QST

The Radio Amateur's Journal *goes mobile*

May 1958

50¢

Collins

KWM-1

mobile/fixed SSB transceiver for

MAXIMUM VERSATILITY

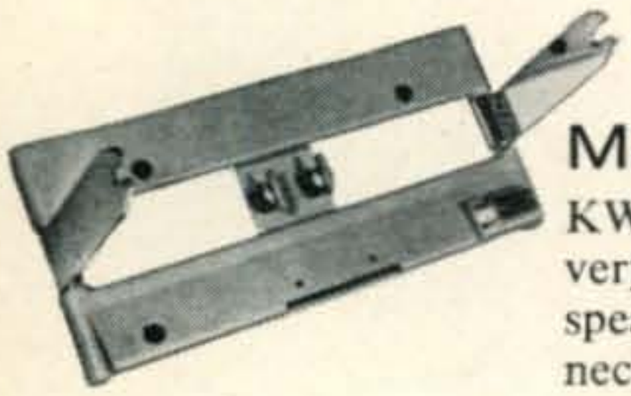
Power
The KWM-1 is the most versatile rig available with 175 watts PEP input on SSB and 160 watts on CW.

Mobile
The most compact unit available for mobile operation with anywhere near the power — the only one available for SSB.

Fixed Operation
Takes very little space — includes receiver and transmitter — costs less than two separate, comparable units.

Novice
Plug-in adapter available to operate the KWM-1 as a crystal-controlled Novice rig. When your General Class license arrives, just slide in the normal crystal box and you're set for regular VFO operation.

Operational Features
Receiver and transmitter tuned to same frequency always — no need for zeroing in. Switch deck on Exciter Tune control will control remote antenna switching relays when changing bands. Only 7 db less output than a kilowatt (one S unit). Crystal switch, automatic antenna switching, control and frequency scales on PA Load and Tune controls make bandswitching easy — even when mobile — no need to get out of the car. Most inexpensive way to have 175 watts mobile AND fixed.



Mobile Mount
KWM-1 slides in and out very easily with power, speaker and antenna connecting automatically.

DC Power Supply
Completely transistorized. Minimum maintenance. Provides all voltages from 12 volt system. 85% over-all efficiency.

AC Power Supply
Very compact unit supplies all voltages for KWM-1.

DX Conversion Adapter
This box replaces the normal crystal box in the front panel. Provides up to 7 transmitting frequencies within the band and allows reception over a 100 kc band in or out of the band. An export model available with transmitting frequencies outside band. This box and normal crystal box easily interchange for switching back and forth.

Extra Crystal Boxes
These can be obtained with crystals for operation anywhere in the 14 to 30 mc band. Also available for crystal-controlled transmitter for Novice operation. Power is easily reduced to conform with Novice power regulation.

Speaker Console
Contains a 5x7 inch speaker, phone patch and directional wattmeter to give the fixed station that finished touch.

Collins CREATIVE LEADER IN COMMUNICATION

COLLINS

For further information, check number 1 on page 134.

There's a PR for every Service!

AMATEUR

40, 80 and 160 Meters, PR Type Z-2

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

20 Meters, PR Type Z-3

Harmonic oscillator. Low drift. High activity. Can be keyed in most circuits. Stable as fundamental oscillators. Fine for doubling to 10 and 11 meters or "straight through" 20 meter operation.....**$3.95 Net**

COMMERCIAL

COMMERCIAL, PR Type Z-1

Designed for rigors of all types of commercial service. Calibrated .005 per cent of specified frequency. Weight less than ¾ ounce. Sealed against moisture and contamination. Meets FCC requirements for all types of service.

SPECIAL TYPES

Type Z-1, AIRCRAFT

3023.5 Kc., .005%.....**$3.45 Net**

Type Z-1, MARS and CAP

Official assigned transmitter frequencies in the range.
Calibrated to .005%. 1500 to 10000 Kc. **$3.45 Net**

Type Z-6A FREQUENCY STANDARD

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

100 Kc. . . . . **$6.95 Net**

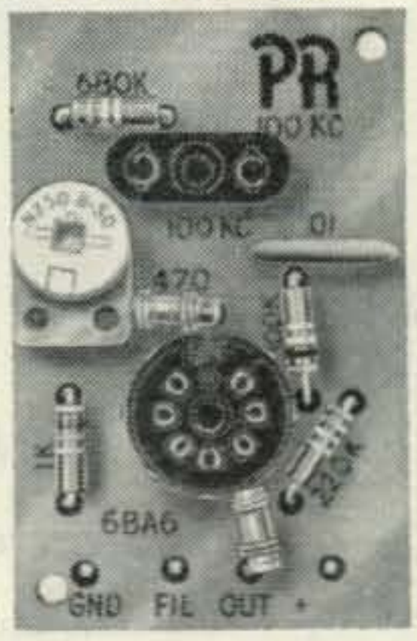
PR PRINTED OSCILLATOR KIT

Has many uses—

- As 100 Kc. Marker
- As 1000 Kc. Marker for Check Points up to 54 Mc.
- As Foundation Circuit for Low Frequency SSB Crystals

Assembled in minutes. Kit contains everything but 6BA6 oscillator tube and crystal.

Each . . . . . **$4.50 Net**

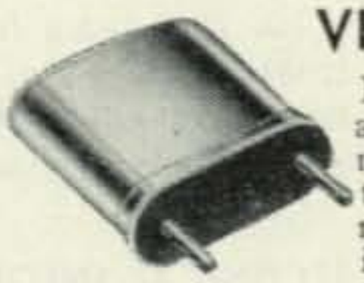


Type 2XP

Suitable for converters, experimental, etc. Same holder dimensions as Type Z-2.

1600 to 12000 Kc. (Fund.) ±5 Kc. . . . **$3.45 Net**

12001 to 25000 Kc. (3d Mode) ±10 Kc. . . . **$4.45 Net**



VHF Type Z-9R

For Lear, Narco and similar equipment operating in the 121 Mc. region, requiring crystals in 30 Mc. range.

Each . . . . . **$4.95 Net**

Type Z-9A RADIO CONTROLLED OBJECTS

27.255 Mc., .04% . . . **$3.95 Net**

Type Z-1 TV Marker Crystals

Channels 2 through 13 . . . . . **$6.45 Net**
3100 Kc. . **$2.95 Net**
4100 Kc. . **$2.95 Net**
4.5 Mc. Intercarrier, .01% . . . **2.95 Net**
5.0 Mc. Sig. Generator, .01% **2.95 Net**
10.7 Mc. FM. IF, .01% . . . **2.95 Net**

ALL PR CRYSTALS ARE UNCONDITIONALLY GUARANTEED. ORDER FROM YOUR JOBBER.

PETERSEN RADIO COMPANY, INC.

2800 W. BROADWAY • COUNCIL BLUFFS, IOWA

For further information, check number 3 on page 134.

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CQ, the Radio Amateurs' Journal is published for active hams by active hams. Not affiliated with any clubs or other political groups, CQ endeavors to be a true and honest reporter for those interested in the hobby. Suggestions for improvement are welcomed.

Authors would do well to send for the CQ Style sheet which will explain our confused system of abbreviations and symbols. The article "Author Author" (October 1952 CQ) tells all about how to write articles for CQ, how much we pay, etc. Reprints of this article are available from CQ if you have been improvident in keeping up your radio library.

CQ CERTIFICATES:

The WPX Award is granted for two-way contact with certain number of amateurs in different prefixes of the world. Full details are contained in the WPX Record Book which is available for 15c from CQ. Application forms are free.

The WAZ Award is granted for contacting all of the amateur zones of the world. Current standings of amateurs working for this award will be found in the DX column. A DX Zone map of the world is available free from CQ. Send stamped envelope.

TECHNICAL INFORMATION:

Please check the 11-year cumulative index which was published in the January 1956 CQ for information about articles in past issues of CQ. The December 1956 and 1957 CQ yearly indexes will bring you up to date. Most back issues are available at 50c from us. Check our "Back Issue" ad for details on those not available. Reprints of the Cumulative Index are available free. For further information see the Ham Clinic column.

DISCLAIMER:

The authors and editors do the best they can to make everything as correct as possible in the articles. If for any reason any of them should happen to goof we hasten to point out that everything is experimental and we guarantee nothing.

◀ For further information, check number 4 on page 134

CQ—The Radio Amateur's Journal

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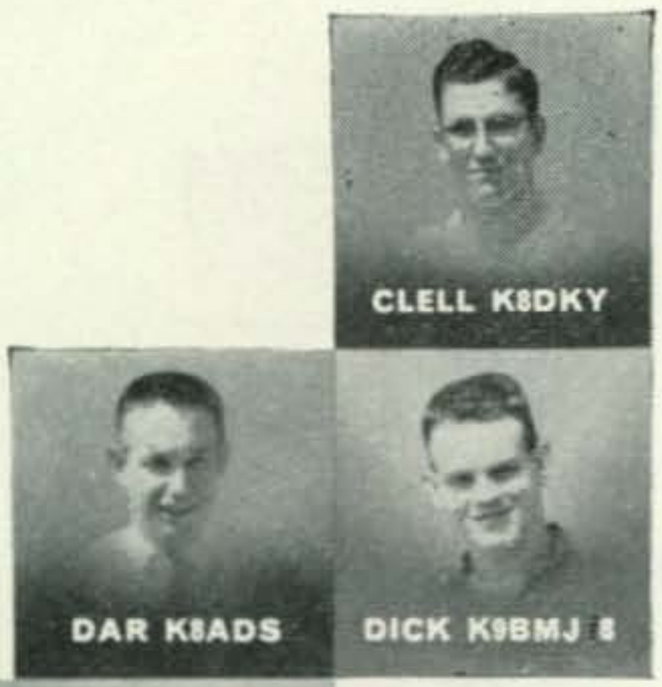


All of these licensed radio amateurs make important contributions to the Heath line of fine ham kits. In a sense, they are your personal representatives within the company, because their design ideas and performance preferences reflect not only their own "on-the-air" experiences, but those of the amateur fraternity with which they are in constant contact. With this kind of representation in Benton Harbor, you can continue to rely on high-performance Heathkit amateur radio equipment designed by hams, for hams!

HEATH *hams work to bring you*

ROGER MACE (W8MWZ)
SENIOR HAM ENGINEER
HEATH COMPANY

HEATHKIT 50-WATT CW TRANSMITTER KIT

MODEL DX-20

$35.95

If high efficiency at low cost in a CW transmitter interests you, you should be using a DX-20! It employs a single 6DQ6A tube in the final Amplifier stage for plate power input of 50 watts. The oscillator stage is a 6CL6, and the rectifier is a 5U4GB. Single-knob band-switching is featured to cover 80, 40, 20, 15, 11 and 10 meters, and a pi network output circuit matches antenna impedances between 500 and 1000 ohms to reduce harmonic output. Designed for the novice as well as the advanced class CW operator. The transmitter is actually fun to build, even for a beginner, with complete step-by-step instructions and pictorial diagrams. All the parts are top-quality and well rated for their application. "Potted" transformers, copper-plated chassis, and ceramic switch insulation are typical. Mechanical and electrical construction is such that TVI problems are minimized. If you desire a good clean CW signal, this is the transmitter for you! Shpg. Wt. 18 lbs.

HEATHKIT DX-100 PHONE & CW TRANSMITTER KIT

MODEL
DX-100

$189.50

Shipped motor freight unless otherwise specified. $50.00 deposit required on C.O.D. orders.

You get more for your transmitter dollar when you decide on a DX-100 for your ham shack! Recognized as a leader in its power class, the DX-100 offers such features as a built in VFO, built in modulator, TVI suppression, Pi network output coupling to match a variety of antenna impedances from 50 to 600 ohms, Pi network interstage coupling, and high quality materials throughout. Copperplated No. 16 gauge steel chassis, ceramic switch and coil insulation, silver-plated or solid silver switch contacts, etc., are typical of the kind of parts you get, to use in assembling this fine rig. The DX-100 covers 160, 80, 40, 20, 15, 11, and 10 meters with a single band switch, and with VFO or crystal operation on all bands. RF output is in excess of 100 watts on phone and 120 watts on CW, with a pair of 6146 tubes in parallel for the final Amplifier, modulated by a pair of 1625 tubes in parallel. Other tubes featured are: 6AL5 bias rectifier, 5V4 low voltage rectifier, 2-5R4GY high voltage rectifiers, OA2 voltage regulator, 12AX7 speech amplifier, 12BY7 Audio driver, 6AV6 VFO, 12BY7 crystal oscillator-buffer, 5763 r.f. driver, and a 6AQ5 clamp tube. VFO tuning dial and panel meter are both illuminated for easy reading, even under subdued lighting conditions. Attractive front panel and case styling is completely functional, for operating convenience. The DX-100 was designed exclusively for easy step-by-step assembly, and no other transmitter in this power class combines high quality and real economy so effectively. Listen to any ham band between 160 meters and 10 meters and make a mental note of how many DX transmitters you hear! This kind of acceptance by the amateur fraternity testifies to the performance and quality of the rig. Its the kind of a transmitter you will be proud to own, and one that will give you a very respectable signal on the air. Time payments available! Shpg. Wt. 107 lbs.

...top quality at lowest prices!

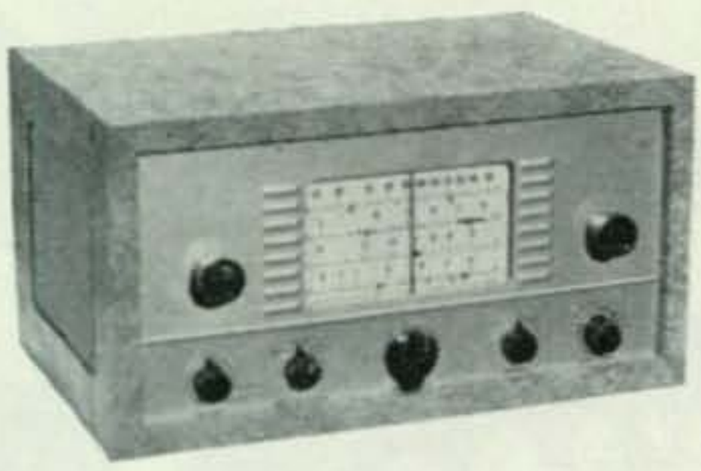
NEW HEATHKIT PHONE & CW TRANSMITTER KIT

MODEL
DX-40

$64.95

The new DX-40 incorporates the same high quality and stability as the DX-100, but is a lower powered rig, for crystal operation, or for use with an external VFO. Plate power input is 75 watts on CW, permitting the novice to utilize maximum power. An efficient, controlled-carrier modulator for phone operation peaks up to 60-watts, so that the rig has tremendous appeal to the general class operator also. Single-knob switching covers 80, 40, 20, 15, 11 and 10 meters. Pi network output coupling makes for easy antenna loading, and Pi network interstage coupling between the buffer and final amplifier improves stability and attenuates harmonics. A line filter is incorporated for power line isolation. The efficient oscillator and buffer circuits provide adequate drive to the 6146 final amplifier from 80 to 10 meters, even with an 80 meter crystal. A drive control adjustment is provided, and the function switch incorporates an extra "tune" position so the buffer stage can be pretuned before the final is on, and so the operator can locate his own signal on the band. Tubes used are a 6CL6 Colpitts oscillator, a 6CL6 buffer, a 6146 final amplifier, a 12AX7 speech amplifier, a 6DE7 modulator, and 5U4GB rectifier. The modulator, incidentally, has plenty of "punch" for clear, strong phone operation. A switch selects any of three crystals, or a jack for external VFO. A high-quality meter with D'Arsonval movement mounts on the front panel for tuning. Whether you are a newcomer or an old-timer, you will find the DX-40 an ideal rig in its power class! Shpg. Wt. 26 lbs.

HEATH COMPANY A Subsidiary of Daystrom, Inc. BENTON HARBOR 12, MICH.



ALL-BAND RECEIVER

HEATHKIT ALL-BAND COMMUNICATIONS-TYPE RECEIVER KIT

Ideal for the short wave listener or beginning amateur, this Receiver covers 550 KC through 30 MC in four bands. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer type—power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—internal 5½" speaker—head phone jack and AGC. Has built-in BFO for CW reception. An accessory power socket is also provided for connecting the Heathkit model QF-1 Q Multiplier. Will supply 250 VDC at 15 ma and 12.6 VAC at 300 ma. Shpg. Wt. 12 lbs.
Cabinet: Fabric covered cabinet with aluminum panel as shown part 91-15A. Shpg. Wt. 5 lbs. **$4.95**

MODEL AR-3

$29.95

ELECTRONIC VOICE CONTROL

HEATHKIT ELECTRONIC VOICE CONTROL KIT

Here is a new and exciting kit that will add greatly to your enjoyment in the ham shack. Allows you to switch from Receiver to Transmitter merely by talking into your microphone. Lets you operate "break-in" with an ordinary AM transmitter. A terminal strip is provided for Receiver and speaker connections and also for a 117 volt antenna relay. Unit is adjustable to all conditions by sensitivity and gain controls provided. Easy to build with complete instructions provided. Requires no transmitter or Receiver alterations to operate. Shpg. Wt. 5 lbs.

MODEL VX-1

$23.95

"Q" MULTIPLIER

HEATHKIT "Q" MULTIPLIER KIT

This fine Q Multiplier is a worthwhile addition to any communications, or Broadcast Receiver. It provides additional selectivity for separating signals, or will reject one signal and eliminate a hetrodyne. Functions with any AM Receiver having an IF frequency between 450 and 460 KC that is not AC-DC type. Operates from your Receiver power supply, and requires only 6.3 VAC at 300 ma (or 12.6 VAC at 150 ma), and 150 to 250 VDC at 2 ma. Simple to connect with cable and plugs supplied. Effective Q of approximately 4000 for sharp "peak" or "null". A tremendous help on crowded phone or CW bands. Shpg. Wt. 3 lbs.

MODEL QF-1

$9.95

more fine ham gear from the pioneer

GRID DIP METER

HEATHKIT GRID DIP METER KIT

A Grid Dip Meter is basically an RF Oscillator used to determine the frequency of other Oscillators, or tuned circuits. Numerous other applications such as pretuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, designed procedures, etc. Features continuous frequency coverage from 2 MC to 250 MC, with a complete set of prewound coils, and a 500 ua panel meter. Has sensitivity control and a phone jack for listening to the "Zero-Beat". It will also double as an absorption-type wave meter. Shpg. Wt. 4 lbs.
Low frequency coil kit: two extra plug-in coils extend frequency coverage down to 350 KC. Shpg. Wt. 1 lb. No. 341-A **$3.00**

MODEL GD-1B

$21.95

HEATHKIT VARIABLE FREQUENCY OSCILLATOR KIT

Enjoy the convenience and flexibility of VFO operation by obtaining this fine variable frequency oscillator. It covers 160-80-40-20-15-11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a, available on most transmitters. It features voltage regulation for frequency stability, and has illuminated frequency dial. VFO operation allows you to move out from under interference and select the portion of the band you want to use without having to be tied down to only 2 or 3 frequencies through the use of crystals. "Zero in" on the other fellows signal and return his CQ on his own frequency! Shpg. Wt. 7 lbs.

MODEL VF-1

$19.50

VARIABLE FREQUENCY OSCILLATOR

HEATHKIT REFLECTED POWER METER KIT

A necessity in every well equipped ham shack, the model AM-2 lets you check the match of the antenna transmission system, by measuring the forward and reflected power or standing wave ratio. Handles up to one kilowatt of energy on all bands from 160 to 2 meters, and may be left in the antenna system feed line at all times. Input and output impedances for 50 or 75 ohm lines. No external power required for operation. Meter indicates percentage forward and reflected power, and standing wave ratio from 1:1 to 6:1. Shpg. Wt. 3 lbs.

MODEL AM-2

$15.95

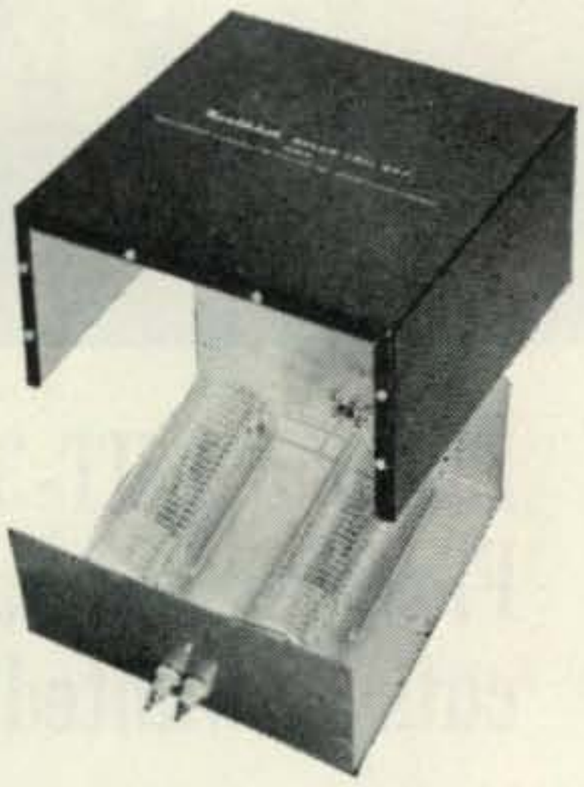
REFLECTED POWER METER

HEATHKIT BALUN COIL KIT

This convenient transmitter accessory has the capability of matching unbalanced coax lines, used on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance. Design of the bifilar wound Balun Coils will enable transmitters with unbalanced output to operate into balanced transmission line, such as used with dipoles, folded dipoles or any balanced antenna system. Can be used with transmitters and Receivers without adjustment over the frequency range of 80 through 10 meters. Will handle power inputs up to 200 watts. Shpg. Wt. 4 lbs.

MODEL B-1

$8.95



BALUN COIL

...in do-it-yourself electronics!

FREE 1958 Catalog

Send for this Free informative catalog listing our entire line of kits, with complete schematics and specifications.

☐ Rush Free 1958 catalog.

HEATH COMPANY

BENTON HARBOR 12, MICH. a subsidiary of Daystrom, Inc.

name _____

address _____

city & state _____

QUAN.	ITEM	MODEL NO.	PRICE

$_____ enclosed. Parcel post, include postage—express is shipped collect.

For further information, check number 5 on page 134.

One Thing is *Crystal Clear*—Your Signal

HT-32
transmitter/exciter

Exclusive HT-32 High Frequency Crystal Filter System a major, proven advance... cuts unwanted sideband at least 50 db.

Now Proven superior — vastly superior to any other type filter—is Hallicrafters' exclusive 5.0 mc. quartz crystal filter system.

Result of a three-year research program, the system makes possible, for the first time, *high frequency filtering*. Result: unprecedented rejection of unwanted sideband—50 db. or more—and the *cleanest signal of all*, bar none.

This and another major technical advance—Hallicrafters' exclusive Bridged-Tee Modulator—make the HT-32 the most wanted SSB transmitter in history.

Export Sales: International Operations
Raytheon Manufacturing Company
Waltham, Massachusetts

Compare these features

- **5.0 mc. quartz crystal filter cuts unwanted sideband 50 db. or more.**
- **Bridged-Tee modulator; temperature stabilized and compensated.**
- **SSB, AM or CW output on 80, 40, 20, 15, 11-10 meter bands.**
- **High stability, gear driven V.F.O.**
- **144 watts peak power input.**
- **Distortion products down 30 db. or more.**
- **Complete band switching.**

Proof of the HT-32's superiority is heard on ham bands night after night. Listen. You won't be satisfied with anything but the cleanest signal on the air. *The HT-32 is available with convenient terms from your Radio Parts Distributor.*

For further information, check number 60 on page 134.

The new ideas in communications are born at...

In our 25th year of service

hallicrafters
Chicago 24, Ill.

editorial / WAYNE GREEN

. . . de W2NSD

never say die

DXpedition

You'll probably read about the Great 1958 DXpedition at length in the DX column, but just in case you are not a habituee of that corner of CQ let me tell you a bit about our Great Trip to Socorro Island.

The whole thing started at the California DX gathering back in January when Don Chesser and I got together for the first time and talked of many things. He had been on an expedition to Grand Camayan Island in 1957 and was eager to try another trip. Guadaloupe, a small Mexican island about 225 miles off the coast of Baja California looked like a good possibility, but ARRL said it wasn't quite far enough from the mainland to qualify as a new country.

Next came Socorro as a possibility. The only DXpedition to get there before had been active for less than three days back in 1956, so it was still much wanted by almost everyone. Being some 400 miles off Mexico it had been granted separate country status by ARRL. Maybe they have a 300 mile limit in Hartford.

Don arranged for a boat to meet the crew at Mazatlan, Mexico and take the eight operators plus radio equipment to Socorro. The crew was quickly signed on, with me right up front. Then came the license.

Negotiations dragged and sagged.

I loaded the Central Electronics 600L, the new Drake sideband receiver, the Harvey Wells Matchbox, the Electro-Voice 664 mike, a couple of aqua-lungs borrowed from Bob, W2TUC, my own two lungs, compressor, spear guns, a Bolex borrowed from Murray, K2CBO, and everything else I could think of into the station wagon and waved good-bye to it as Len, W4KZF drove it off to Cincinnati to get together with Don's car for a caravan to Mazatlan. I planned to fly down at the last minute and step aboard after doing all I could to get the April issue of CQ on the presses.

As time passed with no word of the Mexican license I made plans to leave early and stop off at Mexico City and see what I could do to help things along. Just two hours before I was to leave word arrived that Socorro was out. Zounds! This was only two days before the caravan was to leave for Mexico so something had to be done. Discouragement ran high for a while.

A few days previously I had sent to Tahiti for permission to set up and operate on Clipperton, but this was expected to take quite a while to fruit. The prognosis was very doubtful since there was the problem of non-reciprocation still festering, the memory of the difficulty experienced by the last group to try for Clipperton, and the extreme hazard of getting ashore once you did manage to arrive.

Frankly, I was relieved when Don suggested Navassa. Sure, there are some real miseries to getting on Navassa . . . but it is a lot closer to civilization in case of trouble . . . and it is almost as badly wanted. Maybe we'll make it to Socorro this fall or next spring . . . and Clipperton too.

ARRL Convention

They don't call me "Never Say Die" for nothing. Steve Manning, Publicity Chairman of the coming Washington (DC) National ARRL Convention called up the other day to see if I would give them a plug. On the off chance that there will be no organized lynch mobs or similar discouragements I'll plan on coming down and sitting quietly in the background, grabbing occasional passersby who get separated from the crowd and applying my super salesmanship on them until they update their CQ subscription to break free.

Perhaps the above might not be considered a full fledged plug. Maybe I'd better say more. Well, the convention runs on for three days: August 15-16-17. They've got all sorts of things planned already . . . lunches, dinners, suppers, and perhaps even a breakfast or two. So much is scheduled to happen that it would take a full feature article to cover it. I'll give more details next month if I survive the DXpedition to Navassa.

Good Old QST will probably take some of the strain on this by running the aforesaid feature article.

[*More on page 10*]

de W2NSD [*from page 9*]

Lest We Forget

A card from Brad, W2ELN, gives the amateur frequency allocations for 1928:

1500— 2000 kc
3500— 4000 kc
7000— 8000 kc
14000—16000 kc
56000—64000 kc

Interesting, eh? Wonder what we'll have left after the next pruning session?

Let 'm know you're a ham. Here's a nifty idea, for only $4.95 you can get yourself one of these silver-plated tie bars or lapel pins from Hewlett Sales Co., 1199 East Broadway, Hewlett, N. Y.

Mexican Licenses

Despite the lack of reciprocation wherein Mexican amateurs visiting the United States are unable to go on the air, it is possible to get a special license for mobile operation on your next trip to Mexico. The process, as you might suspect, is a bit complicated. You must submit a photostat of your ham ticket and your car registration, together with a statement that you will abide by the rules of the Mexican Federal Communications Act, a check for $8.00 (100 pesos) made out to the "Direccion General de Telecommuniciones" and a tourist permit.

Flash!

Here's an opportunity to help a fellow ham and get some good technical help in the bargain. Frank Warnock, an excellent technician, has been forced to quit work by a serious disability; this hasn't dampened Frank's spirit or lessened his interest in amateur radio. On the contrary, ham radio is helping Frank rebuild physically and spiritually. It is still impossible for him to hold down a steady job but he's willing and able to wire kits. This service, on a percentage basis, might be a blessing to you boys who haven't had time to wire up those kits. For further information write:

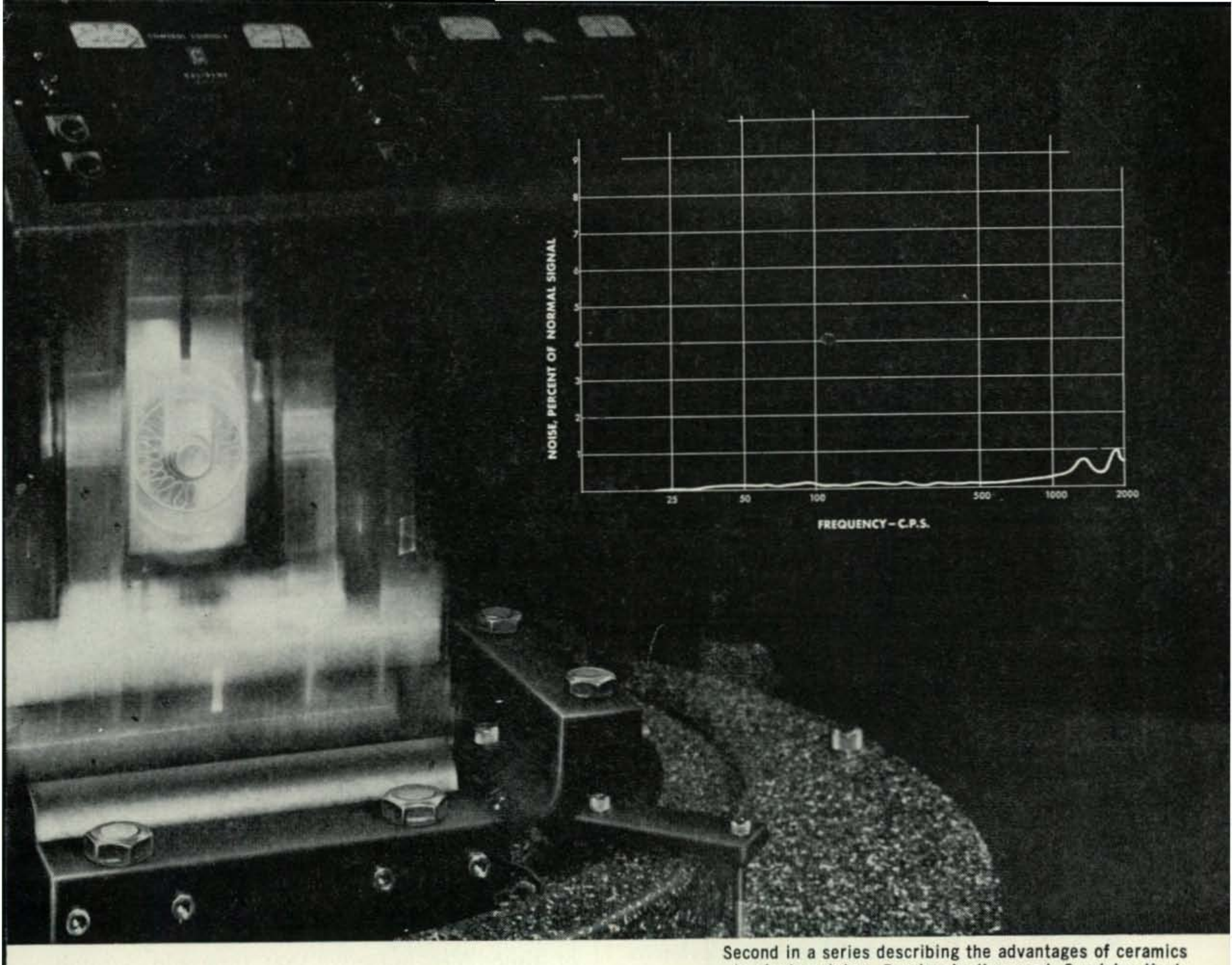
Frank Warnock
1225 Franklin Ave.
Portsmouth, Ohio

73, Wayne, W2NSD

hamfests

Massachusetts

The Central Massachusetts Amateur Radio Association will hold its Annual Gabfest Sunday, May 25th at the Svea Grill, 190 South Quinsigamond Ave., Shrewsbury. There will be a smorgasbord supper, entertainment and prizes. Tickets $3.50 in advance, $4 at the door. Write Harry Miller, Jr., W1DRD, 141 Austin Street, Worcester, Mass.



Second in a series describing the advantages of ceramics in electron tubes. Previously discussed: Surviving Heat.

Surviving Vibration
is an Eimac Ceramic Tube Extra

High reliability under severe impact and vibration is an important vacuum tube requirement for mobile applications. An important aspect of this reliability is the tube's ability to operate under extreme vibration without envelope damage, introducing noise or developing inter-electrode short circuits. Eimac ceramic design improves tube performance under these conditions.

In the illustration an Eimac 4CX300A, 300 watt tetrode, is being operated in a circuit while undergoing 20G vibration at 20 to 2000 cycles per second. The exceptionally low noise level produced under these conditions, shown in the graph above, remains less than 1% of normal signal over the entire test range.

Other advantages of Eimac ceramic tubes are: resistance to damage by impact or high temperature; compactness without sacrificing power; ability to withstand rigorous processing techniques that lead to high tube reliability, uniformity and longevity. In this new line of ceramic tubes, Eimac has the answer for the radio amateur who needs a tube that will perform reliably under rough conditions.

EITEL-McCULLOUGH, INC.
SAN BRUNO · CALIFORNIA

Eimac First with ceramic tubes that can take it

For further information, check number 6 on page 134.

Eimac®

EIMAC DESIGNED AND MANUFACTURED PRODUCTS

Negative Grid Tubes
Reflex and Amplifier Klystrons
Ceramic Receiving Tubes
Vacuum Tube Accessories
Vacuum Switches
Vacuum Pumps

Including more than 40 ceramic electron tubes

Feenix, Ariz.

Deer Hon. Ed:

Never in my Hon. Life are I having closer shave!! It are horribul. In fackly, are still shaking from thinking about it. Hon. Ed., can you thinking how it would be if both of us were . . . and that would mean she would want . . . honustly, are getting faint to contemplateing such a thing.

Nat that Scratchi not having narrow squeeks before. Like take time are changeing final toob in five kilowhat rig without turning rig off. I surely be pushing up six feets of dayzes if not Hon. Brother Itchi are turning off rig in nick of time. Yes indeedy, that time old Scratchi Luck are holding.

And then that time Hon. F.C.C. Inspecktor coming in shack when Scratchi are running reel cool Arizona Kilowhat to push-pull pairalel water-cooled toobs!! And all I getting are warning for running to much power. That are reel close shave on acct. he not asking to seeing lisense which are already eggspired.

Of coursely are that never-to-be-forgotten time Scratchi having already sined sertificat, are standing there with YL on Hon. Arm, and man are asking for to bux to paying for marryage lisense. Only fact that are leeving Hon. Wallet at home saving Scratchi that time. You know, you not hardly finding closer shave than that, no indeedy.

But this last close shave were positively nerve racking. Funny thing to, Hon. Ed., for long time Scratchi not even knowing anything going on, even tho I should have catching on sooner.

First thing I noticeing are when my XYL-to-be, Lil Watanabe, are seeming to be having conversayshuns with Hon. Brother Itchi that they stopping having when I getting close enough to heering. Not only that, but then they starting up conversayshun that I are heering, they not saying anything.

Another thing are happening to. Suddenly I can't finding things in Hon. Shack. Seegar-box ful of resistors are not finding first. Next

[*Continued on page 14*]

HAMMARLUND HIT PARADE

HQ-100 GENERAL COVERAGE RECEIVER

540 KCS to 30 MCS. Electrical bandspread. Q-Multiplier. Voltage-regulated and temperature-compensated for stability. Automatic noise limiter. Auto-response. 10-tube superheterodyne circuit. A real honey for the amateur and Short Wave Listener . . . **$169.00***

HQ-110 AMATEUR RECEIVER

Full coverage of 6, 10, 15, 20, 40, 80 and 160 meter bands. Dual conversion 12-tube superheterodyne circuit. Separate linear detector for SSB and CW. Q-Multiplier. Separate stabilized BFO. Crystal calibrater. Crystal controlled 2nd conversion. Auto-response. Automatic noise limiter. Most popular amateur receiver ever . . . **$229.00***

HQ-160 GENERAL COVERAGE RECEIVER

A brand-new star performer for amateur and general use. Dual conversion 13-tube superheterodyne circuit. 540 KCS to 31 MCS. Electrical bandspread. Q-Multiplier. Adjustable notch filter up to 60 db attenuation. Separate stabilized BFO. Crystal calibrator. Automatic noise limiter. 14 tuned IF circuits. Crystal-controlled 2nd conversion. **$379.00**

*Telechron automatic clock-timer $10 extra.

SEE THESE ALL-TIME GREATS AT YOUR HAMMARLUND DEALER

WRITE FOR COMPLETE INFORMATION . . .

HAMMARLUND

HAMMARLUND MANUFACTURING COMPANY, INC., 460 W. 34th ST., N. Y. 1, N. Y.

Export: Rocke International, 13 E. 40th St., N. Y. 16, N. Y.
Canada: White Radio, Ltd., 41 West Ave. N., Hamilton, Can.

Established 1910

For further information, check number 8 on page 134.

For further information, check number 9 on page 134.

SCRATCHI [*from page 12*]

soddering iron are no place around. Then are missing cupple toobs I having for spares.

You are knowing how it is, Hon. Ed. aren't you? How do you know whether you losing something because can't finding it or because it reely missing. I not reely knowing these things missing until needing soddering iron one day, then I getting mad and doing 1/c looking job.

Looking in desk, under table, in boxes—finely looking over entire house then searching Hon. Brother Itchi's barn. Still no soddering iron. Reelizing not only not finding soddering iron, but also not finding resistors or toobs what are missing.

Not only that, but other funny things happening. Bother Itchi taking strange trips away from house and not telling me. If you not thinking it strange, yewshually when he leeving house he telling me eleventeen things to doing before he coming back, but now he leeving and not even menshuning he leaving.

But then one day I calling up XYL-to-be Lil on landline, and who you think answering fone? Yes indeedy—Hon. Brother Itchi. Well, Hon. Ed., that were the blow that reely unnewtralized the final. That's when the standing-wave raysho blowing up in Scratchi's face.

When Brother Itchi coming back in afternoon I reely giving him the QRM. In fackly, are just getting started to having sooper long personal QSO with him when he starting laffing like furies. This so surprizing me I stopping long enough to heering him say that he not beeting my time with Lil, he are just helping her to getting her amchoor lisense.

You can imagine my reactshun. This are like having feller telling you he not going to kill you with a gun, no, he yewsing poyson insted. My own sweet Lil with an amchoor lisense!! Can you imagineing little old sweet Lil in Hon. Shack of mine with an amchoor lisense??

How long would Scratchi having anything. Lil already taking toobs and resistors to making code practis osilater—yewsing my soddering iron!! Ether that or she would operate in my Hon. Shack, and that would meening cleen up this, cleen up that, curtains at the window, and what's mine is hers and what's hers is hers.

I'm telling you, I reely walking the floor until I finding out about amchoor lisense test, which she taking that same afternoon. Howsumever, amchoor radio are saved. Lil flunking code test. Things only safe for three months, though, Hon. Ed., so operating your rig while you can—Lil taking new exam next time Inspektor are in town.

On the other hand, maybe it not be to bad. Can't you seeing the two mikes on the operating table, one marked HIS and one marked HERS.

Respectively yours,
Hashafisti Scratchi

FCV-2 CONVERTER

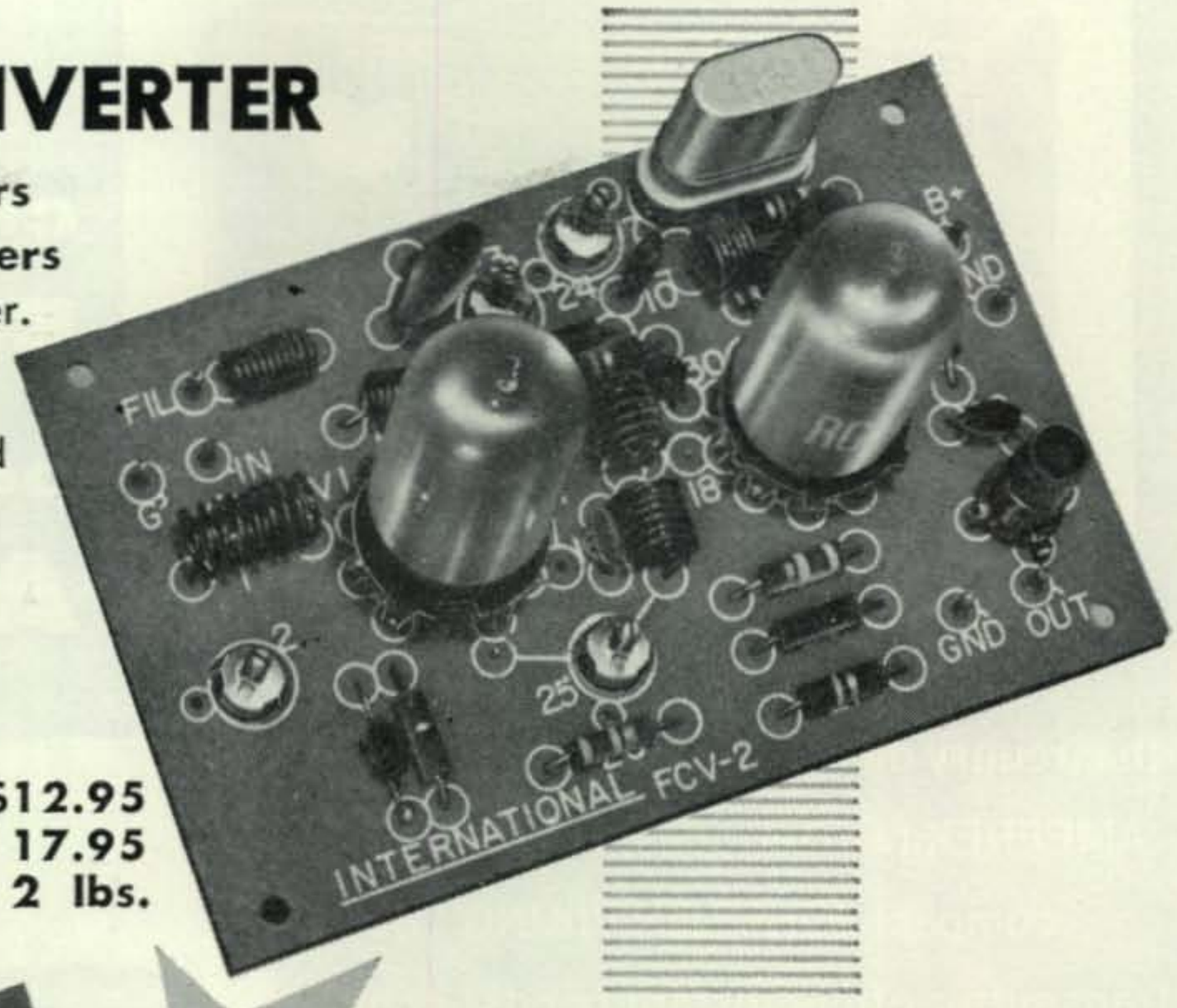
- **Model 50 - 6 Meters**
- **Model 144 - 2 Meters**

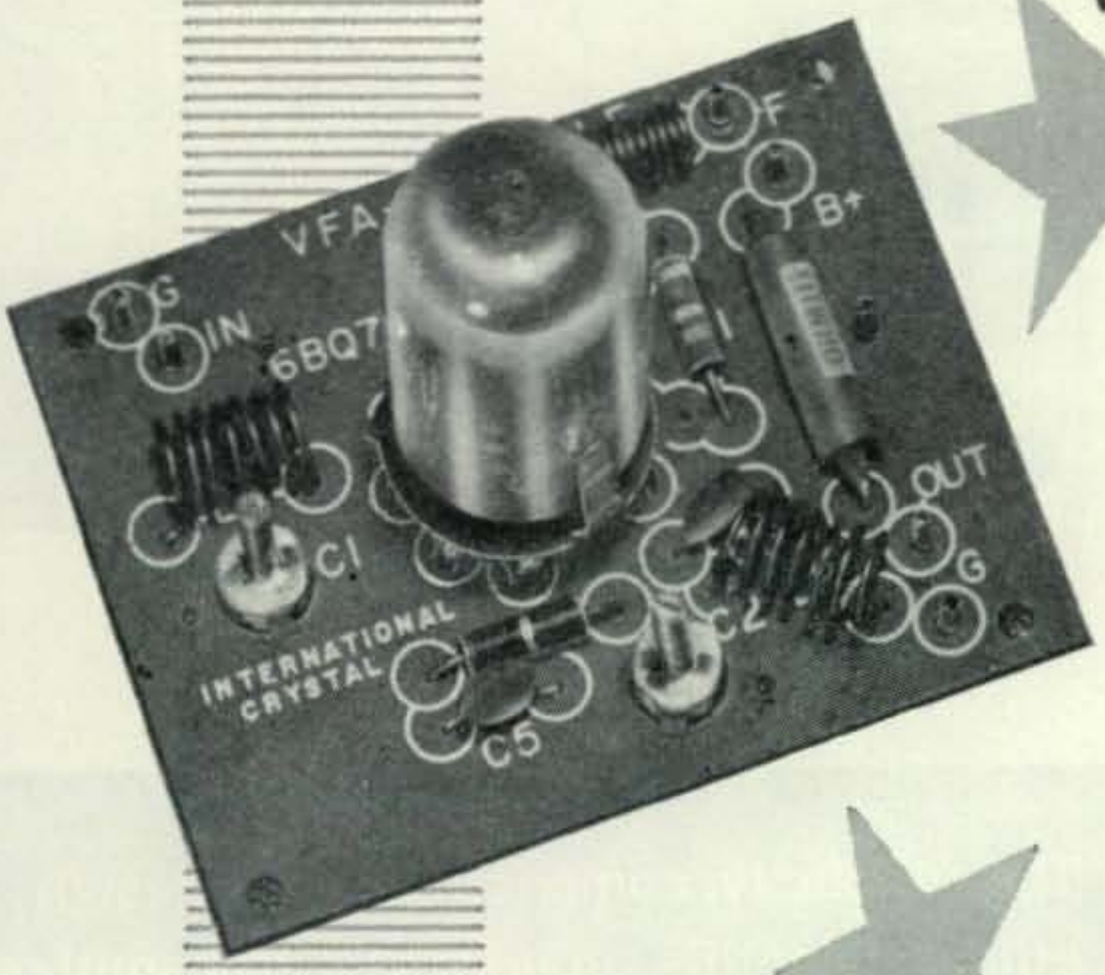
A 6U8 tube is used as oscillator-mixer. Cascode r-f amplifier using 6BQ7A. IF outputs available from broadcast band through 30 MC. (Two standard IFs are available, 600-4600 KC, 7-11 MC; others on request)

Designed to mount in a standard 3" x 4" x 5" minibox.

PRICES

Kit with crystal (less tubes)	**$12.95**
Wired with crystals and tubes	**17.95**
Shipping Weight	**2 lbs.**





VFA-1 CASCODE PRE-AMPLIFIER

For 2 Meters and 6 Meters, using the 6BQ7A in a low noise circuit. Designed to mount in a standard 3" x 4" x 5" minibox.

PRICES

Kit, less tubes	**$ 4.75**
Wired, with tubes	**6.95**
Shipping Weight	**2 lbs.**

IFA-10 AMPLIFIER

For use between converter and receiver. Uses 6AH6 type tube. Available for I-F ranges from broadcast band through 30 MC. Designed to mount in a standard 3" x 4" x 5" minibox. (Specify range when ordering).

Kit, less tube	**$ 5.75**
Wired, with tube	**8.50**
Shipping Weight	**2 lbs.**

HOW TO ORDER

Please supply sufficient information with order to facilitate accurate processing. Shipments are made on open account F. O. B. Oklahoma City when credit has been approved. On C. O. D. orders of $25.00 or over, 1/3 down payment with order is required. Kindly include in check or money order sufficient postage and insurance for your Parcel Post Zone.

Shipping weight each unit 2 lbs.

Zone		Postage
1 x 2	(to 150 miles)	.27
3	(150-300 miles)	.29
4	(300-600 miles)	.31
5	(600-1000 miles)	.36
6	(1000-1400 miles)	.40
7	(1400-1800 miles)	.46
8	(Over 1800 miles)	.51

Insurance—Add 10c for up to $10.00 value; 20c for up to $25.00 value.

Write for COMPLETE CATALOG

International
CRYSTAL MFG. CO., INC.

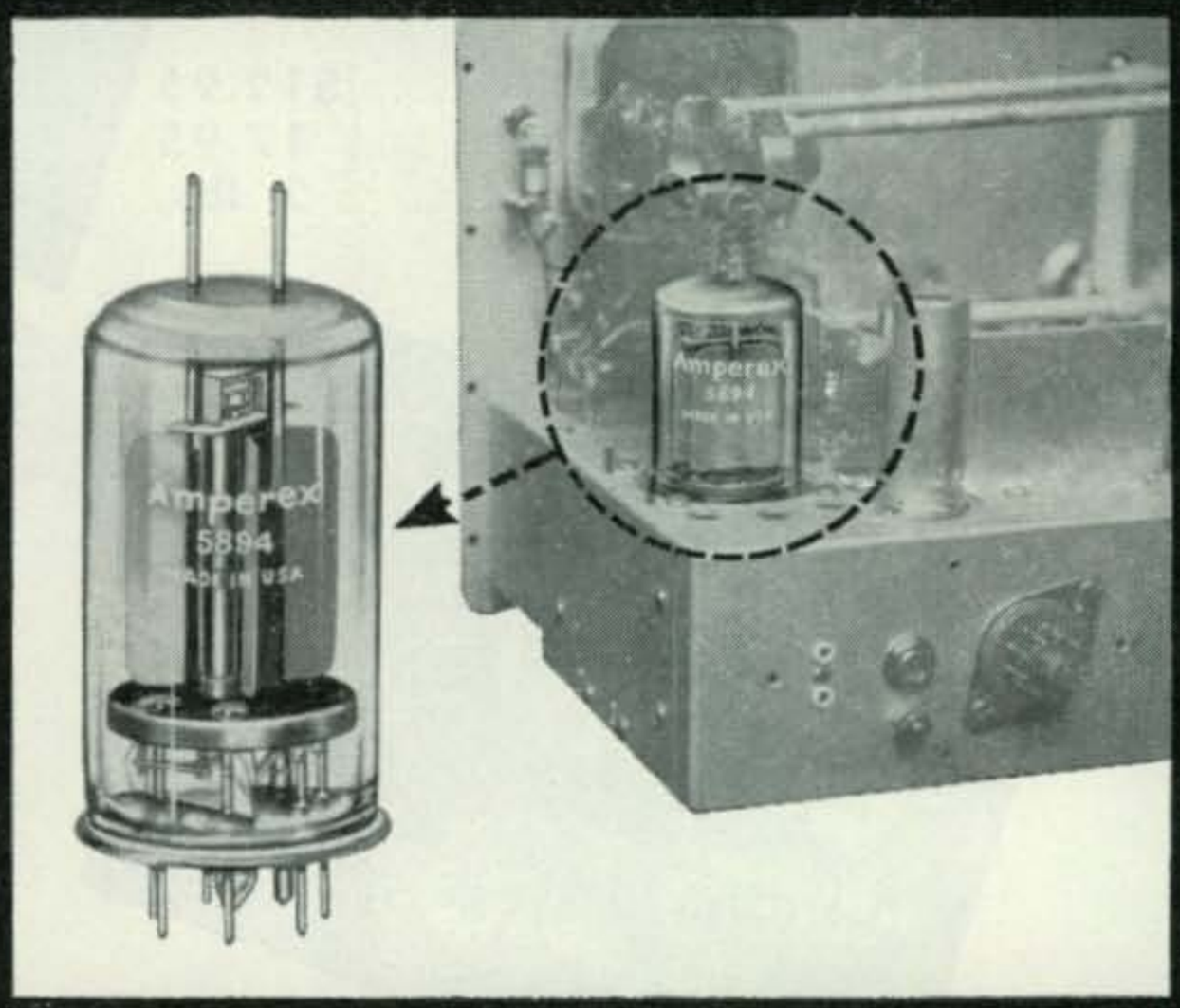
18 N. LEE PHONE RE 6-3741 OKLAHOMA CITY

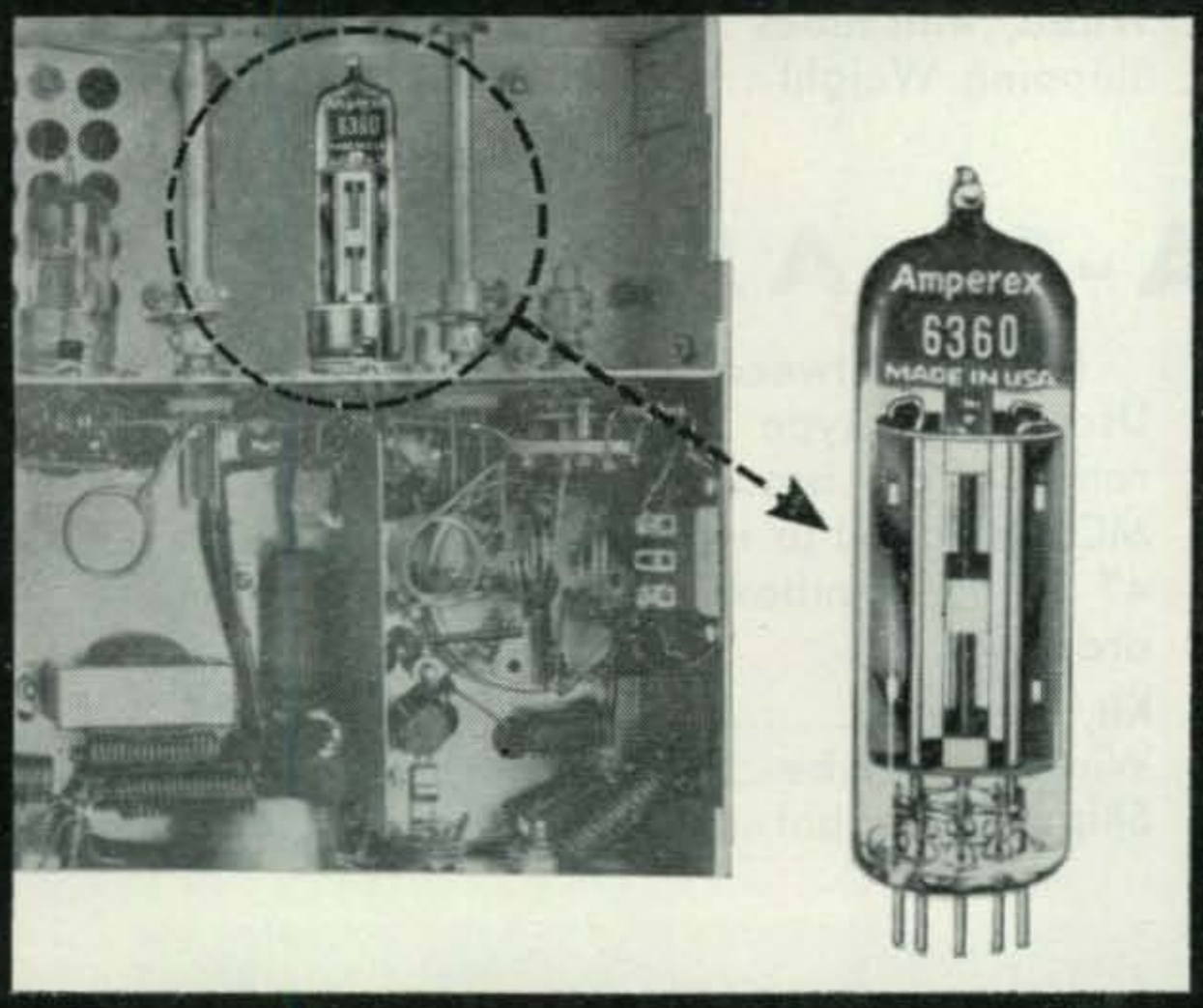
For further information, check number 10 on page 134.

circuit by E. F. JOHNSON

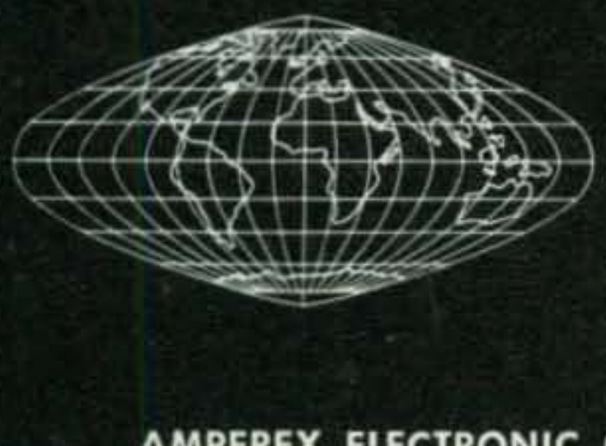
power by Amperex®

With circuitry designed around two famous AMPEREX twin tetrodes, the beautifully compact JOHNSON VIKING "6N2" transmitter offers instant bandswitching coverage on both 6 and 2 meters and may be operated by external VFO or built-in crystal control. Completely shielded and TVI-suppressed, the "6N2" may be used with a large variety of power-supply-modulator combinations. Power input is rated at 150 watts CW and 100 watts AM phone.





The simplicity, compactness, and design efficiency of this superior VHF transmitter are in large part due the use of an AMPEREX 5894 as the final amplifier and an AMPEREX 6360 as the tripler-driver. These highly advanced twin tetrodes are part of a compatible family of AMPEREX transmitting tubes, engineered to complement one another in the design of optimized VHF/UHF transmitter circuits. The 6360 has 14 watts anode dissipation; the 5894 dissipates 40 watts. Net price to user is $4.00 for the 6360 and $25.00 for the 5894.



ask ***Amperex***

about tubes for communications applications

AMPEREX ELECTRONIC CORP., 230 DUFFY AVENUE, HICKSVILLE, L.I., N.Y.

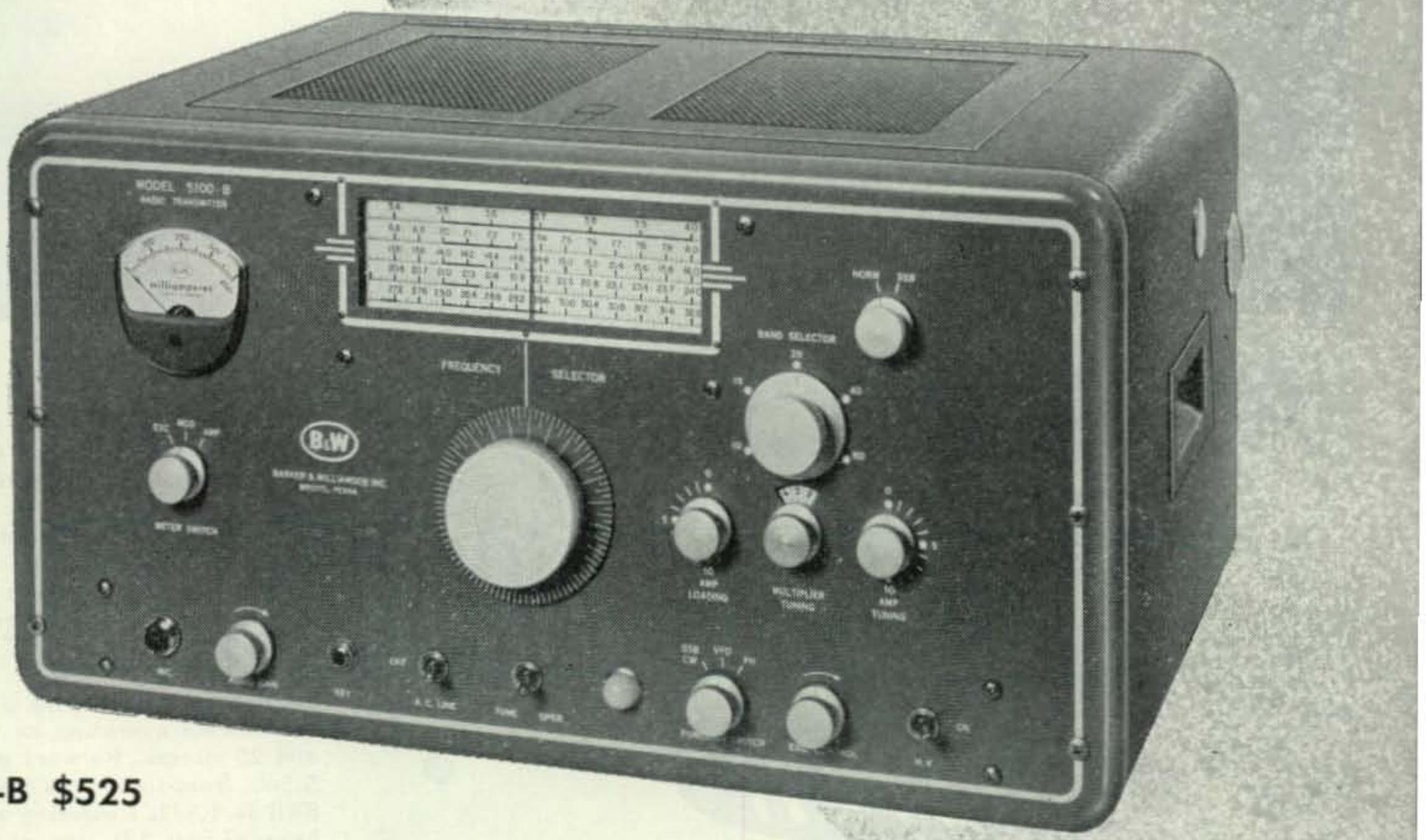
In Canada: Rogers Electronic Tubes & Components, 11-19 Brentcliffe Road, Leaside, Toronto 17.

HERE'S YOUR CHANCE

to get a B&W transmitter that:

- Covers All Bands from 80-10 Meters
- Permits VFO or Crystal Control on All Frequencies
- Provides Versatility for AM, CW and SSB with the 51SB-B
- Features Built-in TVI Suppression
- Has Components Conservatively Rated for Maximum Output
- And . . . All at the Lowest Cost for Comparative Value

Certified by FCDA
Item No. T-32



5100-B $525

There isn't a transmitter on the market that gives you more versatility than the B&W 5100-B . . . regardless of price. In spite of superb performance, the 5100-B is as competitive in cost and often under many comparable units.

Designed for discriminating hams, the 5100-B is engineered to the highest degree by professionals. Layout and circuitry are skillfully designed to assure a minimum of harmonics and distortion.

As a basic for novice or oldtimer the 5100-B is perfect for future addition of SSB by plugging in a B&W 51SB-B. If you're ready for maximum power you can add the B&W L-1000-A Grounded Grid Linear Amplifier. This addition will give you 1000 watts peak envelope SSB-875 watts CW and 375 watts linear AM phone.

Here's your chance to get on the air with a top-quality signal. Buy a B&W Model 5100-B transmitter today. If you want additional information, before you buy, see your favorite "ham" dealer or write the factory direct.

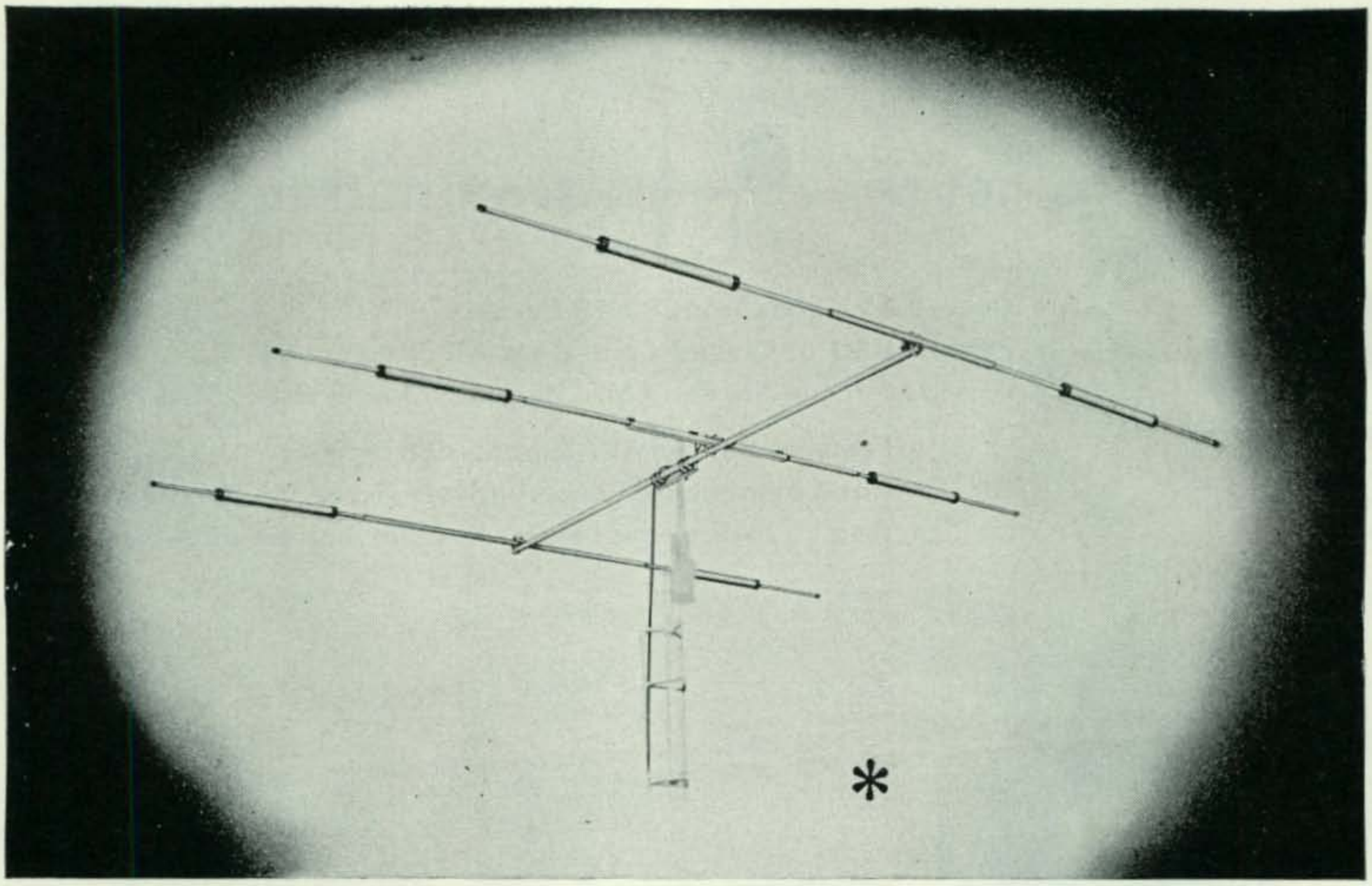
Complete assembly 5100-B, 51SB-B and L-1000-A

Barker & Williamson, Inc.

Canal Street and Beaver Dam Road • Bristol, Penna.

For further information, check number 12 on page 134.

OTHER B&W AMATEUR EQUIPMENT: Transmitters AM - CW - SSB • Single Sideband Generators • Single Sideband Receiving Adapters • Dip Meters • Match Masters • Frequency Multipliers • Low-Pass Filters • T-R Switches • R.F. Filament Chokes • Transmitting R.F. Plate Chokes • Audio Phase Shift Networks • Band Switching Pi-Networks • Cyclometer-type Counters • Antenna Co-axial Connectors • Baluns • Variable Capacitors • Fixed and Rotary Type Coils • Band Switching Turrets • Standard Inductor Materials • Miniductors • Complete line of Amateur Air-wound Plug-in Coils • Variable Plug-in Links • Faraday Shielded Links • Misc. Coil Mounting Assemblies • Misc. Frequency Marked Dial Plates • Misc. Knobs • Ceramic Jack and Plug Bars



INCOMPARABLE
is the word for
TRAP MASTER

EXCLUSIVE TRAP DESIGN – LIFETIME WEATHERPROOFED!

ANTI-SAG CONSTRUCTION!

LOW SWR – REMARKABLY FLAT ACROSS BANDS!

by Mosley

Also: *World famous "Vest Pocket" and "Super" Amateur Beams, Commercial Arrays and other fine products.*

Write for free Catalog, H–58.

Model **TA-33**

Beautifully constructed 3 element beam for operation on 10, 15 or 20 meters. Forward gain is 8db, front-to-back is 25db, and SWR is 1.5/1. Maximum element length is 28 ft. and weighs only 47 lbs. Boom is just 14 ft.

$99.75

Model **TA-32**

Similar to Model TA-33, but has 2 elements operating on 10, 15 and 20 meters. Forward gain is 5.5db, front-to-back is 20db and SWR is 1.5/1. Featuring a short boom of just 7 ft. and max. element length of 28 ft. Weight is 34 lbs. Converts to Model TA-33.

$69.50

Model **V-4-6**

This low cost, high performance vertical antenna covers all bands from 10 thru 40 meters. Requires little space and may be mounted on ground or roof-top. Low SWR and band switching is automatic. Loading coil available for 80 M.

$27.95

Mosley Electronics, Inc.

WEST COAST BRANCH	EXPORT DEPARTMENT	MAIN OFFICE AND PLANT
1406-08 South Grand Avenue	15 Moore Street	8622 St. Charles Rock Road
Los Angeles 15, California	New York 4, New York	St. Louis 14, Missouri

For further information, check number 13 on page 134.

For your information....

A PAGE FROM THE GONSET CATALOG

Shown is page 1 (of 4) which presents only a very few of the communications equipment items in the big GONSET line.

G-66B COMPLETE FIXED-MOBILE RECEIVER

A highly flexible receiver, well suited for fixed station use...without equal for superior mobile reception. 6-band coverage, stable, sensitive, selective.

6 bands: .54 to 2 mcs, 3.54 mcs, 7-7.3 mcs, 14-14.35 mcs, 21-21.45 mcs, 28-29.7 mcs, AM, CW, SSB reception. Highly stable HF and BF oscillators and xtal controlled second conversion oscillator. Steep skirt selectivity by 265 kc 2nd I-F with 8 tuned circuits. Double conversion all bands. AVC and famous Gonset noise limiter, antenna trimmer, "S" meter. Slide rule dial exposes only band in use. 40:1 tuning ratio. Universal power supply is a separate unit, operates on 6V or 12V DC and 115V AC. Loudspeaker is built into power supply unit. Specify whether operation is to be 6V or 12V DC.

"Thin pack" power supply is available for 12 volt DC only operation. Only 2½" thick, plugs directly to G-66B as cabinet extension or can be connected with patch cable. Less speaker.

G-66B, less power supply.....#3046 Net 209.50

Universal "three way" power supply/speaker unit. (6V-12V DC—115V AC).....#3069-6 Net 49.50

Same as above. Factory wired 12V DC, 115V AC. With patch cable.....#3069-12 Net 49.50

"Thin pack" power supply. (12V DC only) less patch cable....#3098 Net 29.50

G-66B receiver with 3069-6 power supply and patch cable. Factory wired for 6V DC and 115V AC .....#3213-6 Net 259.00

G-66B receiver with 3069-12 power supply and patch cable. Factory wired for 12V DC and 115V AC .....#3213-12 Net 259.00

G-66B receiver with 3098 "thin pack" power supply. (12V DC only) less patch cable. #3214 Net 239.00

G-77 A MOBILE TRANSMITTER...

G-77 A Transmitter with power supply and installation kit.

Model #3203....Net 299.00

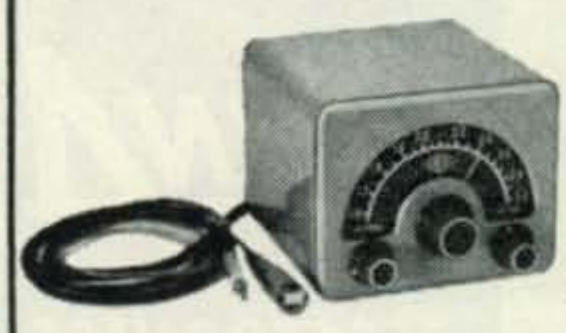
A new mobile transmitter with every desirable feature. A companion unit to the G-66B, same size and appearance. Covers 80-40-20-15-10 meters, has built-in, stable, calibrated VFO with xtl optional. Power input 50-60 watts, modulated. Pi network output. Full press-to-talk with built-in antenna relay. Power supply and modulator are in separate unit. 6V or 12V DC and 115V AC Output voltage is 500-600 volts full load. Selenium rectifiers avoid rectifier filament standby drain.

COMMUNICATIONS MONITOR RECEIVERS, FM AND AM TYPES

A new, economically-priced series of FM and AM receivers for communications monitoring and emergency applications in the VHF region. Complete with AC power supply, speaker, "built-in" antenna, calibrated slide rule dial. Each has 8 tubes plus rectifier. Oscillator is temperature compensated, has low radiation. Excellent AVC and adjustable squelch.

30 to 50 mcs, FM.....#3155 Net 79.50
112 to 132 mcs, AM.....#3156 Net 79.50
132 to 152 mcs, AM.....#3157 Net 79.50
152 to 174 mcs, FM.....#3158 Net 79.50

12 VOLT, POLICE-MARINE CONVERTER



Model #3163 ....Net 29.50
For operation on 12V DC only

New converter for mobile reception of maritime and police bands within frequency range of 1.6 to 3 mcs. Unit operates in conjunction with existing auto set on any car having 12 volt battery system. Installation is simple, rapid. No alteration of auto set. Converter is supplied with cable and plug which fits antenna receptacle of auto set. Operating voltage (12V) is readily obtained by clipping lead to accessory battery post behind dash. Size 3½" H, 4" W, 4" deep.

Model #3066
Net 52.50

6 METER CONVERTER...

An effective converter which provides excellent 6 meter reception when operated in conjunction with conventional automobile broadcast receivers or with communications or broadcast type home receivers.
Has full-vision calibrated dial. Is compact, simple to install. Has switch for 6 or 12V filaments. Also has Gonset noise clipper built as separate unit for connection to receivers which do not have such provisions.

Model #3030
Net 57.50

"SUPER-SIX" SIX BAND CONVERTER

The new six band de luxe converter covering 10-11, 15, 20, 40, and 75 meters. Improved sensitivity and added band spread. Also covers 19 and 49 meter SW broadcast bands. Built-in BC trap. Separate isolated antenna inputs for converter and BC set. Oscillator correction control on rear of chassis. Sturdy, drawn aluminum outer case. Factory wired for 12V DC. Easily converted to 6V DC.

"3-30" SW CONVERTER

An excellent general coverage converter where extreme band-spread is not required. Covers 3 to 30 mcs. in three ranges. Uses four tubes: 6BH6 RF, 6AV6 mixer, 6C4 oscillator and 6BH6 I.F. stage. Extremely compact and easy to install with any car radio.

Model #3002.....Net 49.50

POLICE-MARINE CONVERTER

Overall performance and construction comparable to 3-30 model except covers 1.6 to 6 mcs in two bands and employs 1 mc output. Ideal for police, marine, CAP, Civil Defense, disaster communications as well as amateur 75 and 160 meter mobile work. Compact, efficient, ruggedly constructed.

Model #3003-6.....Net 49.50
Model #3003-12.....Net 49.50

MOBILE FM TUNERS

Gonset tuners provide an inexpensive yet sensitive and stable receiver when used in conjunction with ordinary auto, home or communication receivers or with the Gonset Audio-Amplifier Power Supply unit. Tuners include squelch and noise clipper, I.F. and low-level audio. Very compact...mounts on steering post or under dash for mobile applications 50 ohm input, simple to connect to Audio-Power supply unit or equivalent sections of L.F. receiver.

30-40 mc. FM.....#3009-6

30-40 mc. FM.....#3009-12

40-50 mc. FM.....#3010-6

40-50 mc. FM.....#3010-12

88-108 mc. FM....#3011-6 (less squelch)

88-108 mc. FM....#3011-12 (less squelch)

152-162 mc. FM...#3012-6

152-162 mc. FM...#3012-12

Specify 6 or 12 volt factory wiring.

All Models.....Net 69.50

"SUPER-CEIVER"

Used with any good converter, (as Super-Six) provides a complete receiver of outstanding performance on AM-CW.

Unit is xtal controlled for maximum stability and utilizes 8 tuned circuits at 262 kcs for steep-shoulder selectivity. Self-contained vibrator supply furnishes regulated DC to converter and BFO. Latter is very stable and has pitch adjustment. Also available on special order as an excellent xtal controlled, fixed frequency receiver for many commercial applications. Information on request. Wired for 6 or 12 volts. (Specify).

Model 3041-6, less converter.....Net 119.50

Model 3041-12, less converter.....Net 119.50

For further information, check number 14 on page 134.

Transistor Power Supplies* and Components

*Complete Units

D SERIES (Standard)

Continuous operation at 30 watts. Selective taps at 200, 250 and 300 volts; intermediate voltage at ½ selective taps. Both voltages can be drawn simultaneously if total power does not exceed continuous ratings. Positive or negative ground operation. Input and output filtering included except for intermediate tap.

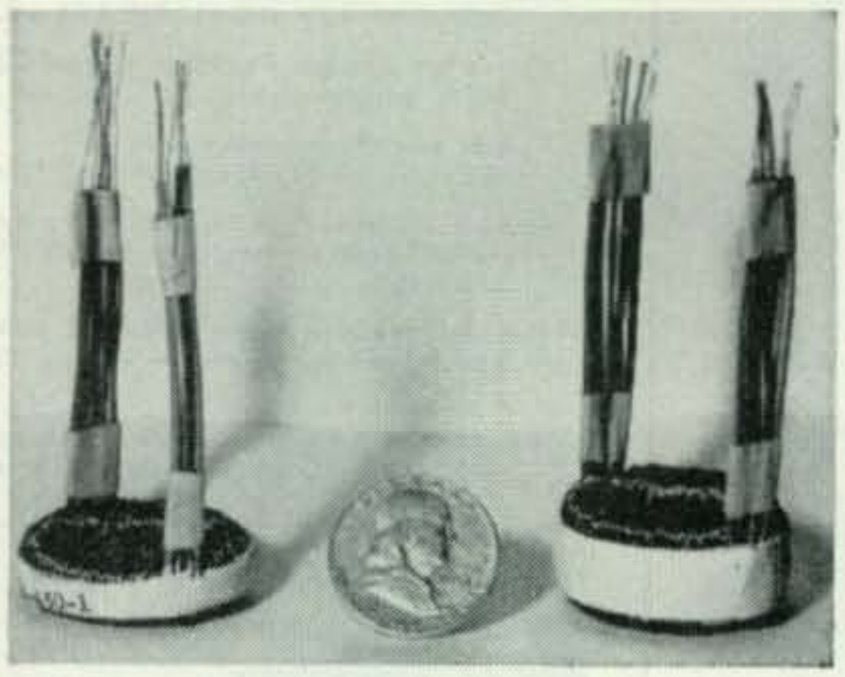
Size: 4⅜" x 3¼" x 1⅛" Wt.: 10 oz. 6- or 12-V Input: **$39.95** 24-V Input: **$61.95**

DA SERIES

Continuous operation at 45 watts. 450 volts and 225 volts simultaneous if total power does not exceed continuous ratings. Intermittent duty to 90 watts, 450 volts at 150 MA; 225 volts at 100 MA (5 min. on, 20 min. off). Positive or negative ground operation. Input (primary voltage) filtering; partial high voltage filtering provided.

Size: 4⅜" x 3¼" x 1⅛" Wt.: 14 oz 6- or 12-V Input: **$57.50** 24-V Input: **$79.50**

Toroid Transformers for Transistor Power Supply Application



H SERIES

H-6-450-1	Input: 6-VDC. Output: 450-VAC center tapped...450 and 225 VDC from bridge rectifier...45 watts.
H-14-450-12	Input: 12/14-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...55 watts.
H-28-450-15	Input: 24/28-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...65 watts.
H-6-100-125-150-D	Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 100 MA.
H-12-100-125-150-D	Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 125 MA.
H-24-100-125-150-D	Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 150 MA.

Without Encapsulation (2 ozs.). 1-10 units: **$16.00** ea. With Encapsulation (3 ozs.). 1-10 units: **$18.50** ea.

HD SERIES — 2000 CPS

HD-6-225-300-2-D	Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.
HD-14-225-300-2-D	Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.
HD-28-225-300-2-D	Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

Without Encapsulation (3½ ozs.). 1-10 units: **$18.50** ea.
With Encapsulation (4½ ozs.). 1-10 units: **$21.50** ea.

HDS SERIES — 2000 CPS

HDS-6-225-300-2-D	Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.
HDS-14-225-300-3-D	Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.
HDS-28-225-300-3-D	Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

Without Encapsulation (3½ ozs.). 1-10 units: **$21.50** ea.
With Encapsulation (4½ ozs.). 1-10 units: **$24.50** ea.

400 CYCLE SERIES

14-115-1.5-400	Input: 12/14-VDC. Output: 115-V at 1.5 amp.
24-115-1.5-400	Input: 24/28-VDC. Output: 115-V at 1.5 amp.

Dim: 3" dia. x 1" thick. Without Encapsulation (12 ozs.). With Encapsulation (16 ozs.). Per Unit: **$76.00**.

Matched Pair HD Transistors:
12/14-V operation—**$11.00** per pr.
24/28-V operation—**$21.00** per pr.

OEM *Prices on Request*

All fully performance tested, 100% guaranteed. Manufactured by makers of world-famous SUNAIR H.F. Aviation Transceivers.

SUNAIR ELECTRONICS, INC.
Broward County International Airport
Fort Lauderdale, Florida, U.S.A.

SUNAir ELECTRONICS, INC.

For further information, check number 15 on page 134.

THE BROADBAND TWINS

THE REVOLUTIONARY NEW 100V EXCITER-TRANSMITTER

NO TUNING (except VFO), uses famous CE BROADBAND system. PRECISION LINEAR VFO—1KC Calibration. Single Knob Bandswitch 80 thru 10. SSB—DSB—AM—PM—CW and FSK. RF Output adjustable 10 to 100 Watts PEP. Meter reads Watts Input, Amps Output and Carrier Suppression. 2" RF Scope. Speech Level and Load Mismatch Indicators. Audio Filter — Inverse Feedback — 50 db Carrier and Sideband Suppression.

IN PRODUCTION SOON.....PRICE $595.00

FAMOUS MODEL 600L BROADBAND LINEAR

NO TUNING CONTROLS — CE BROADBAND Couplers in HIGH EFFECIENCY CLASS AB² using single 813. Easily driven to 600 Watts PEP Input 160 thru 10 by a 20A or 100V. Built-In HEAVY DUTY POWER SUPPLY — 45 MFD PAPER Capacitor. Meter reads WATTS INPUT, GRID DRIVE, RF AMPS, and SWR. Completely shielded — TVI suppressed — parasitic free. REMEMBER there is LESS than ONE S UNIT difference between the 600L and a 2 KW PEP job. .....PRICE $495.00

MODEL 20A

THESE MULTIPHASE EXCITERS PIONEERED AMATEUR SSB

MODEL 10B — 10 watts PEP. Plug-in coils 160 thru 10 meters. Perfect voice control on SSB—DSB—AM and PM — CW breakin: Carrier and calibrate level controls. 40 DB suppression.

Wired.....$179.50 Kit.....$139.50

MODEL 20A — 20 watts PEP. Bandswitched 160 thru 10 meters. SSB—DSB—AM—PM and CW. Magic eye monitors carrier null and peak modulation. Ideal for driving AB1, AB², and most Class B linears.

Wired.....$279.50 Kit.....$219.50

MODEL 10B

MODEL GC-1. Gated Compression Amplifier. Connects between receiver and speaker. Automatically brings all received signals to same level—no blasting. Compensates for receiver AVC deficiencies. Compresses a 40 db increase in level to less than 3 db. Magic Eye continuously monitors compression value. Keep peace with your family and neighbors — buy a GC-1.

KIT....$49.50 Wired....$59.50

MODEL MM-2. 3" RF analyzer scope for use on SSB—DSB—AM—PM and CW. MONITORS RECEIVED AND TRANSMITTED SIGNALS thru new electronic switching circuits. NO TUNING — BROADBAND response 1MC to 55MC at power levels of 5 watts to 5 KW. SIMPLE CONNECTIONS. Built-in 1KC oscillator for exciter alignment. Plug-in IF adapters available for 450-500 KC, 80 KC and 50 KC.

IF adapter RM-455 or RM-80 or RM-50 .....$9.95
MM-2 (less adapter) wired.$129.50
Kit $99.50

WRITE FOR INFORMATION ON THE COMPLETE MULTIPHASE LINE.

MULTIPHASE EQUIPMENT

Central Electronics, Inc.

1247 W. Belmont Ave. Chicago 13, Illinois

MULTIPHASE
THE OVERWHELMING
CHOICE OF HAMS
EVERYWHERE

For further information, check number 16 on page 134.

For further information, check number 17 on page 134.

Letters . . . to the editor

More On Sports Cars

Dear Mr. Green,

After reading your column in December's CQ, I can only say "Bravo" in re your ideas concerning extra-ham-radio events for hams.

Although too far now to make your sports car rally, I'd like to mention a technique I tried successfully in connection with the sports car field. Communications from pit to car during an extended race can be haphazard, and I long toyed with the idea of using 2m communication between driver and pit. At Courtland, Ala., we tried it, using a Gonset Communicator, the pilot of the auto (myself, in a 100-S Austin-Healey) using a standard Navy hardhat and lip mike, with extraordinary results. (Unfortunately, we blew an oil line after 12 laps.) The current issue of Sports Car, the SCCA magazine, has a photo of a similar contrivance being used in a Corvette in a recent California race. Of course, I always use WWV for time checks in rallies, and we have used 2m for start-to-finish communication in hillclimbs at Laconia, N. H. (This set-up was masterminded by Dick Lipman, W1YZE.)

If you ever get a seaplane group together, let me know, and I'll try to get there, if you've got beaching room for a P5M. In fact, we have enough active hams aboard the base to man one. Corpus, unlike many military installations, is quite enthusiastic about ham radio, due mainly to our Admin. Officer, Cdr. Henry Olingy, KH6BR. The red tape can be fierce, otherwise.

As I said, much power to your program. I only wish I were in the area again to participate.

Ira J. Rimson, Ens., USN, KN4SNR/5
Durand, Michigan

FPSNAO

Dear Wastebasket:

Every twice in a while a guy gets an idea. You know, like dyspepsia only on a sorta higher plane.

First I'll have to kinda apologize to you guys. You see, I'm not one of these old timers. In fact, I might be classed with the "Fuzzy Chins" "Space Cadets" or "non-compatables" except that it's been since shortly after the big blizzard ('88 that is not '51") that I been fiddlin with ham radio.

Started off with a honey-comb coil regen with four transformer coupled audios using '01-As.

Even tried a Fork Spark Coil Xmitter using pops storage battery till I found I was kinda behind times on that one.

But this here "K" ticket makes me a Johnny-Come-Lately in left field, or class X or sumpthin according to what I hear on 75 some mornings.

Anyhow as I said this idea hits me the other nite between fone calls from neighbors with 21 megacycle I.F. T.V.s, just before old hatchet-face—oops pardon me dear—the XYL, starts bleating at me "go to bed you old fool or you'll be late for work again come morning".

Now I'm no engineer or electron wizart, but seems to me this here fued between SSB and DSB on one side and the old die hard AM boys on the other is like seeing "Birth of a Nation" on TV. Pears like you've heard it once before somewhere.

Every time I get a station all rigged up to relax and have arm chair "Cue Soes" with no more solderin or drillin, somebody pulls out the drain plug by introducing a new system that makes my equipment obsolete.

I hear them say "bet we're botherin old Bill up there he's still usin that old fashioned super-het without a sum and substance detector" or "sorry we broke up your QSO OM we had our super ether snorter set in lattice filter twenty with .005 KC bandwidth and didn't hear you".

[*continued on page 24*]

the mobile Pierson KE-93

the compact receiver for "out of this world" DX

Wherever you go, your powerful, mobile Pierson KE-93 is at your fingertips. Fitting into the smallest sports-car, an eighth the size and weight of former models, it is superior to any comparable receiver on the market today.

Hooked up with the Pierson AC pack, containing speaker and S meter, it's also the most powerful fixed or portable receiver you can buy.

The KE-93 12-tube, all band receiver far surpasses all rigid requirements for mobile receivers: high resistance to shock, vibration, temperature, humidity, and noise. Beats most high-priced table-top receivers!

NEW! Pierson's 2 and 6 meter crystal controlled converter. Get yours today!

- Dual conversion, crystal second mixer
- Shows only band in use
- Extreme selectivity and sensitivity
- Receiver size: 6" x 5" x 9"
- Advanced circuit designs including silencer
- A.M., C.W., and S.S.B. switch
- Simple 7-band turret switching
- 6 or 12 V.D.C. or 110 V.A.C. power packs

Write today for complete information and dealer addresses.

AUTOMATION ELECTRONICS, INC.

1500 West Verdugo Avenue, Burbank, California

For further information, check number 18 on page 134.

LETTERS [*from page 22*]

So from now on I'm in the drivers seat, see?

I'm introducing FPSNAO. That's right, pronounced "Fips-nay-oh" or backwards "Oh-anne-spoof".

It's a new system entirely. Of course, it will take Electro-engineer-physicists to build either receiver or transmitter for this FPSNAO deal, and once you go on the air all present equipment will be useless.

You see this signal will cover, not 50 or 70 KC like the SSB or DSB boys but 0 KC.

Yes, zero KC, from an RF standpoint anyhoo. However, it will cover 1200 KC on 75 1000 KC on 40 etc., audio.

But!, and this is the real meat of the idea, it will cover this space only because all equipment to date except FPSNAO will be obsolete, not because we actually cover all that territory, but because all you other guys will be using obsolete equipment.

Remember the example the simple slop band surpressed clarity boys gave. "You can't use a Coherer detector to receive vacuum tube signals".

So go Modern—Go FPSNAO.

The FPSNAO rigs do not receive or transmit sidebands! All sidebands are filtered out and only the modulation peaks stacked above center frequency are allowed into the antenna. So you see, not "more stations per band" as with old fashioned SSB or DSB but "an infinite number of stations per band" in FPSNAO.

However, you must realize that these advantages can't be obtained with hodge-podge receivers of AM, SSB or DSB vintage. You must use the extremely complicated, ultimately delicate FPSNAO receiver with the sum and substance, dilinear. Vertically integrated, negative positron detector. Otherwise a FPSNAO signal covers the whole band. We must repeat however, this is only "apparent" and is due to those outmoded receivers you are using.

As soon as the patent office answers my letters we can begin to give circuit data, etc.

While we're waiting we're working on a system to obsolete all FPSNAO equipment.

Oh, yes, FPSNAO? Why that's simple it means—
"For Pete's Sake—Not Another One?"

73's
Bill Carman, K2GMP

6SN7 For The S-85

Dear Editor:

Just a note, was looking for an easy way to "soup up" my Hallicrafters S-85 and ran across the S-9er of W6TSQ in CQ of May 1956. Didn't have a 6BK7A (worth $3.00) so I substituted a 6SN7 . . . all I can say is WOW!

When I tune in a very loud 10 meter station with the 6SN7 in; and then replace it with the original 6SG7, it absolutely disappears in the noise completely.

What puzzles me is why don't they build them this way? When I read the testimonial of his friend "Dong", I thought, "Well . . . you know", but now all I can say is THANKS and encourage (strongly) others to try it.

Keep up the good work.

Dean Baerwald (Ex KNØKAK)
Iowa City, Iowa

BSA HAM-venture

Dear Wayne,

I read the letter written by the Troop 14 in Phoenix, Arizona a few weeks ago, and I thought maybe I could put up a little competition for them. I talked of the idea of setting up a station at Union County's Camp Winnebago in Marcella, N. J. to several scout leaders, and they gave me the OK to try it out for a weekend on February 15 and 16.

I got together with Jack Felver, KN2KSL, a few weeks before the overnight trip and we decided to combine our stations and give it a try. We used Jack's bandmaster and BC-348Q as a rig, and K2PHR loaned us an antenna pre-cut for 80 meter operation. I threw in my new bug with 5-80 meter novice band xtals and all the tools that we would need.

[*continued on page 121*]

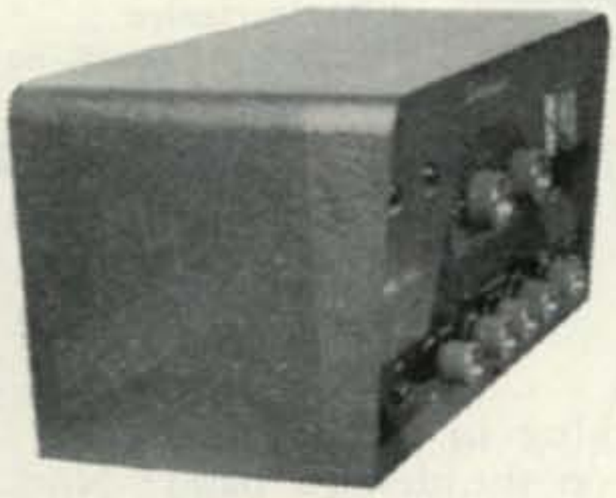
Any Way You Look At It . . .

here's TREMENDOUS value

IN THE NEW WRL

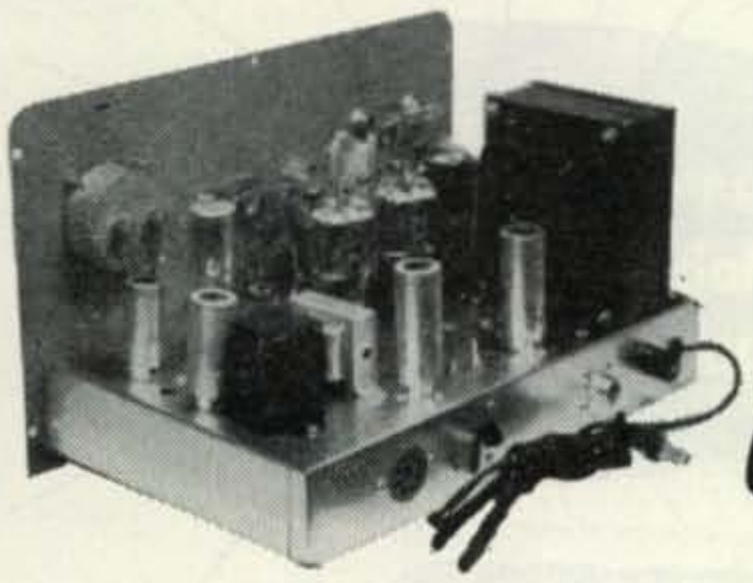
*Sidebander DSB-100**

100w P.E.P. DSB Input, Suppressed Carrier
40w AM Phone; 50w CW



"FORWARD LOOK"

***Available June, 1958**



Go Sideband . . . Inexpensively!

Here's a Complete Bandswitching suppressed carrier Sideband Rig for 80-10M, with continuous band coverage, 3-9mc and 12-30mc, covering all the popular MARS, CAP and special emergency services. No fear of obsolescence, designed for DSB, AM or CW, adaptable for converting your present AM equipment to sideband, and can be used with standard crystals and regular VFO. Minimum of 35db carrier suppression on all bands. If one sideband QRM'ed, simply switch to other. Will drive any of the popular commercial linears for sideband service. Three-stage RF section allows straight through operation for maximum efficiency on all bands. Internal tone generator facilitates tuning. Pi-net output, 52–600 ohms. Speech clipping and filtering assures powerful communication punch and minimum band width. 600V power supply has ample reserve for using external accessories (operation of external VFO, VOX, etc. Socket provided on chassis rear apron.) Provisions for Antenna Relay Control. Shpg wt.: approx. 30 lbs. Size: 8"x14"x9"

Wired & Tested: $139.95
In Kit Form: $119.95

TUBE LINE-UP:

two 6DQ6A final amplifiers
6CL6 buffer doubler
6CL6 crystal oscillator or
VFO buffer
12AX7 audio driver amplifier
12AX7 speech amplifier and driver
6AQ5 modulator
1N34 speech clipper
5U4GB rectifier

Available as accessory, VOX Model 10 for voice operated control with extra contacts for auxiliary circuits. Simply plug in socket.

Wired & Tested: $24.95
Kit: $19.95

See Your Favorite Distributor

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WRL *Electronics*

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Globe Chief 90A Kit - Globe Scout 680A Kit - Globe Champion 300A Kit - Globe King 500C - Linear Amplifier LA-1 - Universal Modulator UM-1 - Antenna Tuner AT-3 - Antenna Tuner AT-4 - Code Oscillator Kit - Screen Modulator Kit - 6 Meter Converter - VFO 666 - Globe Hi-Bander - Sidebander DSB 100

For further information, check number 20 on page 134.

For further information, check number 21 on page 134.

New MORADCO Mobile-High Power TRANSMITTERS RECEIVERS

Check these Outstanding Features:

- **Turret-type,** hooded, illuminated dial.
- **Each band** is full scale.
- **Anti-backlash,** gear-driven tuning assemblies.
- **Gold-plated** variable capacitors for reliability and low RF losses.
- **Screw, nut, and lock washer** construction—no rivets.
- **Jiffy mounts** available to facilitate effortless removal from vehicle to shack.
- **Preformed cables** available.
- **Constructed** of heavy gauge, formed aluminum for mechanical rigidity.
- **Neutral Hammertone** finish to blend with the decor of your car.
- **Functional in design**—symmetrical in looks.
- **Designed** with the newer automobile in mind (a little wider, but not so deep or high).
- **Dimensions**—11⅜" wide, 4⅛" high, 7¼" deep.

MB-565 TRANSMITTER

10 tubes—covers 80-40-20-15 and 10 meter bands.

VFO or crystal controlled.

VFO always operates at ½ the carrier frequency into a cathode follower, then through a Class A buffer stage to the driver operating as a doubler. The neutralized PI network final operates straight through on all five amateur bands at 60 watts input. It uses carbon, crystal, or dynamic microphone.

High level plate modulation is an integral part of the transmitter. This allows you to use the power supply or dynamotor of your choice.

Designed to operate into 50 to 75 ohm antenna or antenna tuner.

Antenna change-over relay is built in.

Illuminated meter measures all necessary currents and voltages.

AMATEUR NET PRICE $249.50

MB-6 RECEIVER

13 tubes—covers 80-40-20-15 and 10 meter bands.

Sensitivity is 1 microvolt or better on all bands.

Signal to noise plus signal is better than 20 db.

Crystal controlled second mixer.

Bandpass—4 kc at 6 db down.

Integral—100 kc crystal calibrator.

Illuminated "S" meter, converts to field strength meter for transmitter tune-up.

RF and audio gain controls.

Noise limiter.

Noise balanced squelch circuit eliminates inter-station noise but opens on extremely weak signals.

Temperature stabilized for single side band reception.

Antenna Trimmer

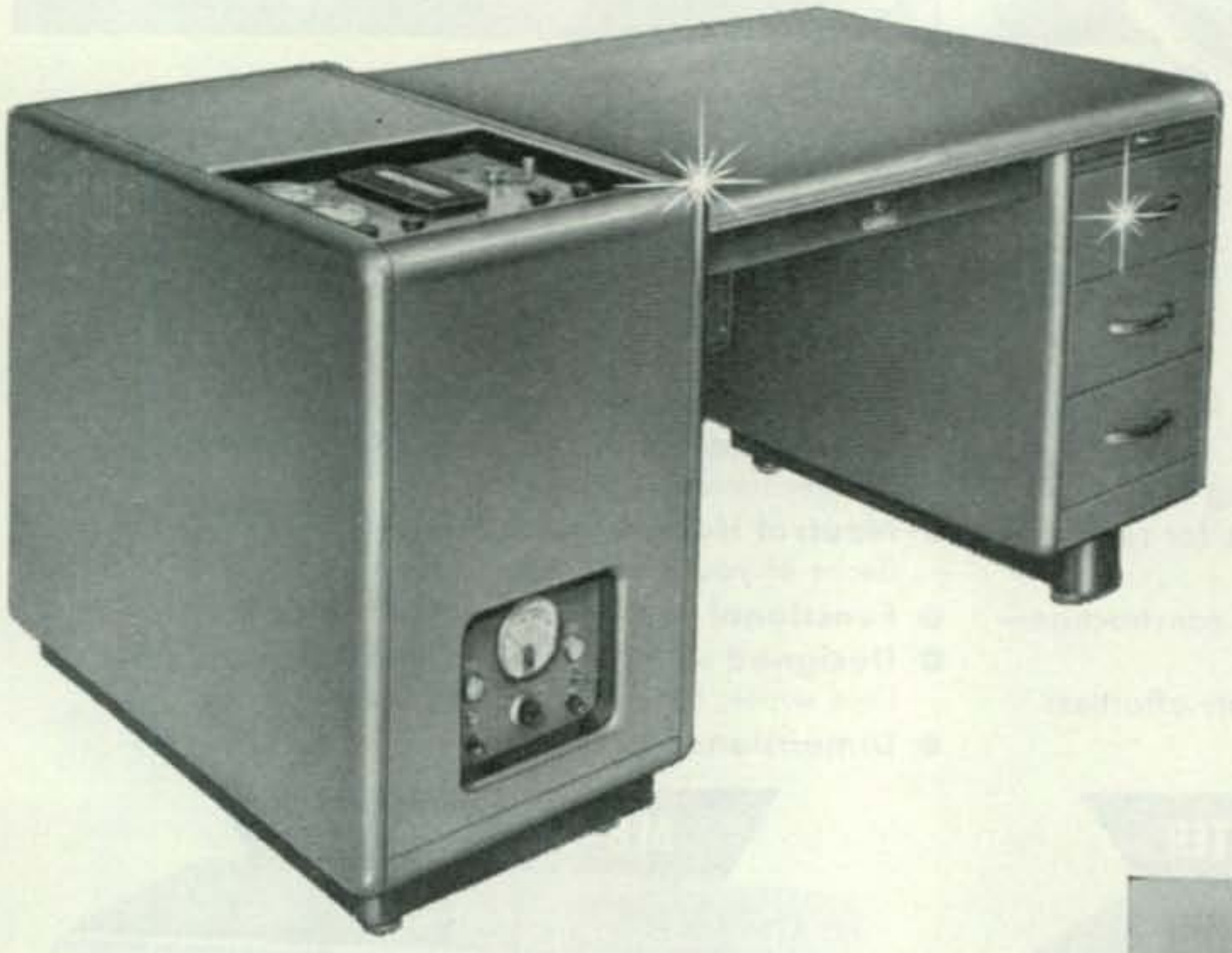
AMATEUR NET PRICE $239.50

SEND FOR COMPLETE DETAILED INFORMATION

MORROW
RADIO MANUFACTURING CO.
2794 Market Street • Salem, Oregon

For further information, check number 22 on page 134.

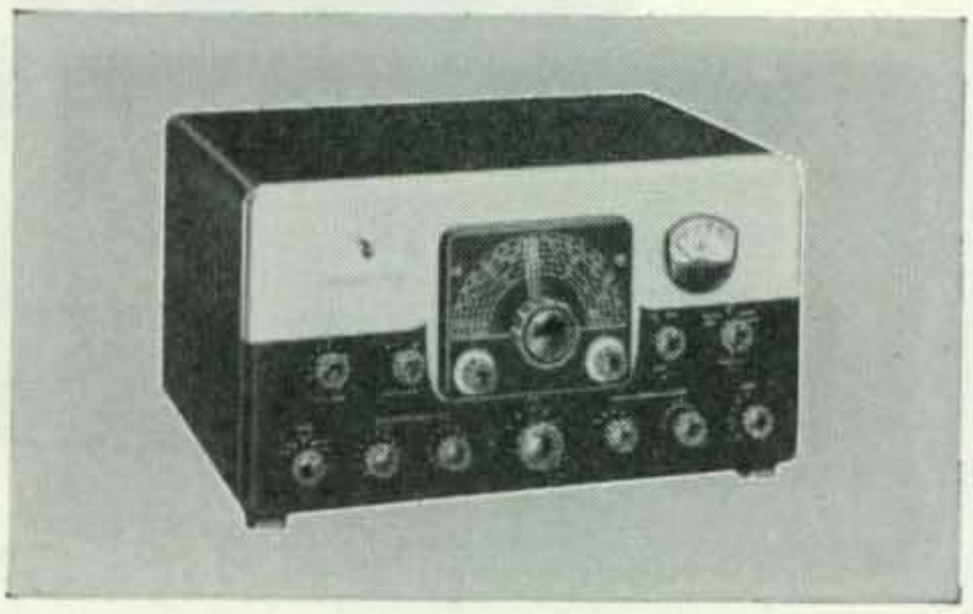
*Choose your next transmitter 1st choice**



VIKING "KILOWATT" AMPLIFIER—Boldly styled, effectively TVI suppressed—contains every conceivable feature for safety, operating convenience, and peak performance. 2000 watts P.E.P.† on SSB—1000 watts CW and AM. Continuous tuning 3.5 to 30 mc.—no coil change necessary. Compact pedestal contains complete kilowatt—rolls out for adjustment or maintenance. Excitation requirements: 30 watts RF and 10 watts audio for AM; 2-3 watts peak for SSB. Completely wired and tested with tubes.

Cat. No. 240-1000..Wired and tested.....Amateur Net $1595.00

Cat. No. 251-101-1..Matching accessory desk, top, back and three drawer pedestal.....FOB Corry, Pa. $132.00



DRIVE IT WITH THE "PACEMAKER"—This exciting transmitter offers you the ultimate in single sideband . . . 90 watts SSB P.E.P. and CW input . . . 35 watts AM. Self-contained—effectively TVI suppressed. Instant bandswitching on 80, 40, 20, 15, and 10 meters. Excellent stability and suppression. Temperature compensated built-in VFO . . . separate crystal control provided for each band. VOX and anti-trip circuits provide excellent voice controlled operation. Pi-network output matches antenna loads from 50 to 600 ohms. More than enough power to drive the Viking Kilowatt or grounded-grid kilowatt amplifiers. (Requires use of Cat. No. 250-34 Power Divider when used with Viking Kilowatt.) With tubes and crystals, less key and microphone.

Cat. No. 240-301-2..Wired and tested.....Amateur Net $495.00

New Power-packed Desk Top Linear Amplifiers!

VIKING "COURIER" AMPLIFIER—Rated a solid one-half kilowatt P.E.P. input with auxiliary SSB exciter as a Class B linear amplifier; one-half kilowatt input CW or 200 watts in AM linear mode. Completely self-contained desk-top package—may be driven by the Viking "Ranger," "Pacemaker," or other unit of comparable output. Continuous coverage 3.5 to 30 mcs. Drive requirements: 5 to 35 watts depending upon mode and frequency desired. Pi-network output designed to match 40 to 600 ohm antenna loads. Fully TVI suppressed. Complete with tubes and built-in power supply.

Cat. No. 240-352-1..Kit.....Amateur Net $244.50

Cat. No. 240-352-2..Wired and tested.....Amateur Net $289.50

VIKING "THUNDERBOLT" AMPLIFIER—The hottest linear amplifier on the market—delivers over 2000 watts P.E.P.† input SSB; 1000 watts CW; 800 watts AM linear; in a completely self-contained desk-top package. Continuous coverage 3.5 to 30 mcs.—instant bandswitching. May be driven by the Viking "Navigator", "Ranger", "Pacemaker", or other unit of comparable output. Drive requirements: approximately 10 watts in Class AB_2 linear, 20 watts Class C continuous wave. With tubes and power supply.

Cat. No. 240-353-1..Kit.....Amateur Net $524.50

Cat. No. 240-353-2..Wired and tested.....Amateur Net $589.50

†The F.C.C. permits a maximum one kilowatt average power input for the amateur service. In SSB operation under normal conditions this results in peak envelope power inputs of 2000 watts or more depending upon individual voice characteristics.

**Results of a recent nationwide survey conducted by CQ Magazine prove that Johnson Viking transmitters in use outnumber those of any other manufacturer. Published copies of this survey available on request.*

from the line that's among the nation's amateurs!

VIKING "RANGER" TRANSMITTER—This outstanding amateur transmitter will also serve as an RF and audio exciter for high power equipment. As an exciter, it will drive any of the popular kilowatt level tubes. No internal changes necessary to switch from transmitter to exciter operation. Self-contained, 75 watts CW or 65 watts phone input . . . instant bandswitching 160, 80, 40, 20, 15, 11, and 10 meters. Extremely stable, built-in VFO or crystal control—effectively TVI suppressed—high gain audio—timed sequence (break-in) keying—adjustable wave shaping. Pi-network antenna load matching from 50 to 500 ohms. Easily assembled—with tubes, less crystals, key and microphone.

Cat. No. 240-161-1..
Kit.....Amateur Net $229.50

Cat. No. 240-161-2..Wired and tested.....Amateur Net $329.50

VIKING "VALIANT" TRANSMITTER—Designed for outstanding flexibility and performance. 275 watts input on CW and SSB (P.E.P. with auxiliary SSB exciter), 200 watts AM. Instant bandswitching 160 through 10 meters—operates by built-in VFO or crystal control. Pi-network tank circuit will match antenna loads from 50 to 600 ohms—final tank coil is silver-plated. Other features: TVI suppressed—timed sequence (break-in) keying—high gain push-to-talk audio system—low level audio clipping—built-in low pass audio filter—self-contained power supplies. With tubes, less crystals, key, and microphone.

Cat. No. 240-104-1..
Kit.....Amateur Net $349.50

Cat. No. 240-104-2..Wired and tested.....Amateur Net $439.50

VIKING "FIVE HUNDRED" TRANSMITTER—Rated a full 600 watts CW . . . 500 watts phone and SSB. (P.E.P. with auxiliary SSB exciter.) All exciter stages ganged to VFO tuning. Two compact units: RF unit small enough to place on your operating desk beside receiver—power supply/modulator unit may be placed in any convenient location. Crystal or built-in VFO control—instant bandswitching 80 through 10 meters—TVI suppressed—high gain push-to-talk audio system—low level audio clipping. Pi-network output circuit with silver-plated final tank coil will load virtually any antenna system. With tubes, less crystals, key, and microphone.

Cat. No. 240-500-1..
Kit.....Amateur Net $749.50

Cat. No. 240-500-2..Wired and tested.....Amateur Net $949.50

VIKING "ADVENTURER" 50 WATT TRANSMITTER—Used to earn first Novice WAC! (Worked All Continents.) Self-contained, effectively TVI suppressed, instant bandswitching 80, 40, 20, 15, 11, and 10 meters. Operates by crystal or external VFO. An octal power receptacle located on the rear apron provides full 450 VDC at 150 ma. and 6.3 VAC at 2 amp. output of supply to power auxiliary equipment such as a VFO, signal monitor, or modulator for phone operation. This receptacle also permits using the full output of the supply to power other equipment when the transmitter is not operating. Wide range pi-network output handles virtually any antenna without separate antenna tuner. Break-in keying is clean and crisp. With tubes, less crystals and key.

Cat. No. 240-181-1..Kit.....Amateur Net $54.95

SPEECH AMPLIFIER/SCREEN MODULATOR—Designed to provide phone operation for the "Adventurer". High gain—use with either crystal or dynamic microphones. Simple installation—only minor wiring changes necessary in "Adventurer". With tubes.

Cat. No. 250-40..Kit.....Amateur Net $12.25

VIKING "NAVIGATOR" TRANSMITTER/EXCITER—This compact, flexible CW transmitter has enough RF power to excite most high powered final amplifiers on CW and AM. 40 watts—bandswitching 160 through 10 meters. Highly stable, built-in VFO is temperature compensated and voltage regulated—may also be operated crystal control. Timed sequence keying—effectively TVI suppressed. Pi-network antenna load matching from 40 to 600 ohms. With tubes, less crystals and key.

Cat. No. 240-126-1..Kit.....Amateur Net $149.50
Cat. No. 240-126-2..Wired and tested.....Amateur Net $199.50

Write for your free copy of our big amateur catalog

E. F. Johnson Company

2903 SECOND AVENUE S. W. • WASECA, MINNESOTA

For further information, check number 23 on page 134.

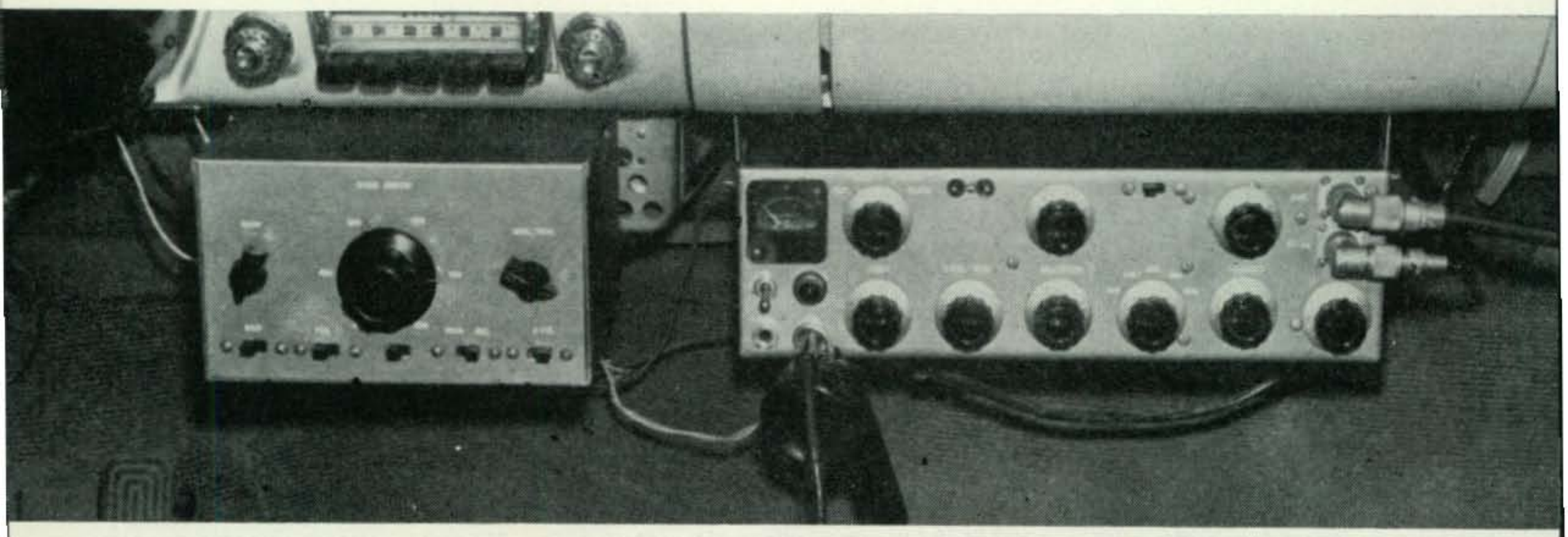


Fig. 1

ALL BAND MOBILE STATION

by W. B. BERNARD, W4ELZ, CAPT., USN

When a change of duty station from San Diego, Cal. to Washington, D. C. was imminent it seemed that a mobile rig would be a desirable way to help pass the time while driving across country. Since the car is a station wagon it was almost necessary to have the whole installation up under the dash because past experience indicated that the cargo compartment would be chock-a-block with luggage and other personal belongings. The resulting installation is shown in Fig. 1.

Receiving Installation

After studying the problem for a time it was decided that the best solution to the receiving problem was to construct a crystal controlled converter for the BC receiver already installed in the car. It was felt that only a crystal controlled converter would give the desired stability and ease of tuning. The BC receiver was somewhat modified to incorporate a series valve noise limiter and a BFO, to furnish power to the converter, and to allow additional control functions.

The converter was designed with a pentode rf amplifier, a pentode mixer, and a pentode crystal controlled oscillator. Since the BC receiver tunes over a band of about one megacycle it was necessary to have six band coverage. That is one band each for 80, 40, 20, and 15 meters and two bands for 10 meters. When this is all laid out it can be seen that it would take three coils for each of six bands, a total of eighteen coils, and a six wafer band switch to accomplish the band changing. This would make quite an extensive and expensive assemblage. The author then remembered that W6UIX had proposed to use a Standard Coil turret TV tuner for a VHF converter so such a tuner was investigated to determine its potentialities for lower frequency use. The investigation showed that the use of the tuner for the intended purpose was feasible so the next step was to acquire a tuner and go to work. The Standard Coil tuners are widely advertised in the magazines, the cascode models for around $12.95 to $15.00 and the pentode models from about $7.95 up. Also in many places it is possible to purchase used tuners for a few dollars and complete TV receivers for $5.00 or less. At the frequencies under consideration there is no reason to go to the cascode rf circuit and the tuner is to be completely rebuilt so one of the old and cheap pentode tuners is the best buy.

When buying the tuner make certain that it is not one of the very oldest models which has a 1" diameter tube running down the center of the turret. This tube occupies so much space that it makes it next to impossible to install all the necessary coils, capacitors and crystals. The later models have only a ¼" shaft down the center of the turret and therefore offer adequate room for the modified coil strips and crystals. The condition of the coil strips and the contact strips should also be checked. Although new replacements for these parts are available the cost of these new parts will add considerably to the total cost

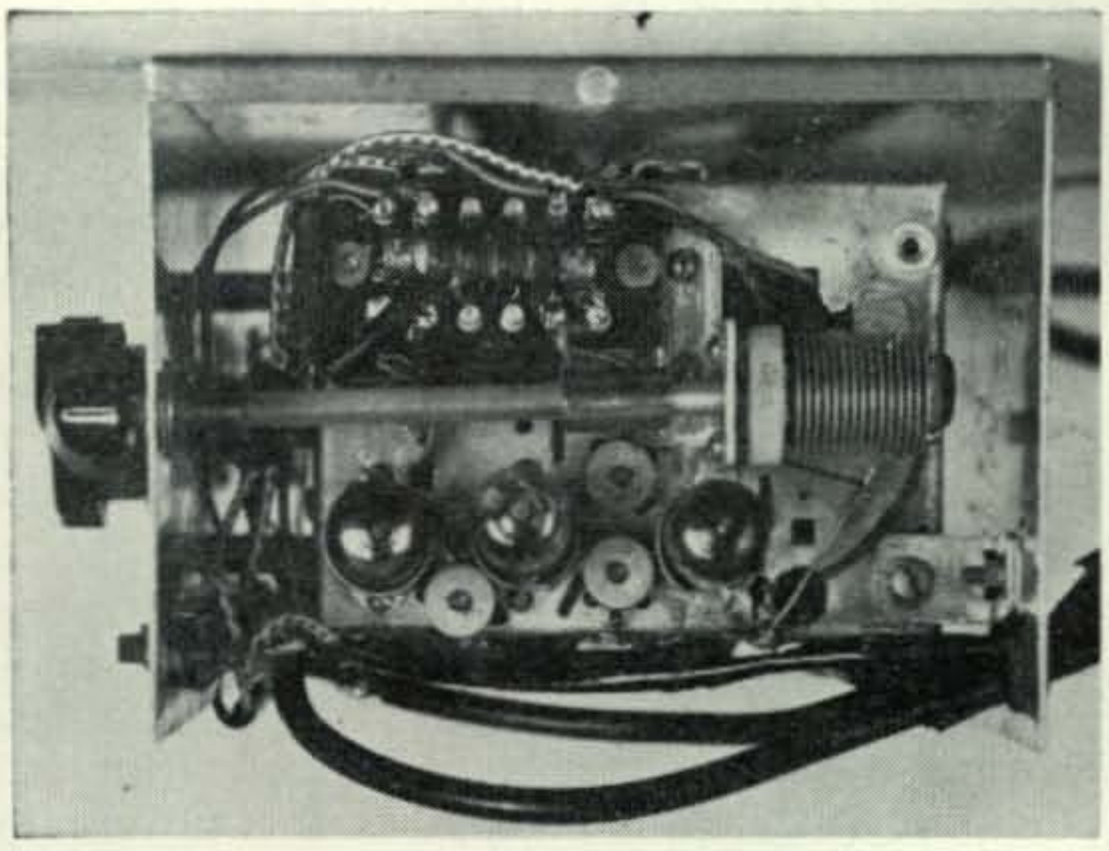


Fig. 3

of a used tuner. If any large number of replacements are needed it is advisable to look for another tuner. It should be kept in mind of course that only one half of the coil strips are actually needed for a six band tuner.

Fig. 2 gives the diagram for the complete unit. When the antenna switch is thrown to put the converter in the circuit the antenna lead is connected to a tap on the antenna coil. The antenna coil, which is tuned by a 100 mmfd air capacitor, controllable from the front panel, feeds the grid of the rf amplifier tube. The plate of the rf amplifier drives the primary of a double tuned band pass circuit the secondary of which is connected to the grid of the mixer. From the plate of the mixer tube the signal feeds to the BC receiver antenna connection. A 3-30 mmfd trimmer compensates for the difference in the capacitance across the BC receiver antenna circuit with the converter in and out of the circuit and thus keeps the BC antenna coil tuned. The third tube in the converter is the crystal controlled oscillator which feeds the beating frequency into the mixer through stray coupling. The oscillator coil is tuned to the crystal frequency on the 40 and 80 meter bands and is tuned to harmonics of the crystal frequency on remaining bands.

In addition to the antenna transfer switch there are switches on the converter front panel to switch the AVC on and off, the BFO on and off, the converter heaters on and off, and to open and close the converter oscillator cathode circuit. The converter oscillator cathode circuit is also carried over to the transmitter control relay so that the receiving set up may be automatically disabled when the transmitter is in operation. The BC receiver rf amplifier cathode circuit is brought out so that rf gain might be controlled from the converter front panel.

To begin actual construction the tuner was taken completely apart and the chassis was stripped of all parts except the heater filter assembly and the rf amplifier socket. A 5/8" hole was drilled next to the hole for the original oscillator-mixer socket and new sockets

Fig. 2A

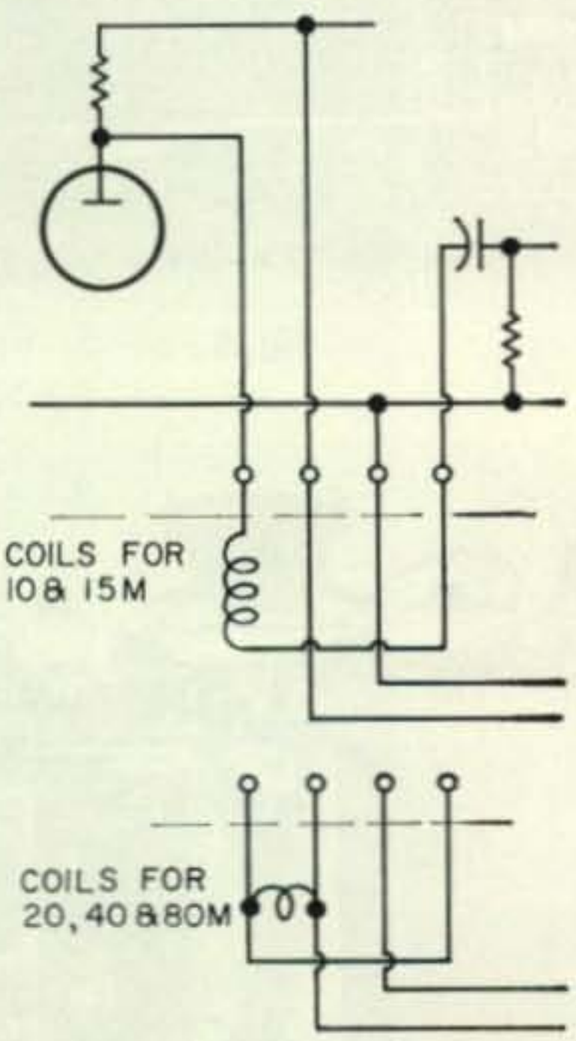
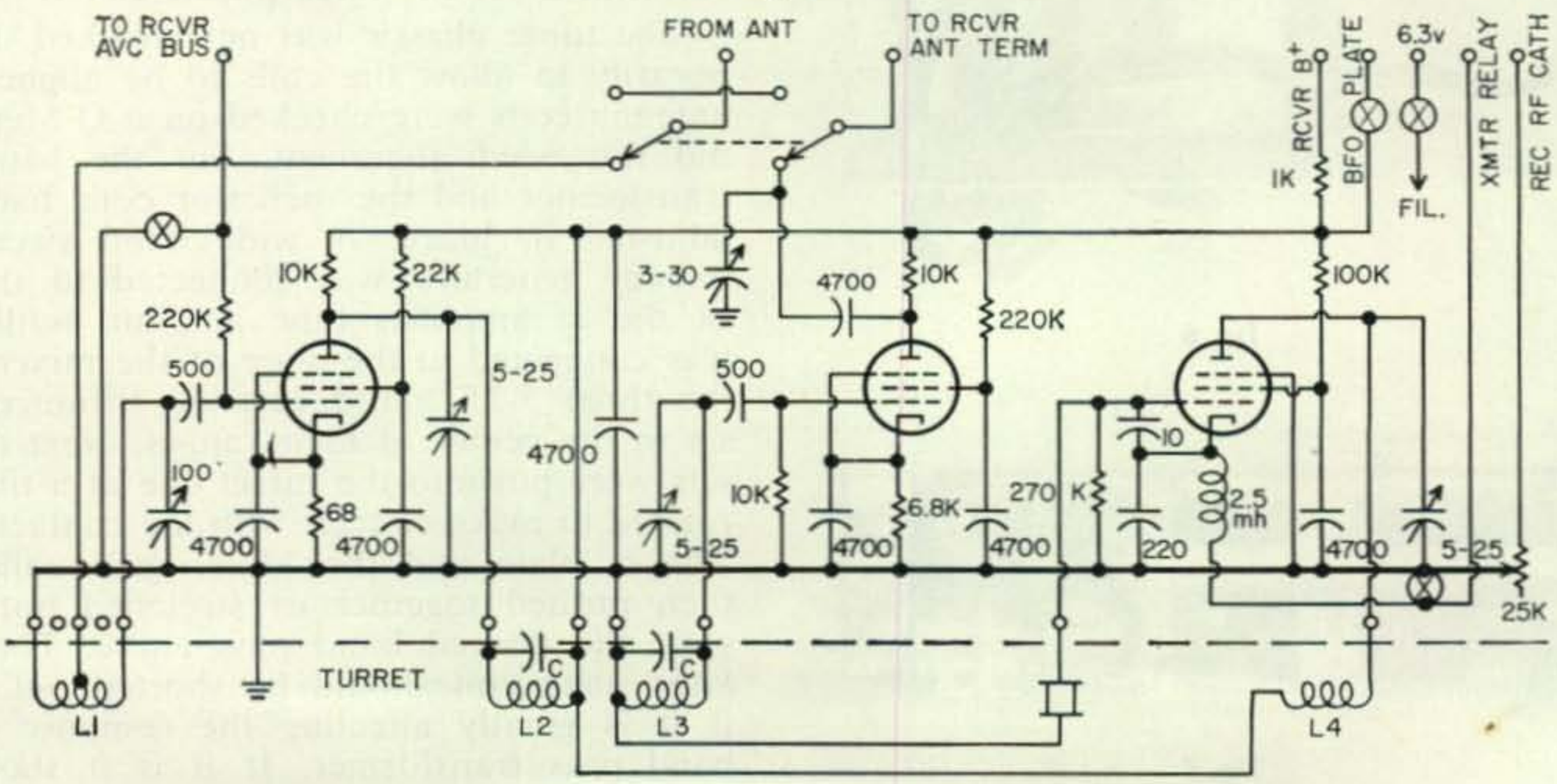


Fig. 2



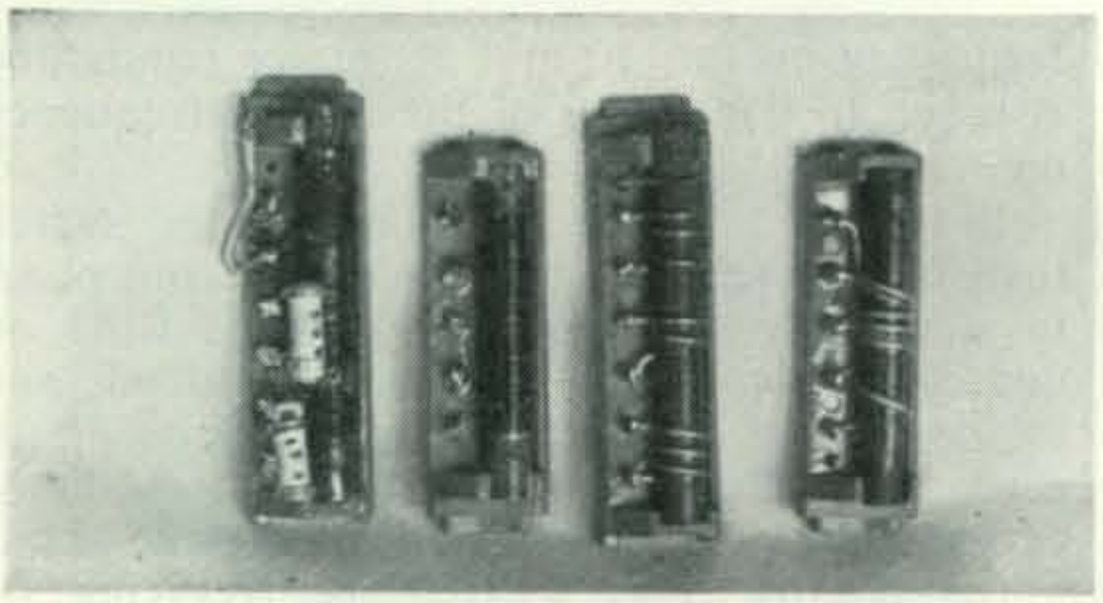


Fig. 4

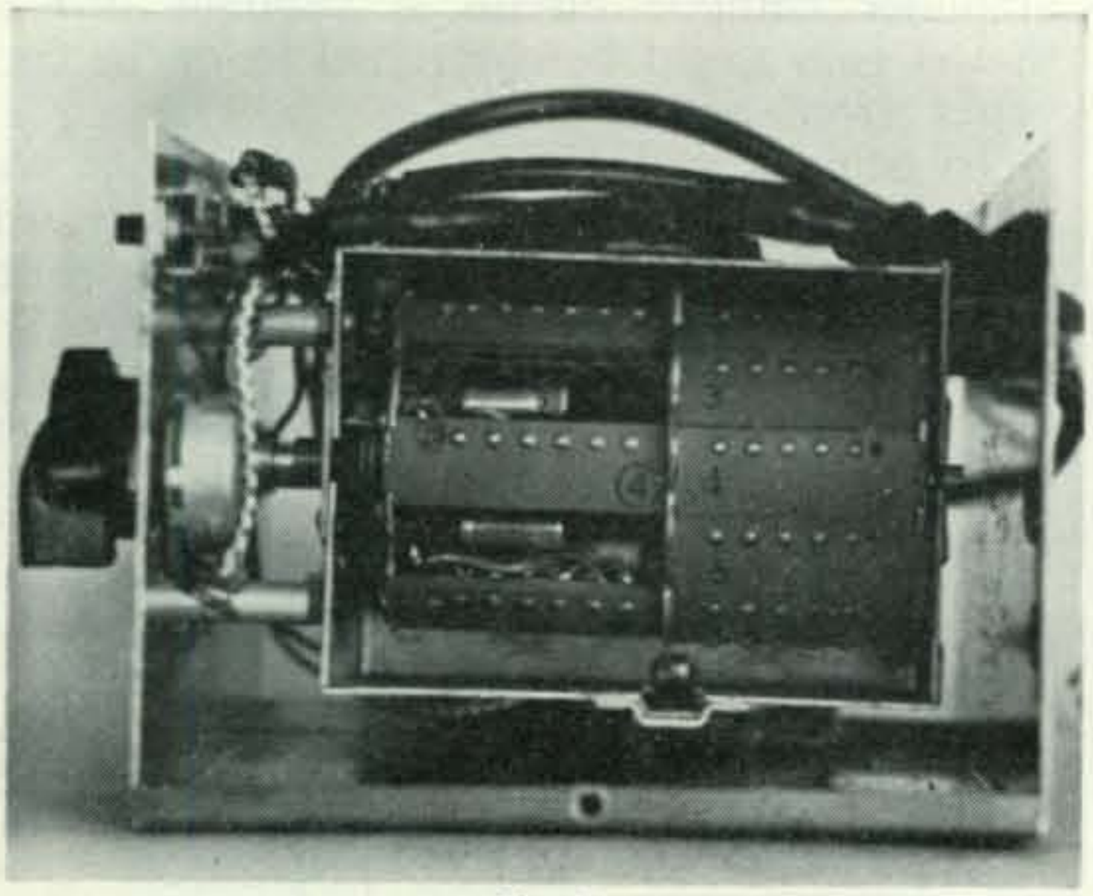


Fig. 5

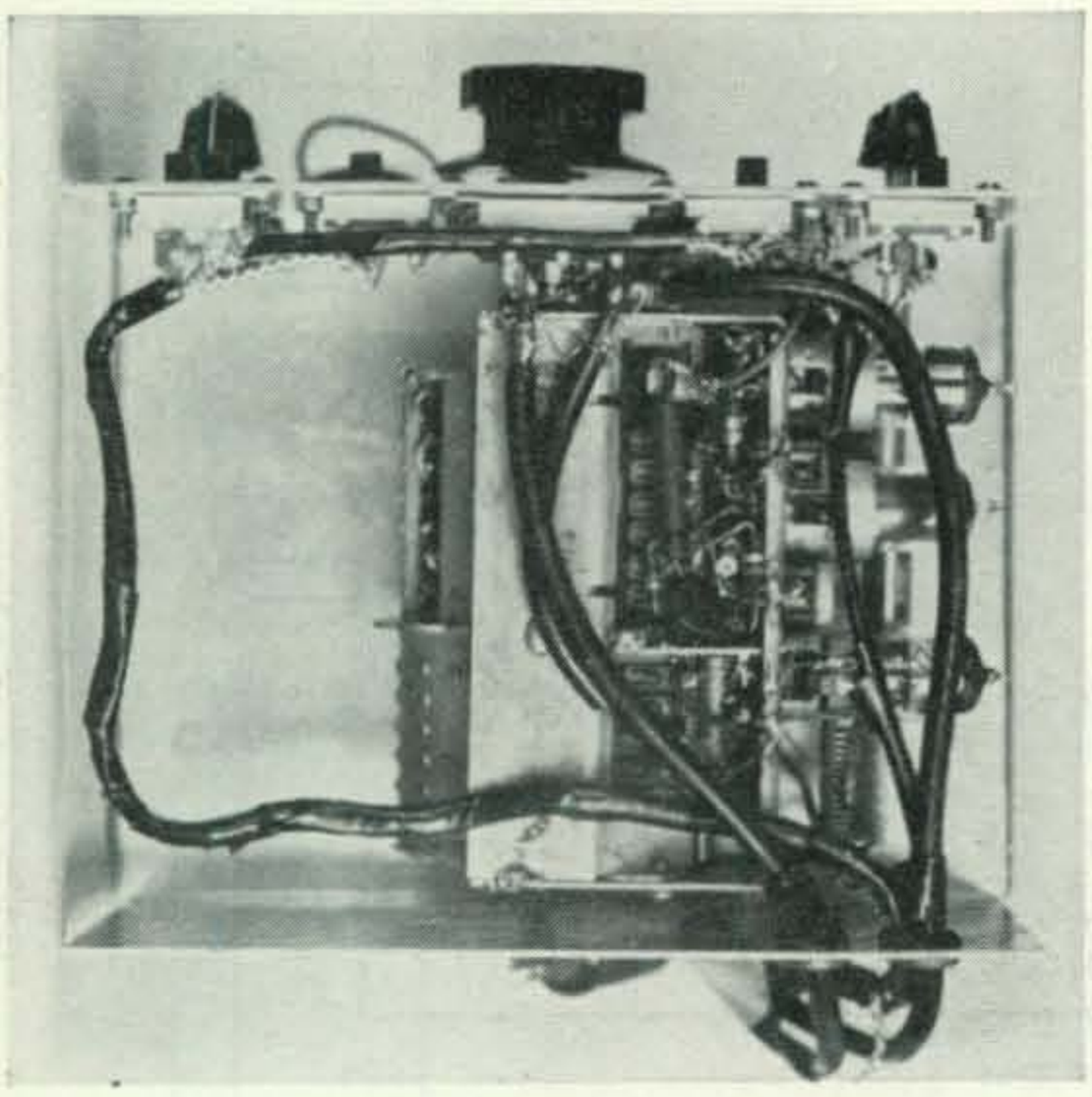


Fig. 6

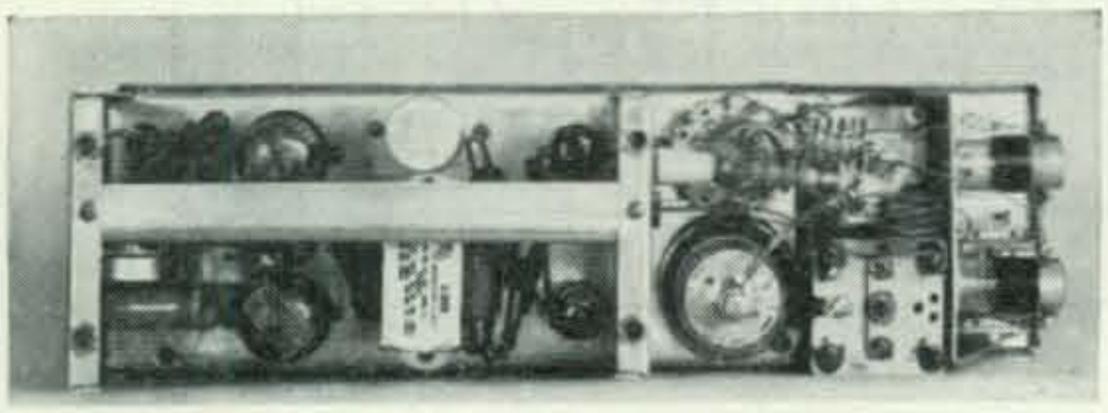


Fig. 7

were placed in this hole and in the hole formerly occupied by the original oscillator-mixer socket. These new sockets are oriented in the same direction as the rf amplifier socket. Fig. 3 shows the relative positions of the three sockets. Next the 100 mmfd antenna trimmer and the three 5-25 mmfd ceramic trimmers are mounted on the chassis as shown in Fig. 3. A terminal board to hold the oscillator rf choke and the mixer plate components is also mounted atop the chassis.

The chassis was then wired with the exception of the connections which were to be made to the contact strips. After this part of the wiring was completed the contact strips and the side plate which supports them were installed and resoldered to the main chassis. Next the connections to the contact strips were made completing the internal wiring of the tuner unit.

Next the turret assembly was modified. All the coil strips were removed from the turret and six sets of them were modified to the specifications given in Table I. The phenolic coil forms from the unused oscillator-mixer coils were shortened and used to replace the fiber antenna coil forms with which the tuner was originally equipped. If these additional forms are not available plastic rod may be substituted. The 80 meter coils and the 40 meter interstage transformer windings were scramble wound; all the other coils are wound in single layers. A typical set of coils before and after rewinding are shown in Fig. 4.

Six crystal holders are mounted inside the front end of the turret. These can be seen in Fig. 5. The crystals used in the final conversion were in the miniature HC-6/u holders, however, during the construction of the unit crystals in modified FT-243 holders were used. The thickness of the FT-243 holders must be decreased if they are to fit between the alternate coil strips. This decrease in thickness is most easily accomplished on the holders having thick plastic covers. A thin metal cover is substituted for the thick plastic cover.

The tuner chassis was next hooked up temporarily to allow the coils to be aligned. The antenna coils were checked on a Q-Meter and did not need alignment, but the band pass transformer and the oscillator coils had to be adjusted in place. A wide band sweep frequency generator was connected to the grid of the rf amplifier tube and an oscilloscope was connected to the plate of the mixer. Then the three 5-25 mmfd ceramic trimmers were set to the center of their ranges. Next the coil sets were put into the turret one at a time and rotated to make contact with the contact strips. The rf plate and the Mixer grid coils were then pushed together or stretched until they gave the desired band pass curve. The oscillator plate coil should be shorted out to see if it is greatly affecting the response of the band pass transformer. If it is it should be

adjusted until it does not and the band pass coils should be readjusted until the proper band pass is obtained.

The oscillator coil can now be adjusted to the proper frequency. This was done by setting the marker oscillator on the sweep generator to the injection frequency and adjusting the oscillator plate coil until the minimum pip showed on the response curve. It could be adjusted by operating the converter oscillator and pushing and pulling the coil until maximum rectified voltage at the mixer grid was indicated by a VTVM. Once the coils were properly adjusted they were painted with polystyrene coil dope to hold them to the adjustments.

While the converter was still temporarily hooked up it was tested using the station receiver. It proved to be operating satisfactorily so it was mounted in a standard two piece box 4½"H x 8"L x 6"D along with the accessory switches and controls and the remaining wiring completed. Various views of the assembly are shown in Figs. 3, 5 and 6.

The converter has proven very satisfactory in service. The sensitivity is sufficient to work down into the noise level, the stability is good enough to allow SSB reception on all bands and it will receive CW signal while in motion without a wavering note.

Should the constructor not have the equipment required to align the double tuned band pass transformer the converter should operate quite well with a single tuned circuit between the rf amplifier plate and the mixed grid. All other parts of the converter remain unchanged. This will give lesser rejection of out of band signals but there are many commercially built converters in use that have no more selectivity than this system. Fig. 2A shows the changes in the chassis and coils to use a single interstage circuit. For 10 and 15 meters the coil is connected between the rf plate and the mixer grid thus splitting the circuit capacities between the ends of the coils. For the other bands the rf plate and the mixer grid are connected in parallel for the signal frequency and the coil is connected from this parallel connection back to B plus. The coils for these single tuned circuits can be set up with a grid dip meter or signal generator.

The Standard Coil Turret tuner is a very versatile unit which can be further exploited by the experimentally minded amateur. The tuner can be made to operate on as many as twelve bands by mounting the crystals external to the turret. These crystals can then be switched into the circuit by a switch wafer operated by the turret shaft. This can be

Table II

L1 –12T #20E on ½" polystyrene rod
L2 –25T #20E on ½" polystyrene rod
L3 – 5T #20E 7/16" dia. ½" long
L4 – 5T #20E on ½" polystyrene rod
L5 – 9T #20E on ½" polystyrene rod
L7 –30T #20E on ½" polystyrene rod
L8 –42T #26 DCC on ½" polystyrene rod
L9 – 6T #14 Tinned ⅞" dia. 1" long
L10– 5T #14 Tinned ⅝" dia. ⅞" long
L11– 8T #14 Tinned ⅞" dia. 1¼" long
L12–20T #20E on ¾" dia. poly coil form
L13–15T #20E on ¾" dia. poly coil form

Parts List

All resistors ½ watt unless otherwise specified.
R1–250 ohm pot.
R2–150 K
R3–3.3K
R4–100 K 2W pot.
R5–10 K
R6–47 K
R7–560 K
R8, 14–100 K
R9, 10–120 K
R11, 12–270 K
R13–330 ohms 2W
R15, 20, 22–33K 2W
R16–220 ohms 2W
R17–47 ohms
R18–120 ohms 1W
R19–22 ohms
R21–40K 4W pot.
R23–100 ohms 2W
R24–15 ohms
R25–100 ohms
R26–22K 1W
R27–10 ohms
R28–100 ohms 1W
R29–10K 2W
R30–1K
All capacitors 600 V ceramics unless otherwise specified.
C1–25Mfd 25V Electrolytic
C2–10Mfd 25V Electrolytic
C3–10Mfd-30Mfd 450V Electrolytic
C4, 5, 32–1000 uufd
C6–.1Mfd 600V Paper
C7, 8, 9, 12, 13, 14, 16, 17, 18, 20, 24–5000 uufd
C10–27 uufd 600V Mica
C11–82 uufd 600V Mica
C15, 21–100 uufd min. variable
C19, 22, 33–1500 uufd
C23–100 uufd 600V Mica
C25, 26–1500 uufd 1000V ceramic
C27–100-100 uufd 1000V variable
C28–330 uufd 750V variable
C29–250 uufd 600V Mica
C30–510 uufd 600V Mica
C31–680 uufd 600V Mica
C32–1000 uufd 600V Mica
T1–Microphone Transformer, Triad A-1X or equiv.
T2–Modulation Transformer, Merit A-3008 or equiv.
RFCL–100 uH National R-33
RFC2, 3–2.5 MH National R-100
RFC4–2.5 MH National R-100-S
RFC5, 6–50 uH National R-33
S1–2ckt 2pos rotary CRL PA2002
S2–4ckt 5pos rotary made up from 2 CRL 2500R steatite wafers and index assembly for 5 Or 6 section switch.
S3–1ckt 5pos rotary CRL PA2000
S5–SPST toggle switch
S6–2ckt 4pos rotary CRL PA2003
L14–4 H choke Triad C-4X or equiv.
M1–1½" square meter 1Ma full scale deflection
RY1–DPDT Antenna relay 6V coil Advance series 2000 or equiv.
RY2–Dynamotor starting relay Advance 951C or equiv.

Parts List

All resistors ½ watt unless otherwise specified.
R1, 8–220 K
R2–10 K 2W.
R3–22 K 1W.
R4–68 ohms
R5–10 K
R6–6.8 K
R7–10 K 1W.
R9–270 K
R10–100 K
R11–1 K 2W.
R12–25 K pot.
All capacitors 600V ceramic unless otherwise specified.
C1–100 uufd air variable
C2, 8–500 uufd
C3, 4, 6, 9, 10, 11, 14–4700 uufd
C5, 7, 15–5-25 uufd ceramic trimmer
C12–10 uufd 600V mica
C13–220 uufd 600V mica
C16–3-30 uufd mica trimmer

Table I

Freq. Band	*L1*	*TAP*	*L2&L3*	*C*	*L4*	*Osc. Inject. Freq.*	*Xtal Freq.*
3.5-4 mc	90T#36SSE	10T	90T#36SSE	40	95T#36SSE	Between 4550 & 5050	
7.0-7.3 mc	80T#30E	10T	40T#36SSE	50	65T#36SSE	Between 5750 & 6450	
14.0-14.4 mc	30T#25E	8T	26T#30E	47	45T#36SSE	Between 12850 & 13450	Between 6425 & 6725
21.0-21.5 mc	25T#20E	8T	17T#25E	40	27T#30E	Between 19950 & 20450	Between 6650 & 6817
28.0-29.0 mc	20T#20E	7T	15T#25E	12	19T#30E	About 27450	About 6862 or 9150
29.0-30.0 mc	20T#20E	7T	15T#25E	10	19T#30E	About 28450	About 7112 or 9483

accomplished by slightly flatting two sides of the shaft so that it will fit into the rotor of a switch wafer such as the Centralab Deluxe Switchkit units. The stator of the wafer may then be bolted to the front of the tuner chassis.

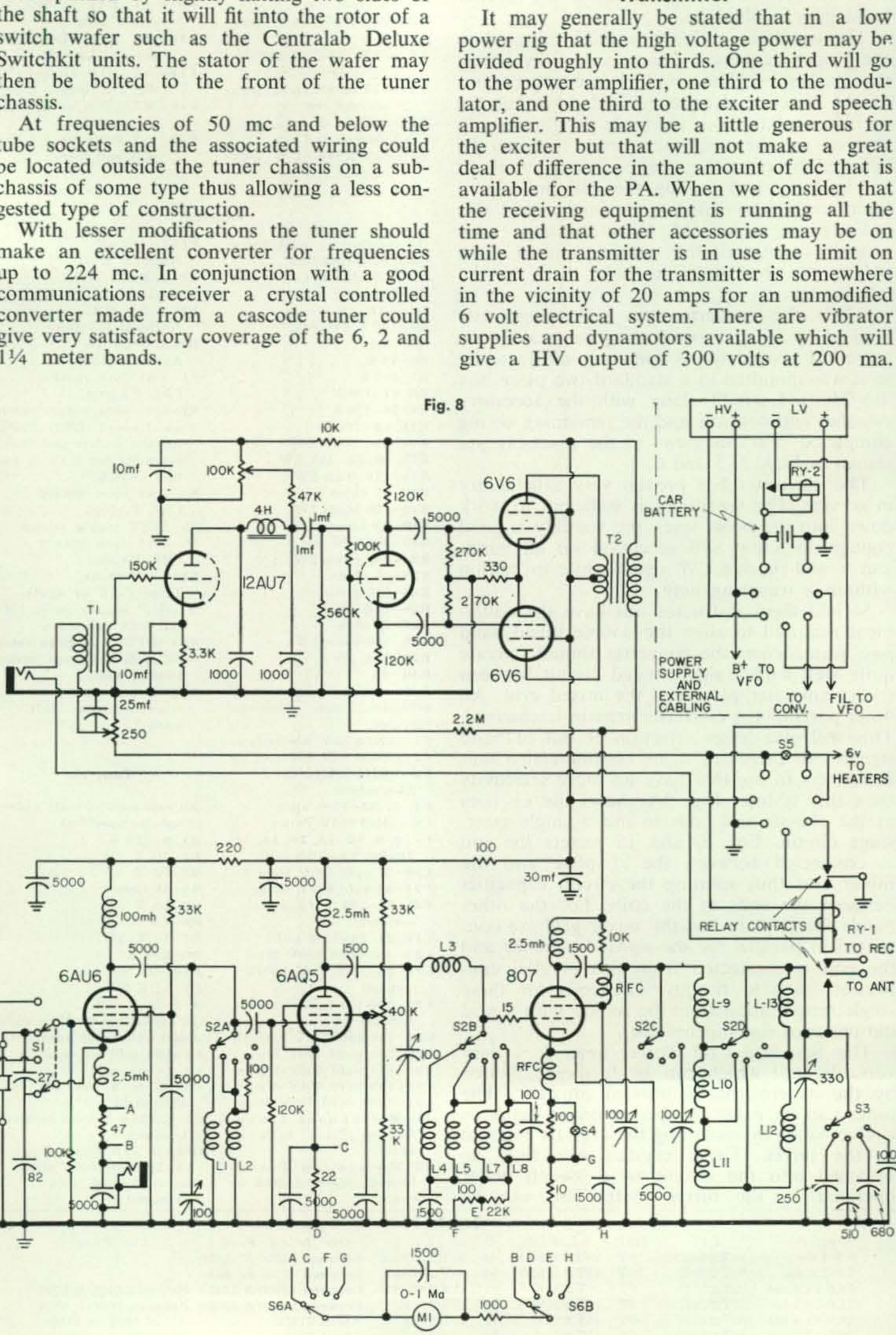
At frequencies of 50 mc and below the tube sockets and the associated wiring could be located outside the tuner chassis on a sub-chassis of some type thus allowing a less congested type of construction.

With lesser modifications the tuner should make an excellent converter for frequencies up to 224 mc. In conjunction with a good communications receiver a crystal controlled converter made from a cascode tuner could give very satisfactory coverage of the 6, 2 and 1¼ meter bands.

Transmitter

It may generally be stated that in a low power rig that the high voltage power may be divided roughly into thirds. One third will go to the power amplifier, one third to the modulator, and one third to the exciter and speech amplifier. This may be a little generous for the exciter but that will not make a great deal of difference in the amount of dc that is available for the PA. When we consider that the receiving equipment is running all the time and that other accessories may be on while the transmitter is in use the limit on current drain for the transmitter is somewhere in the vicinity of 20 amps for an unmodified 6 volt electrical system. There are vibrator supplies and dynamotors available which will give a HV output of 300 volts at 200 ma.

Fig. 8



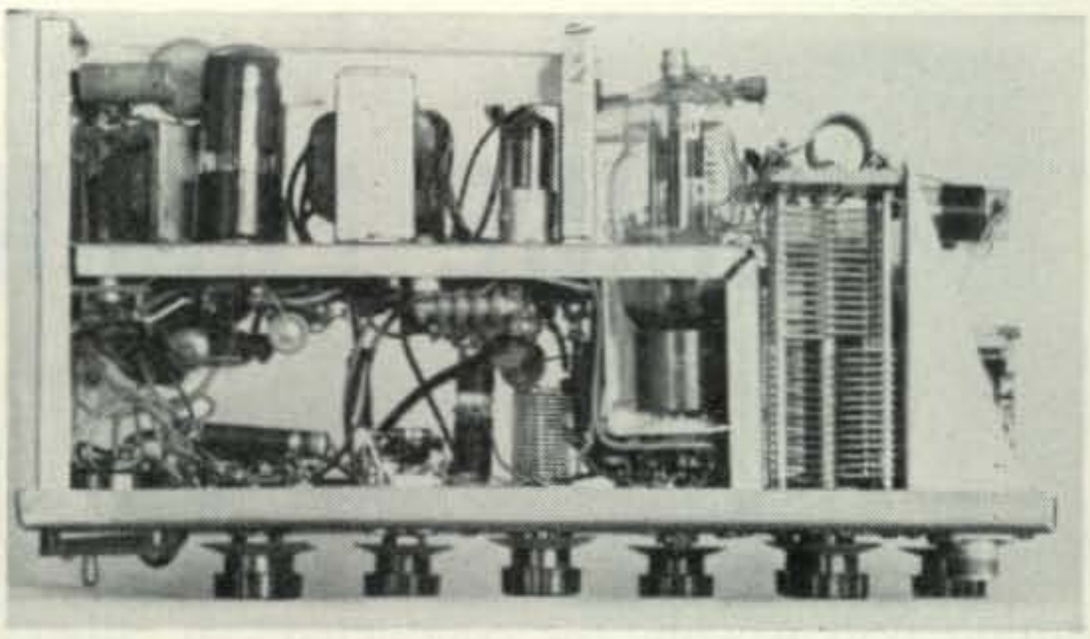


Fig. 9

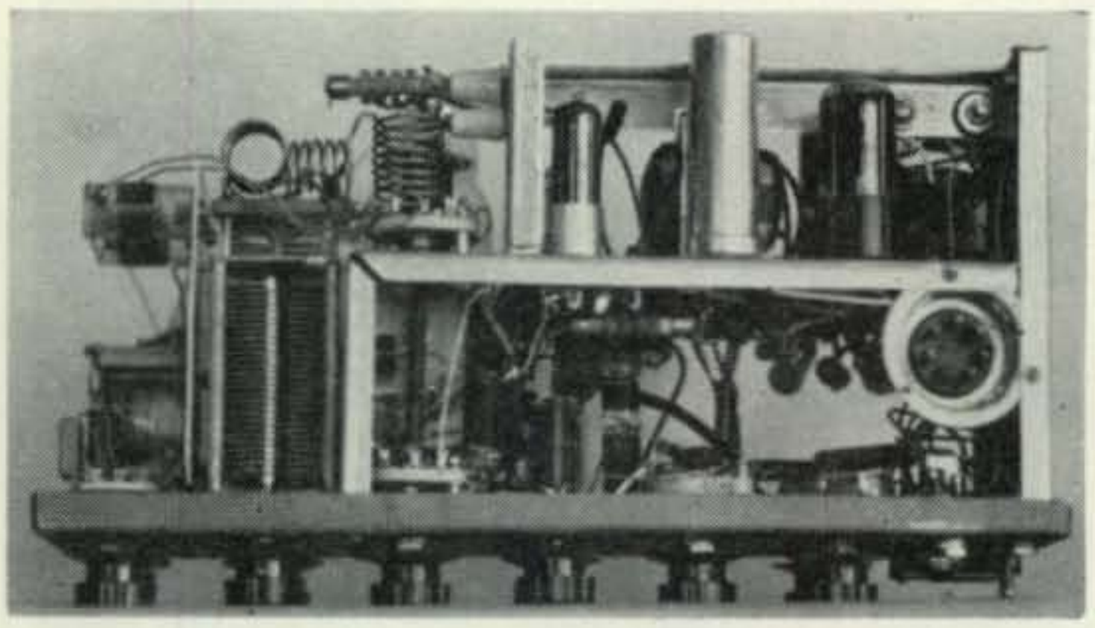


Fig. 10

Using our rule of thumb for the division of the HV power available this gives us about 20 watts input to our PA.

This 20 watts may seem a little low to some of the high power people but were we to go to an input of 50 watts we would have a signal strength increase of just slightly more than 50%. This increase would cost us a considerable amount of change in the primary power system of the car in the case of a 6 volt car and a bit of beefing up of the system in a 12 volt car. This extra installation did not seem worthwhile for the results that it would achieve so we stuck to the twenty watts.

We can make up for the low power to a great degree by speech clipping in our transmitter. Numerous investigators have found that speech clipping of up to 12 db may be applied to a communications system without harming intelligibility. If we clip 10 or 12 db and then increase our audio gain until we are again fully modulating our carrier the end result is the same as if we had increased our carrier by the same amount and fully modulated it with unclipped speech. This speech clipping is much more economical than increasing power and is therefore especially advantageous in mobile equipment. With no increase in input power and very little increase in space we can make our 20 watts do the work of 200.

A study of the tube handbook showed that the 70 ma. plate current required to draw 20 watts from a 300 volt supply would require an 807 or 6146. Since we had some 807's on hand the choice was automatically made. A 6AQ5 was selected to drive the 807 and a 6AU6 was selected as the oscillator.

A pair of 6AQ5's or 6V6's will give the 10 watts of audio necessary to modulate our 20 watts of plate input. The 300 volt plate supply is a little higher than recommended for the 6AQ5's but it would not be likely to damage them. Again the tube choice was dictated by the stock on hand so we used 6V6's. A 12AU7 was used as an input amplifier and phase inverter.

The circuit of the transmitter is given in Fig. 8. The grid and cathode circuits of the 6AU6 are switched so that the transmitter may be operated with crystal or VFO control. VFO control may be accomplished either by the use of remotely located tuned circuits using the 6AU6 as an oscillator or by the use of a separate VFO having output on 160 and 40 meters. The use of a separate VFO is much to be preferred. The wires for the VFO position of the oscillator switch are not connected to anything on the diagram. The constructor may make his own choice.

The output circuit of the 6AU6 is tuned to 20 meters when the transmitter output is on 10 meters and it is tuned to 40 meters when the transmitter output is on 15, 20 and 40 meters. When the transmitter is being operated on 40 meters a 100 ohm resistor is connected in series with the coil in the 6AU6 plate circuit to resist any tendency of the 6AQ5 to oscillate when the grid and plate are tuned to the same frequency. When the transmitter is operated on 80 meters the plate circuit of the 6AU6 is untuned. A small (100 uH) rf choke is used in this circuit to partially compensate for the susceptance of the stray capacity from plate to ground and thus increase the output from the tube.

The plate circuit of the 6AQ5 multiplier is tuned to the output frequency of the transmitter on all bands. The coil L3, connected between the multiplier plate and the PA grid acts as an impedance matching device on the higher frequency bands where it is most difficult to obtain adequate drive. On the lower frequency bands it is not needed and has little effect. The multiplier screen voltage is made variable so that the excitation to the PA may be adjusted to the correct amount (3 to 4 ma.).

The output circuit of the PA is a pi-network. The input capacitor is a dual section type with a capacity of 100 mmfd per section. One section is used on all bands and the second section is connected in parallel with the first when the transmitter is switched to the 80 meter band. The output capacitor is a 330 mmfd variable. It may be supplemented with the fixed capacitors which can be switched in parallel with it. The specifications for the transmitter coils are given in Table II.

One set of contacts of a DPDT relay connects the antenna to the transmitter when the coil is energized and to the receiver when not

[*Continued on page 108*]

NOISE ELIMINA

Numerous requests have been received by the writer relative to noise elimination in radio equipped Volkswagons as well as other foreign made cars. Relatively little information has been available even from manufacturers except that applicable to generator and ignition noise elimination at broadcast and FM frequencies.

In addition to actually "noise proofing" the VW, Porsche, MG, etc., the writer has taken the time to contact those who are responsible for the proper operation of radio equipment in various types of foreign cars. Piecing together each bit of good solid advice and technical information and then trying out various suggested techniques resulted in a high level of *success.*

But believe it or not, *no two vehicles of the same make* always required exactly the same elimination measures! So this article is directed in a general way toward the measures which have been found effective; with suggestions for a few "cut and try" procedures for the various makes.

Vehicular noise can be caused by: the ignition system; the generator; wheels; loose metal mass such as fenders, hood, etc.; improperly grounded coaxial antenna feeder; loose or defective light bulbs; defective doorlight, ignition and headlight switches; voltage regulator "feedthrough"; "floating grounds" (as found on the instrument panel); corrosion of electrical contacts through galvanic or electrolytic action (when two dis-similar metals are brought together under moisture conditions); loose bonding strips at the engine proper; and tires or brakes.

Noise is of two types, either conducted or radiated. Radiated noise is usually from the ignition system while the conducted can either be from the ignition system, generator or mechanical parts.

In the VW and other foreign cars with rear mounted engines, radiated interference is the big headache. This is so because the antenna is usually installed on the rear close to the engine and its ignition system. But have hope, it can be licked!

Many sports car enthusiasts (including VW owners) want their car engines to deliver maximum power at all times and often shy away from using resistor sparkplugs such as those manufactured by Autolite. REAL tests indicate they have nothing to worry about if resistor plugs are cleaned and checked every 2500 miles. Yes, there is a tendency for the built-in resistors to change value over a period of time but not so much that the change cannot be tolerated.

So the first thing that must be done in eliminating the noise generated by the ignition system in the VW or any other car is to install resistor plugs. Make certain that the connections to all plugs are solid; do not depend upon wire crimped lugs—solder them.

In the VW, a resistor loaded distributor rotor is a *must* and can be obtained from Robert Bosch Corp., 225 7th Street, San Francisco 3, California. The stock number is ZVVT5Z5Z and sells for $1.25 plus postage and state tax.

Before installing the new resistor rotor however, make certain that the distributor cap contact points are clean and even.

The next thing to do (on all cars) is to install a Sprague 48P18 Hypass feed-through type VHF bypass capacitor. This condenser is rated

TION IN THE VW

and other foreign cars

by CHUCK SCHAUERS, W6QLV

at 40 amps and is connected in series with the generator output lead — NOT THE FIELD LEAD! Make sure that it is grounded to the generator frame proper. On the VW and Porsche 1600 there is plenty of space by using existing mounting holes.

Shield the two "hot" or supply leads to the high-tension coil and install *two* Sprague 80P3 condensers in series with *both* leads. Install the condensers as close as possible to the coil and distributor. Make certain that the shielded leads are grounded at both ends near the condensers.

Install a Mallory AS 145 (.1 mfd) on the engine (VW) as close as possible to the oil signal switch and connect one lead to the top screw. MAKE CERTAIN you do not break the seal.

Bypass the ignition switch (all cars) with a Mallory AG451 condenser (0.5 mfd). Bypass the input lead to the light switch with the same type of condenser. (Ceramic condensers may be used on the MG with success.)

If you operate 6, 10 or 2 meters, a trap consisting of number 8 enamelled wire is wound on a 1 inch form and shunted with a 3-35 mmfd compression type condenser. Grid dip the assembly prior to installation for the band you are interested in and install it in either one of two circuits. If you have generator whine, connect it in series with the condenser (48p18) and adjust for minimum noise. If you are bothered with "ignition ringing", install it in series with the hot lead leading to the distributor—not the high tension lead. For the 10 meter band about 8 turns of wire are sufficient for the coil.

Now try the installation. If you still have noise, do this: in the VW, bypass the license plate light with a 1 mfd Mallory AG452; place a piece of copper screen over the wires in the engine compartment leading to the front of the car (make sure the screen is grounded at a number of points); in some installations, shielding of wires leading from the engine compartment has been found effective.

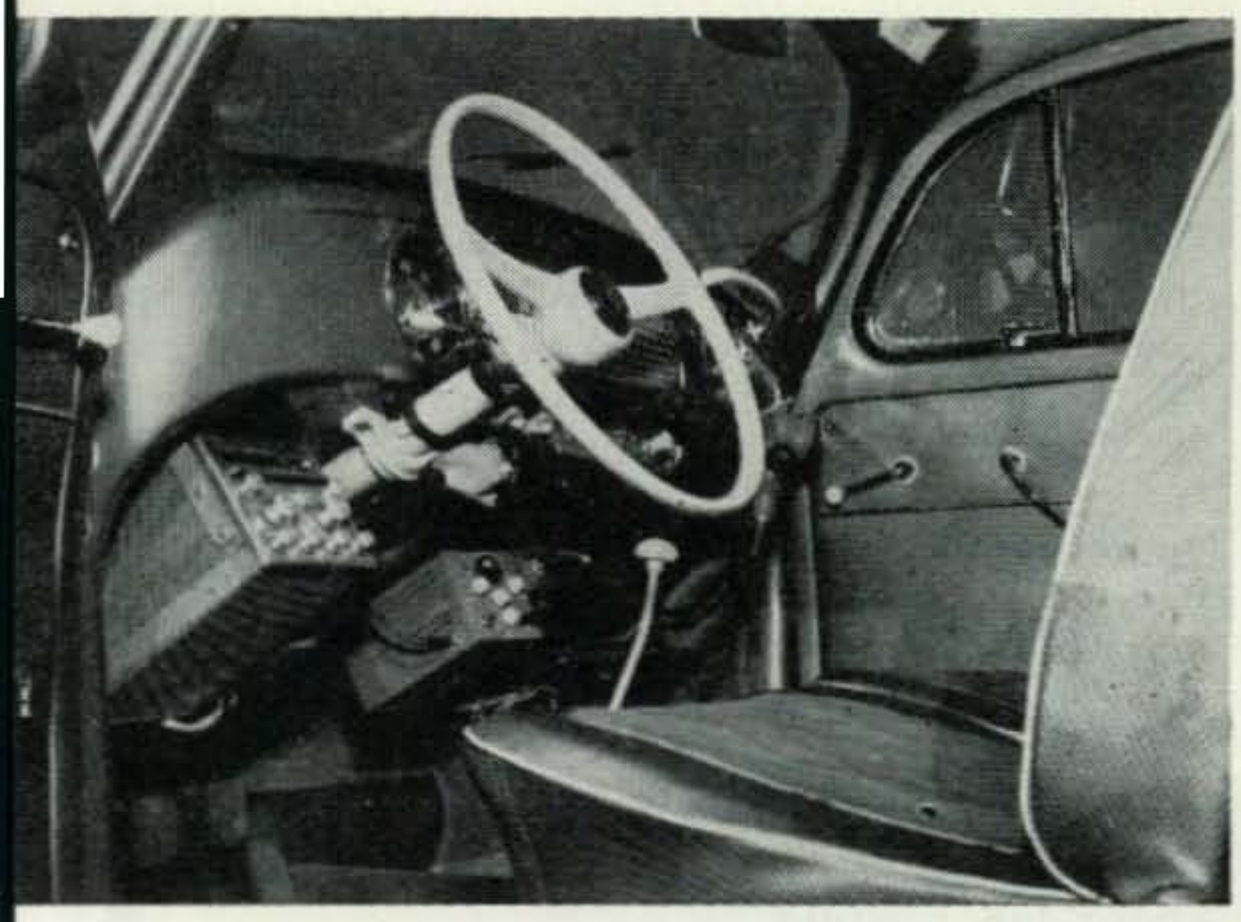
Try your receiver again, if you still have noise check for loose connections on *all* lights; check bulbs by substitution (not for light but for noise); push in the brake pedal and see if that stops the noise. If it does, take another AG452 Mallory condenser and bypass the brake switch.

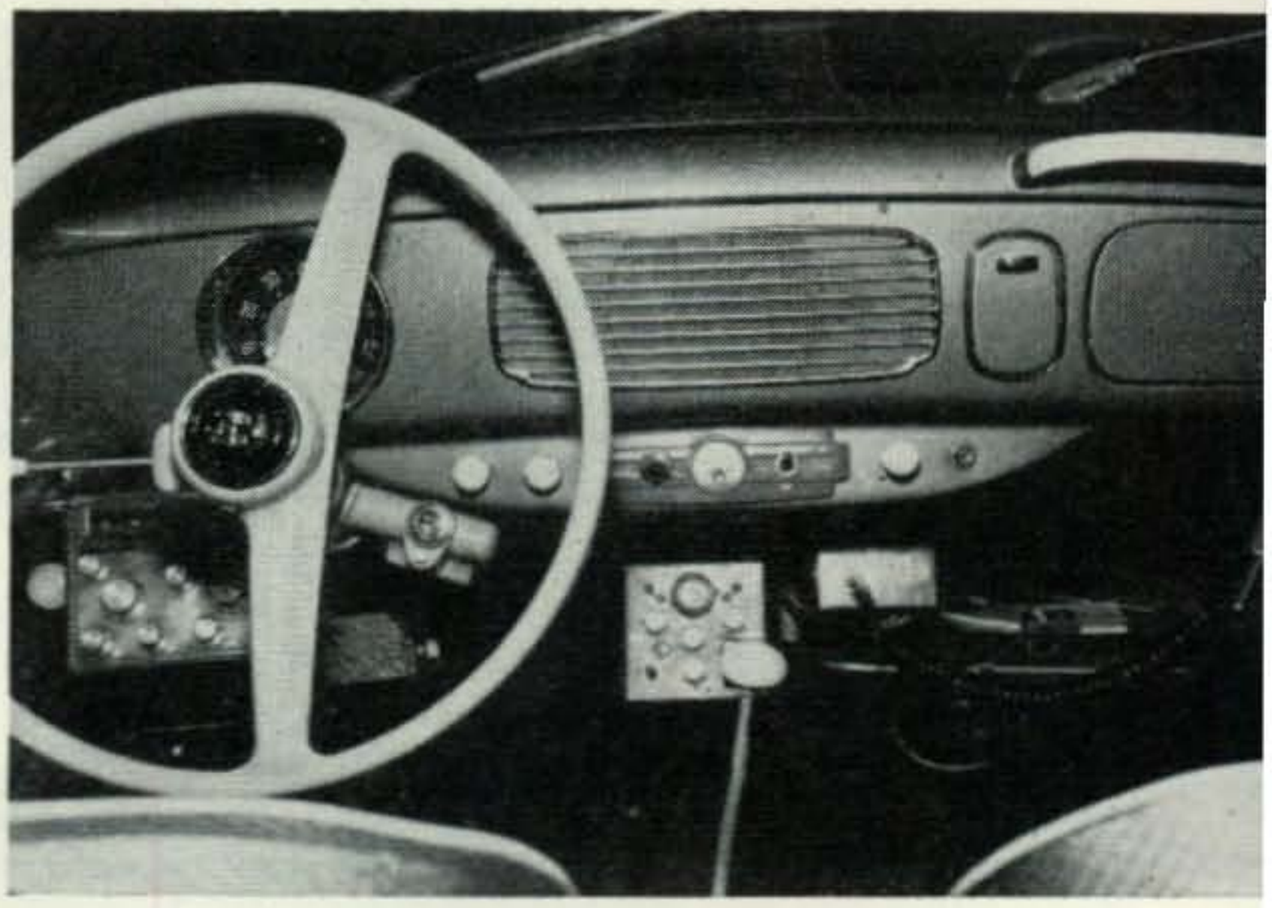
If your antenna is mounted on the left rear, move it over to the right rear. Doing this solved one ham's noise problem after all other measures failed.

Make sure that your coaxial cable going to the antenna is grounded TO THE CAR FRAME! NOT THE FLOOR PLATE ON THE VW.

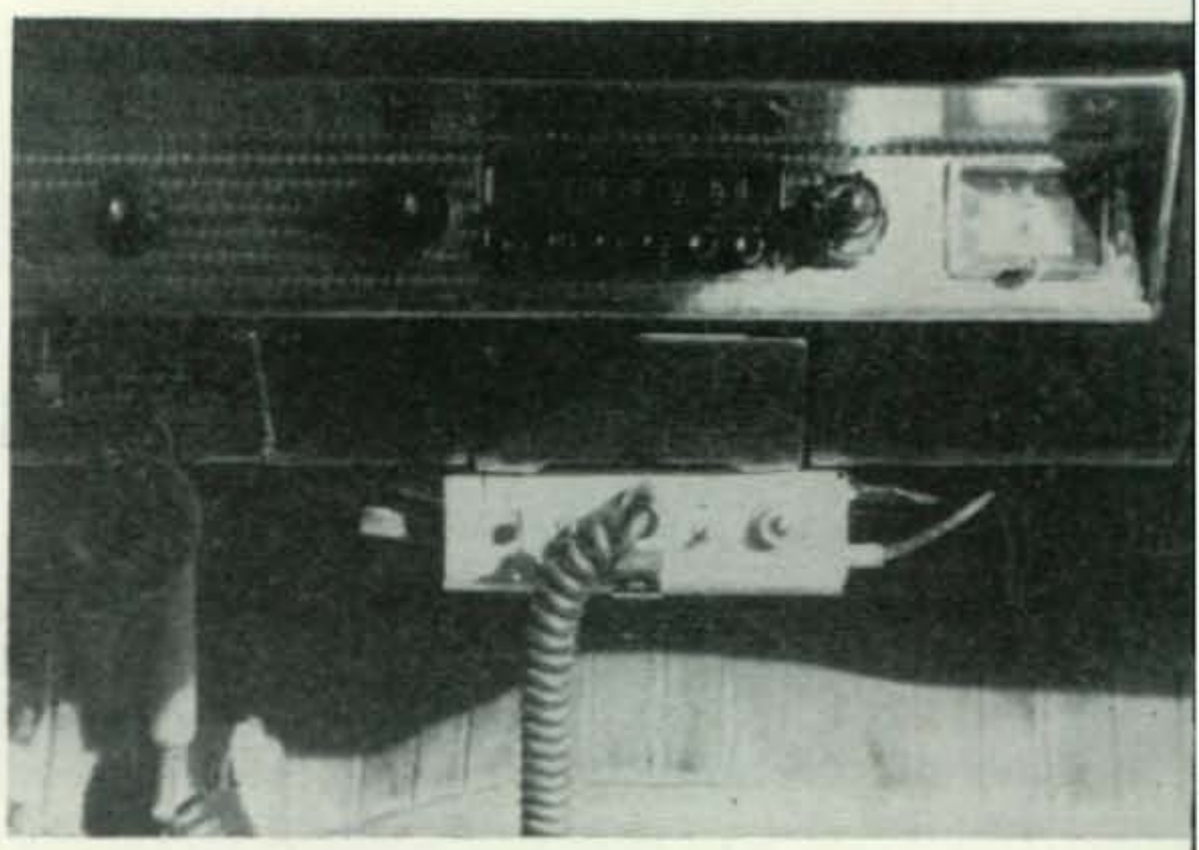
If you have regulator noise, wind a coil of about 40 turns with Number 16 bell type wire (double cotton coated) and install this coil at the regulator terminal (series) and place a 4 ohm resistor in series with a .002 mfd ceramic across the field terminal to ground. NEVER use either one alone! The coil diameter can be either ¾" or 1".

Still noisey? Then suspect the choke control (on the VW). Make sure it as well as other mechanical rods, etc.) are bonded to the





COMPANY CAR SPECIAL



—160 meter mobile rig

by ALLEN H. KRAFVE, W8HAW
3817 Taylor House, S. Q., Ann Arbor, Mich.
and BRUCE L. BEVELHEIMER, W8NAC

Those of us who drive company cars know that the company, like many of our wives, is sort of against our drilling holes for antennas, mounting transmitters, power-supplies, and all the other usual complexities associated with mobile operation. They get all upset at even the suggestion.

So, living under this twin axe ourselves, we decided to have a go at designing a mobile installation that would pacify all concerned. It had to be compact, neat, and easy to install. Compactness and low power go hand in hand so 160 meters was chosen, assuring the most usefulness for the low power involved. Stations up to 65 miles have been worked, but the usual range for good communications is more like 25 miles. And, best of all, no complaints from the family or company.

The Rig

The transmitter operates with an input of about 4 watts. It is crystal controlled, with a 6AQ5 (or 12AQ5) triode connected oscillator and another 6AQ5 (or 12AQ5) as a tetrode final. The final tank is a pi-net with 2 sets of mica trimmers for tuning condensers. These are quite compact, and will easily handle the power. A switch is included to provide two pretuned operating channels. Throwing the switch and changing the crystal are the only steps necessary for changing frequency. Audio is provided by a third 6AQ5 (or 12AQ5) which is transformer coupled for plate modulation. A 9 volt transistor radio battery is included for microphone voltage.

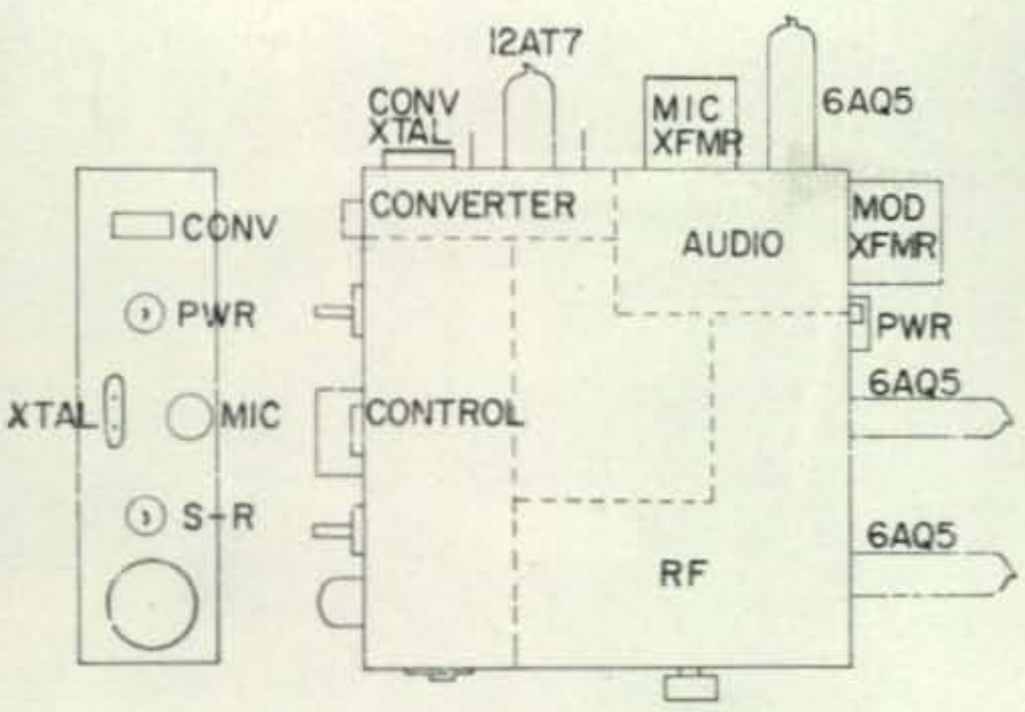
The converter is crystal controlled, with a 2600 kc crystal. To obtain maximum gain in one stage, a 12AT7 is used. Broad-banded slug-tuned coils are used to avoid peaks in the gain curve. A switch is included to allow the converter to be cut out for normal broadcast reception.

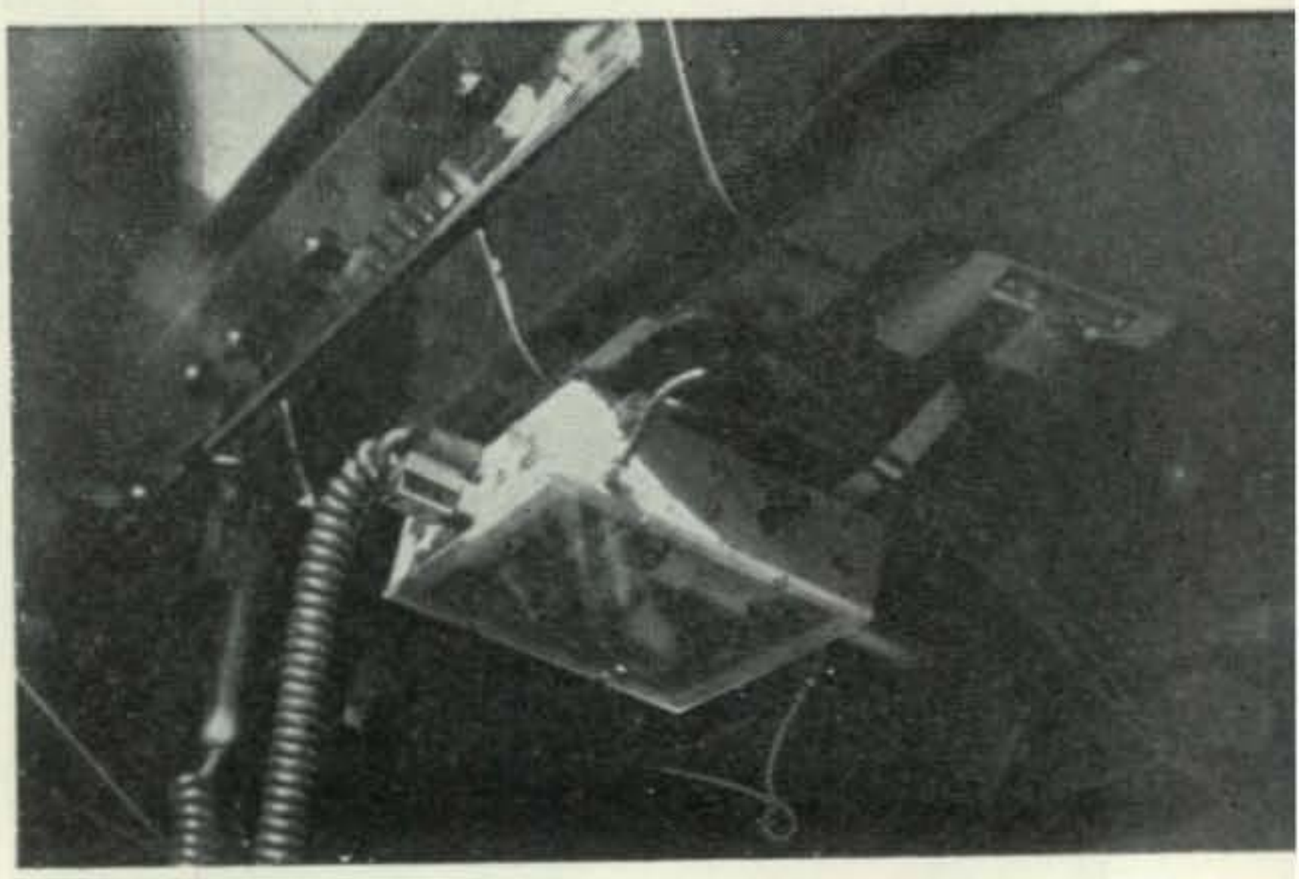
Push-to-talk control is provided for convenience and safety of operation. This necessitates the inclusion of a DPDT relay. A Dow relay, available with either 6 or 12 volt coils, was selected. A neon bulb is included for a pilot light. This indicates that the high voltage is on and, by dimming slightly when the transmitter is turned on, indicates proper operation of the transmitter. A power switch and a send-receive switch are also included on the front panel.

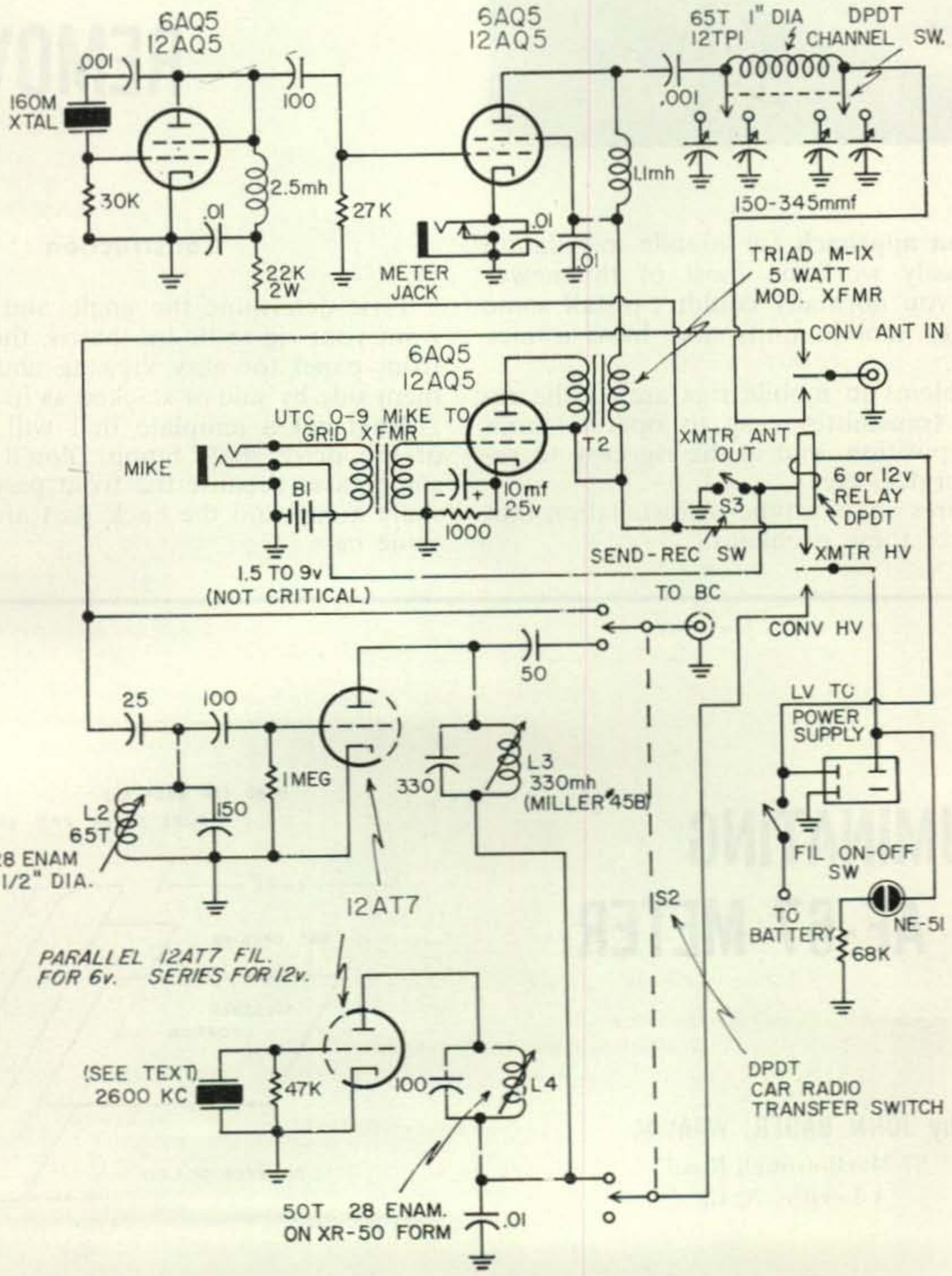
The entire unit is mounted in a 7x7x2 inch aluminum chassis. The arrangement can be seen in the drawing. The tubes and transformers are mounted on the side panels, as well as the antenna and power connectors. The arrangement of the parts is such that the various segments of the unit are definitely separated. This layout avoids the necessity of shielding between the segments. A 7x7x¼ inch plexiglass panel is used as a bottom plate. A metal plate would have been too close to the final tank and would have resulted in a loss of power.

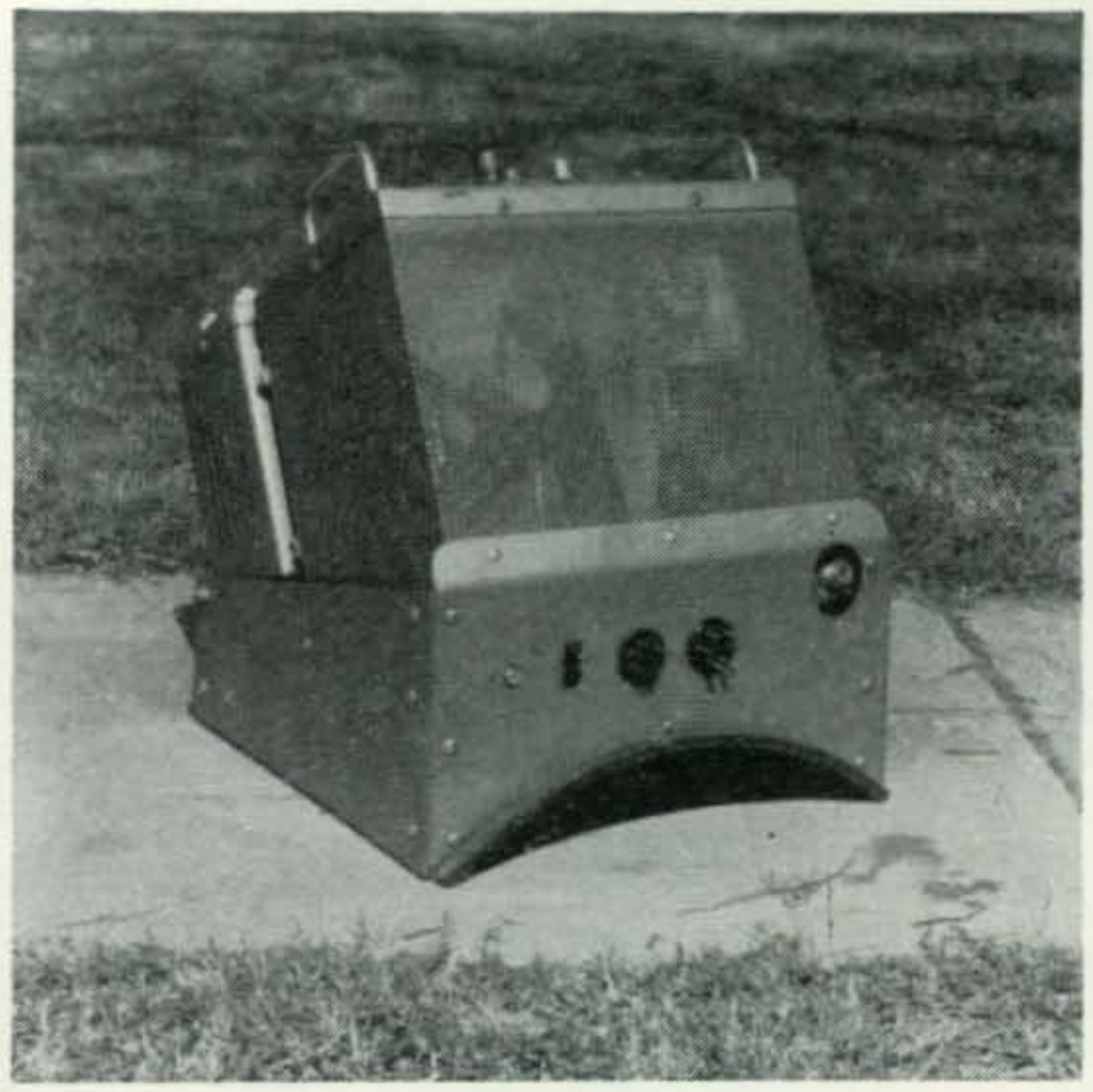
The power for the unit is supplied by a modified Heath VPS vibrapack. This unit delivers 260 volts at 60 ma., which is more than adequate for the unit. A filter has been added to the power supply to reduce hash. Since the power supply is only 4½x4x4 inches, it can be placed in many places under the dashboard. It can also be placed in most glove boxes. The transmitter is easily bolted to the perforated cover of the car radio. This avoids drilling holes in the dashboard.

The total cost of construction was about $30. Some junk box parts were used, but most parts were obtained new. The time required for construction was about 8 hours. The installation required 30 minutes and removal required about ten minutes. ■


12AT7
CONV XTAL
MIC XFMR
6AQ5
CONVERTER
AUDIO
MOD XFMR
CONV
PWR
XTAL
MIC
CONTROL
PWR
6AQ5
S-R
6AQ5
RF




6AQ5
12AQ5
.001
160M XTAL
100
30K
.01
2.5mh
27K
22K 2W
METER JACK
6AQ5
12AQ5
.01
.01
65T 1" DIA 12TPI
DPDT CHANNEL SW.
.001
1.1mh
150-345mmf
TRIAD M-IX 5 WATT MOD. XFMR
CONV ANT IN
6AQ5
12AQ5
UTC O-9 MIKE TO GRID XFMR
MIKE
B1
1.5 TO 9v (NOT CRITICAL)
T2
10mf 25v
1000
XMTR ANT OUT
S3
6 or 12v RELAY DPDT
SEND-REC SW
XMTR HV
TO BC
CONV HV
50
25
100
1MEG
330
L3 330mh (MILLER 45B)
L2 65T
150
#28 ENAM 1/2" DIA.
12AT7
S2
LV TO POWER SUPPLY
FIL ON-OFF SW
TO BATTERY
NE-51
68K
PARALLEL 12AT7 FIL. FOR 6v. SERIES FOR 12v.
(SEE TEXT) 2600 KC
47K
100
L4
50T 28 ENAM. ON XR-50 FORM
.01
DPDT CAR RADIO TRANSFER SWITCH



REMOVABLE

Here is an approach for mobile installation that will easily work on most of the newer cars where you normally couldn't install some of the larger mobile units and have a nice looking job.

Two problems in mobile rigs are: is the receiver and transmitter easy to operate from the driving position, and is the rig easy to remove for service, etc.

The pictures show a type of installation that meets both of these problems.

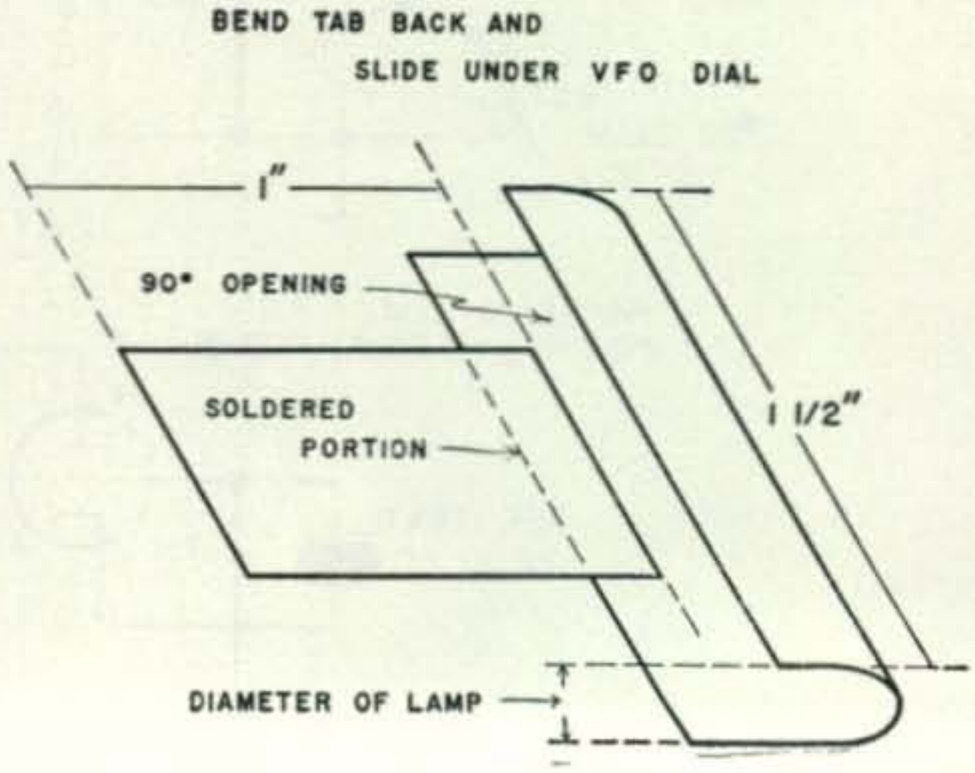
Construction

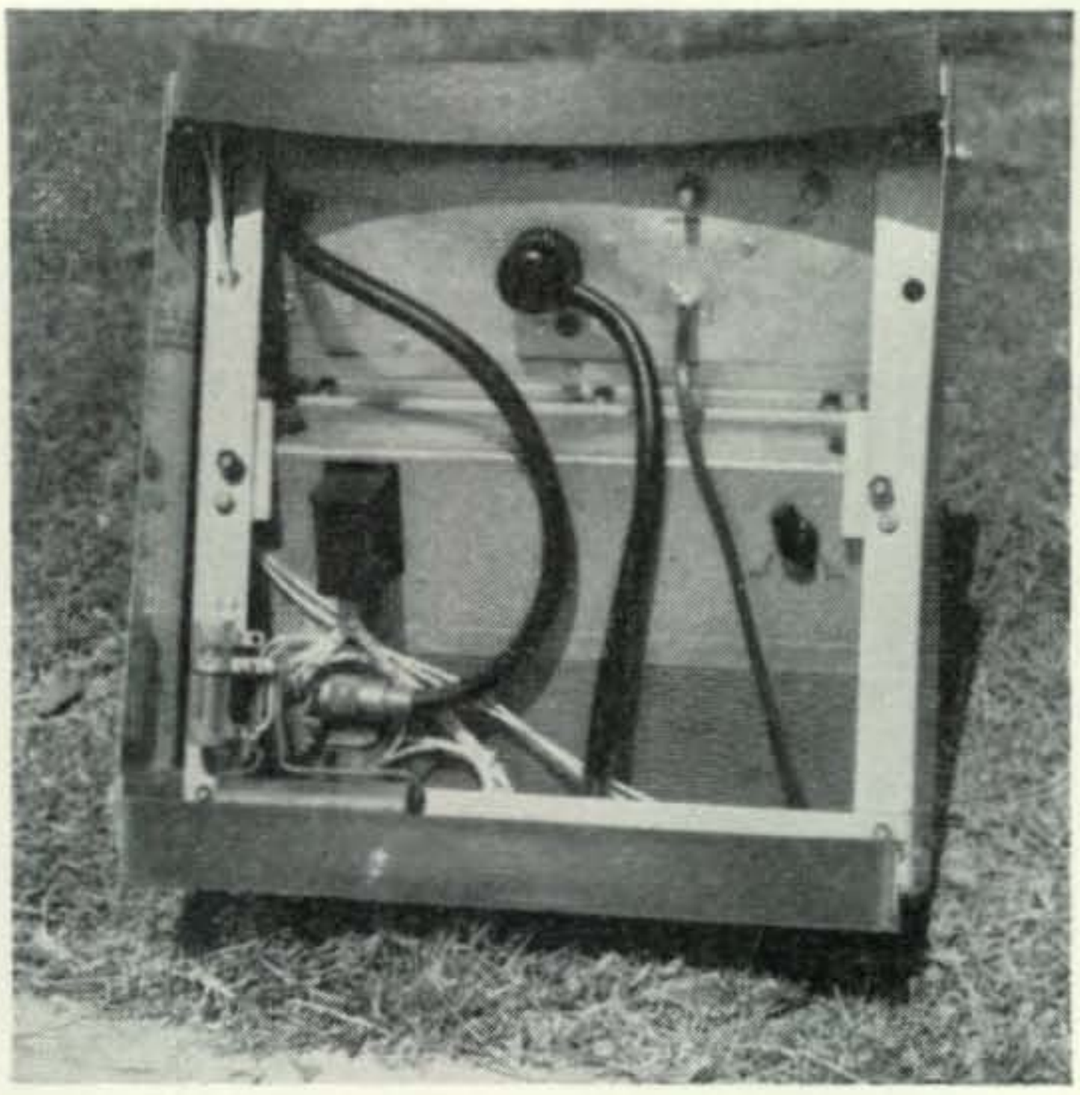
First determine the angle and position you want your rig to be in, that is, the angle of the front panel for easy viewing and if you want them side by side or stacked as in the pictures.

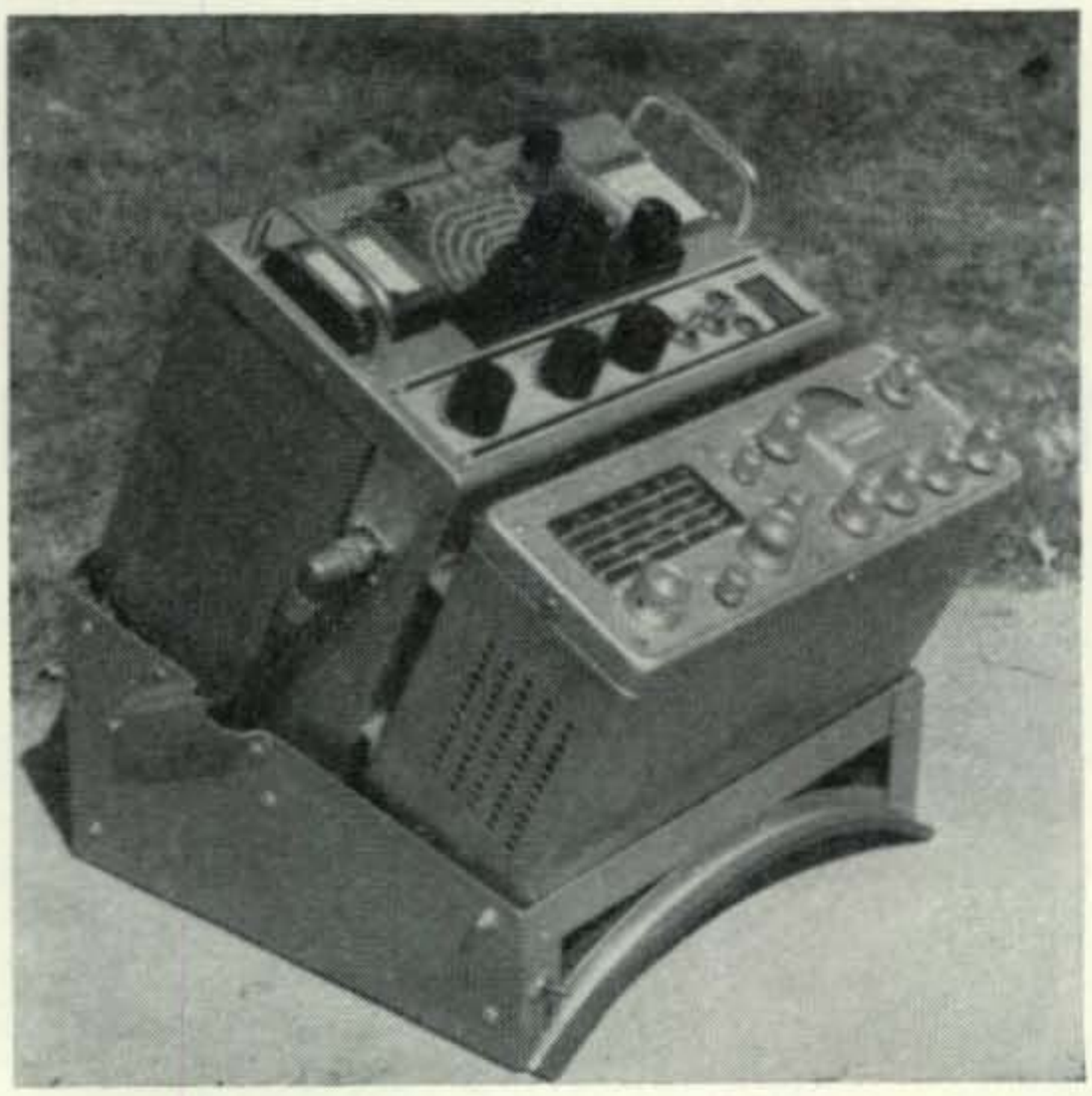
Next cut a template that will fit the curve of the drive shaft hump. You'll need two in some cases because the front part of the drive shaft hump and the back part are different on some cars.

ILLUMINATING THE AF-67 METER

by JOHN BAUER, W4AWM
87 Marlborough Road
Asheville, N. C.







MOBILE RACK

by ROBERT P. MAJOR, K6ELE
419 East Home St., Long Beach 5, Calif.

In the rack shown we used aluminum tee extrusion for the saddle. A jig was built to bend the tee in a curve to fit the curve of the drive shaft hump, however angle stock or wood could be used.

Now place the two saddles on the drive shaft hump and build a rack up to hold the rig in the position desired.

When the rack is finished run the power and antenna leads to plugs mounted on the rack. Run the wiring from the car power supply and the antenna to plugs that will fit those mounted on the rack.

To keep the rack in place while driving, a couple of sway braces from the rack to the bottom of the instrument panel can be used, however in the installation shown none was found to be needed except during left turns made in excess of 40 mph.

Material was obtained from the local Aircraft Company Salvage yard and hardware stores. ■

Trying to tune the AF-67 Trans-Citer at night while in motion is difficult. The main cause of this being that not enough light passes through the plastic side of the meter from the VFO dial.

A simple solution for this problem may be had by making and installing an almost invisible lamp shield beside the meter. The shield is made from a thin sheet of copper purchased from a local hobby shop. An excellent form for the shield is a GE number 44 pilot lamp which will be installed in the finished product. Cut a strip of copper approximately 1½ inches long by 1 inch wide, and form the width of it around the lamp in a 270 degree arc. Remove the lamp and cut off the excess material. Next, mark and cut out two ends for the shield and solder them into place. Cut another strip of copper approximately 1 inch wide by 1½ inches long and solder it to the shield leaving 1 inch free and pointing in the direction of the open slot in the shield. Paint the inside of the shield white and the outside gloss black.

Solder an insulated lead about 3½ inches long to the tip of the bulb, and a 3 inch bare lead to the base of the bulb, and force the bulb into the shield.

Remove the plastic VFO dial cover from the Trans-Citer. Bend the copper strip previously soldered to the shield back, and slip it under the dial plate. Run the hot lead from the lamp to the hot lead on one of the other lamps below the dial. The ground lead may be soldered to a lug and slipped under the nut on the meter switch.

Replace the VFO cover and await nightfall. You will no longer have to squint to see the meter. ■

transistor power convertors

by BILL HAMLIN, W1MCA
Hamilton, Mass.

It is now possible to construct vibratorless d-c power converters or d-c voltage multipliers by using automobile type power transistors now available at a low cost to the Ham and experimenter. By proper design up to 35 watts of output power may be obtained by employing CBS 2N256 transistors.

Possible uses for a transistorized supply of this size included power for d-c or a-c operated portable radios, small transmitters, a-c electric

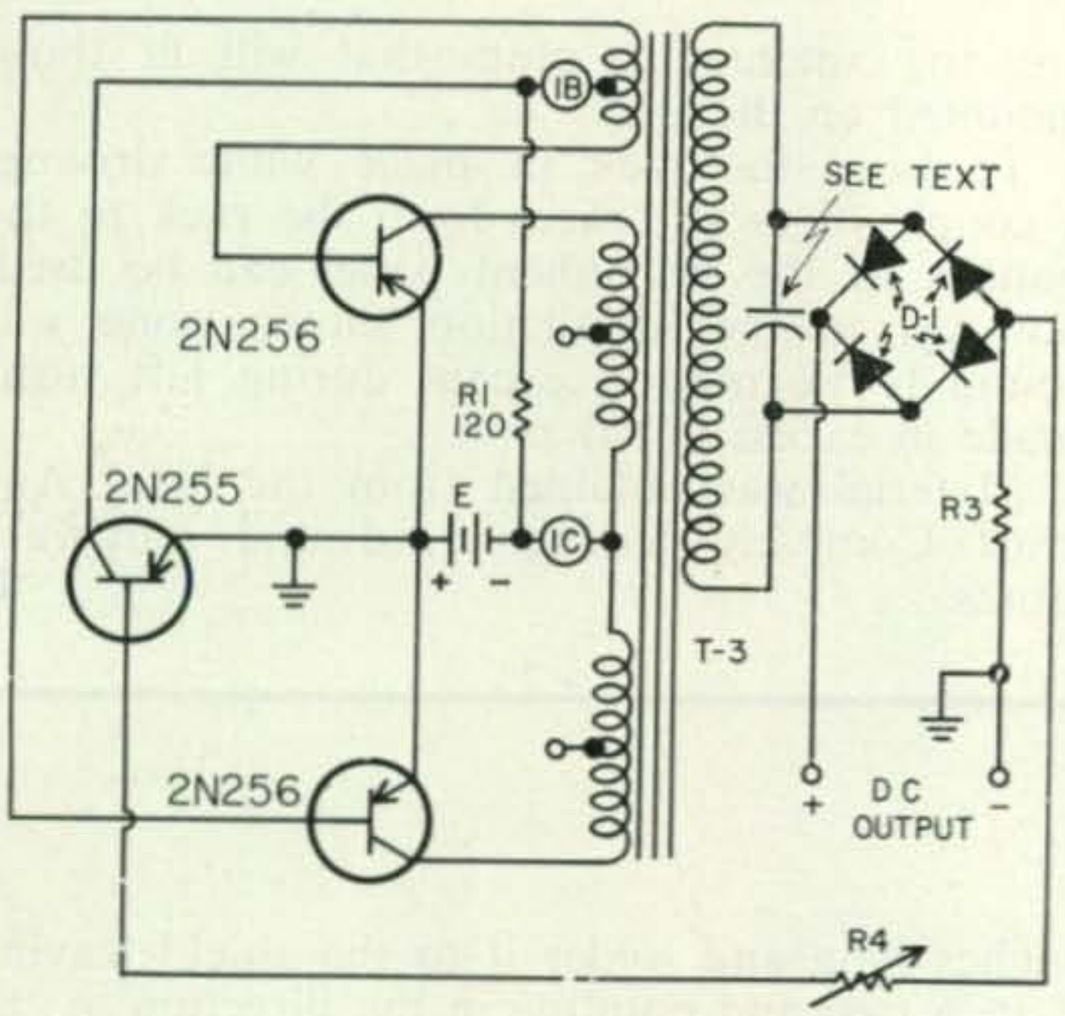


Fig. 1

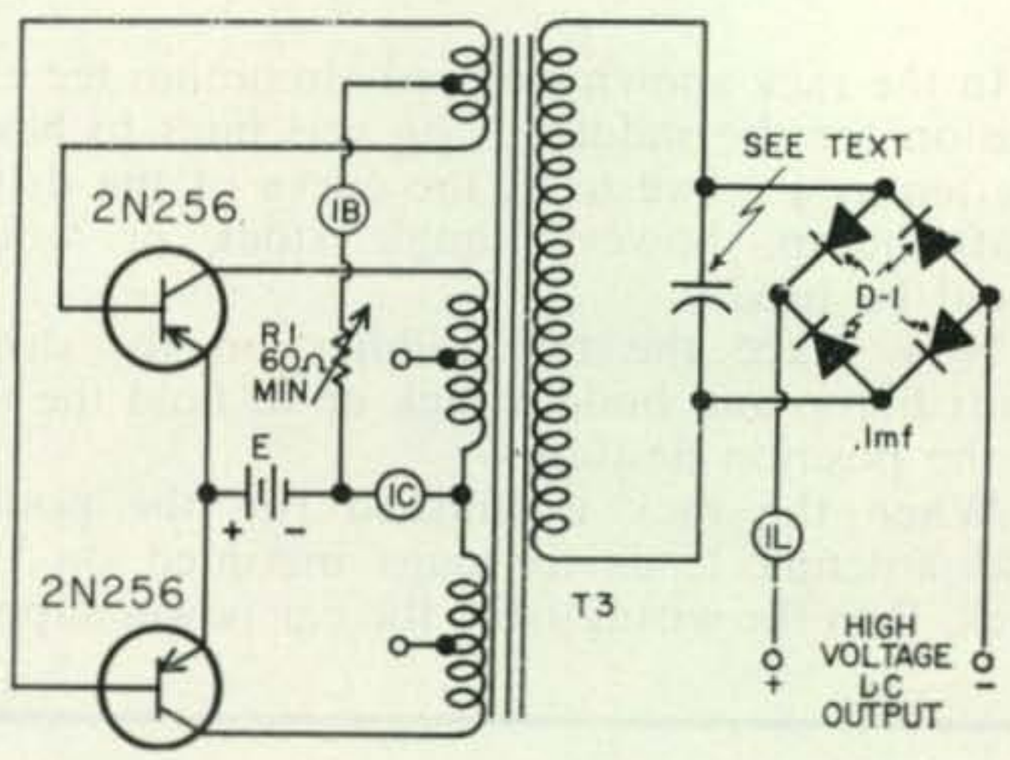


Fig. 2

Fig. 3

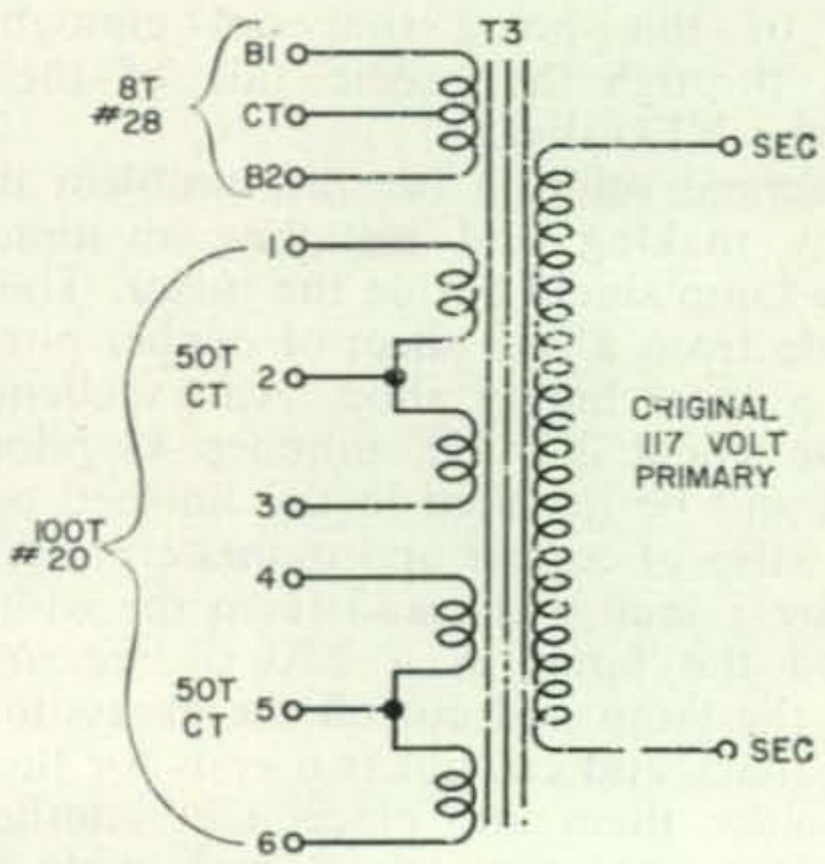


Fig. 4

shavers from d-c, or other small a-c devices.

The biggest saving and advantage achieved by the transistor power supply is elimination of the usual vibrator which quickly wears out because of moving electrical contacts. Transistor supplies can operate more efficiently for thousands of trouble free hours.

The supplies are rapidly gaining recognition as the most practical and economical method of power conversion since low cost power transistors have been available for automobile radio receivers. Several of these units are being made commercially but the design is such that special transformers are used. The transformer is probably the biggest deterrent to home construction.

Transformers

Existing transformers may be modified to achieve the desired results but each case should be worked out by cut-and-try method working toward maximum efficiency of operation.

The transformer to be used is a matter of individual choice. Saturation must be obtained with a sharp break point to approach a square waveform. This is necessary for peak efficiency.

Other desirable transformer characteristics include: low core loss, high saturation flux density, low leakage inductance. The experimental supplies shown in Figs. 2 and 3 were made using a transformer with 24-volt, 3-ampere secondary and a 117-volt primary. The 24-volt winding was removed and two new windings added over the primary. Details are shown in Fig. 4.

Frequency of Oscillation

Frequency of oscillation is another design consideration. It seems to be most practical for the Ham or experimenter to use frequencies between 60 cps and 2000 cps. High frequencies require smaller filter components and less bulky transformers. But the efficiency of power transistor operation drops, and stock transformer core (laminated steel) losses increase as frequency goes up; also the rise and fall time of the voltage pulses should be short compared to the period of each cycle. It then works out that around 400 cycles per second is a good area for operation for ordinary cores unless 60 cycle a-c power is required rather than d-c power.

The oscillation frequency increases with increasing supply voltage, decreasing number of turns on the transformer primary, smaller transformer core, and lower saturation density.

CBS transistors for the experimenter, types 2N255 and 2N256, are available in unlimited quantity. These are suggested because of their low price and high power capability.

Power Output

So that there is no confusion concerning the power available from these units it should be explained. Transistor limitation is stated in terms of switching power. Maximum switching power may be eight times the maximum class A power. The CBS 2N255 and 2N256 transistors in the automotive power package can switch about 25 watts each or 50 watts in push-pull, this is with an adequate heat radiator attached to the transistors. With perfect transistor-to-load matching using the most efficient transformer, up to 85% operating efficiency theoretically can be reached; that is, 50 watts input will provide 42.5 watts output. A more realistic figure, considering the unavailability of special transformers to the experimenter and other difficulties, is a 35 watt output of 70% efficiency using the regulated circuit of Fig. 2

For full output in the circuits shown using CBS 2N256 transistors adjust the base current of each transistor to not more than 100 milliamperes. This is accomplished by adjustment of R1 in Fig. 1 and 2 and R4 in Fig. 3. Collector current of these transistors should be limited to 2 amperes.

Circuit Design

Modified stock transformers can be used for these circuits. The transformer should have a power rating equal to or better than the power output; for example, a 24-volt, 2-ampere transformer could handle up to 48 watts.

The turns ratio of transformer T1 or the collector primary (taps 1 to 6 of T3) to output secondary is approximately equal to one-half the output voltage divided by the input voltage. For example, 300 volts output requires a turns ratio of 25 for a 6-volt source, and a turns ratio of 12.5 for a 12-volt source.

The base winding turns ratio of T3 (taps B1 and B2) is not critical but it should have 5 to 10 times fewer turns than that of the collector winding. T2 in Fig. 1 should also have this ratio, 5 to 10 times step down from that of T1.

R1, as previously mentioned, determines the base current. This is nonadjustable in Fig. 3 because of the automatic regulation provided by the 2N255 transistor.

The regulating transistor in Fig. 3 improves operating efficiency. A voltage developed across R3 being proportional to load current is fed back to the base of the 2N255 through R4. This, in turn, varies base bias of the 2N256's in the right direction for more or less power output.

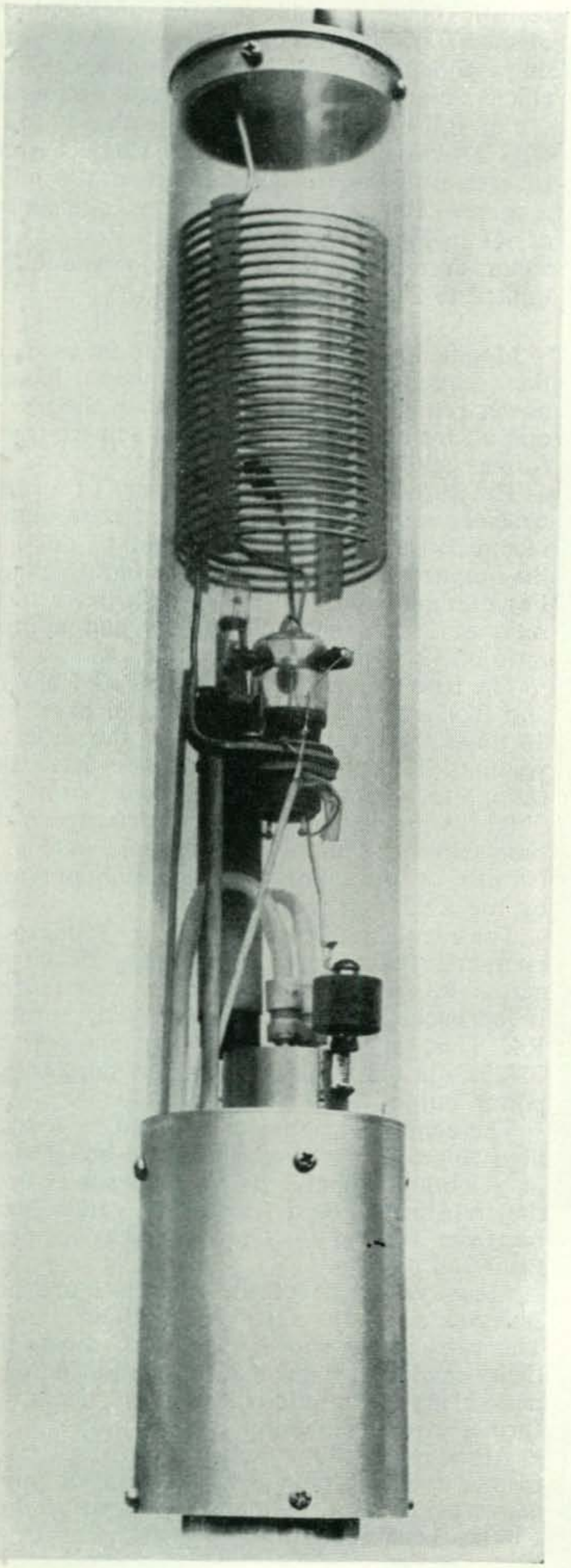
The condensor across the secondary reduces high voltage peaks similarly to the buffer stage in a vibrator supply. Its value depends upon the transformer used frequency. Values ranging from .005 mf to .1 mf should cover practically all circuits.

Many variations of these circuits are possible including the rectifier and filter system. The two circuits shown here were chosen for their simplicity, high efficiency, and compactness. These are offered as basic ideas for further experimentation.

At the present time there are few stock transformer available designed for transistor power converter use and undoubtedly more of these will be available in time! ■

1. Sunair Electronics (see ad page 20).

KW P.A. MOUNTED IN MOBILE



This thought-provoking title should start the reader's mind wondering just what is going to happen when we take a KW amplifier and by squeezing and pulling, make it function in an antenna. Actually, our first attempt at building a new P.A. was so successful, the second model has been made with only a few minor improvements, such as reducing space requirements.

We are convinced that mobiles produce startling results on all contacts when high power is used effectively. In fact, time after time this equipment equals the performance of home stations. After thoughtful consideration, it is felt that this method could be suitably adapted to home station application as effectively as mobile. Aside from its small size and high power, there are two other facets which should surprise most readers. In the face of all its novelty, miniaturization and non-conforming construction, the circuits are extremely simple and easy to tune. In fact, the operating model worked just as it was calculated. Equally as important a feature is that of cost. If this new amplifier is built for transmitting only and does not have a TR switch, the biggest single cost is the tube. This means that the cost of one of these amplifiers is greatly reduced and can be built at a figure remarkably less than the exciter, or a conventional power amplifier for fixed operation. The design of the equipment is as follows:

Basic Circuit

From the output of the exciter I have employed a simplified form of Pi net, using a slug tuned coil having a step-up ratio to excite the grid. See Fig. 1. Actually, the 4CW300B required 60v peak rf to drive the grid, or less than 1 watt of power. Should higher rf power be available, then an alternate grid circuit is recommended. That is, a low resistance is connected from coax to ground with the coax capacity coupled to the grid of the tube. (See Fig. 1A). An rf choke supplies the fixed bias to the grid with either circuit. This method has been employed in other high power applications and is especially suitable where high stability and broad banding is necessary. We have used the Eimac socket SK610, which has its own built-in screen bypass for the 4W300B. The latest amplifier employs a type SK710 socket. The 4CW300B fits this lock-in type of socket which prevents the tube from being bounced out. Our choice of water cooled tubes eliminates the difficulties arising from moisture and dust which, in combination,

ANTENNA

by JO EMMETT JENNINGS, W6EI
Box 1278, San Jose, Calif.

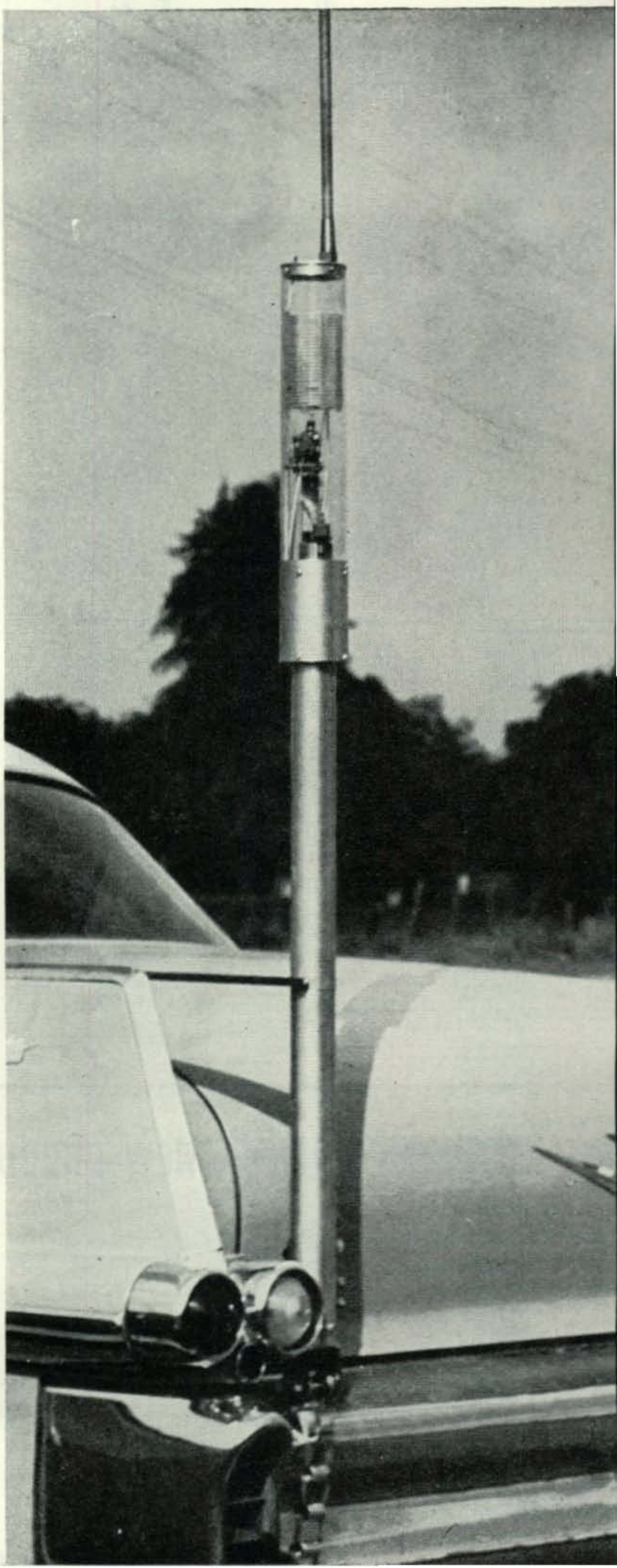
could block the air passages in the tube and result in a very short operating life. The use of filters to remove the foreign matter causes the blower problem to become extremely acute, due to reduced air flow.

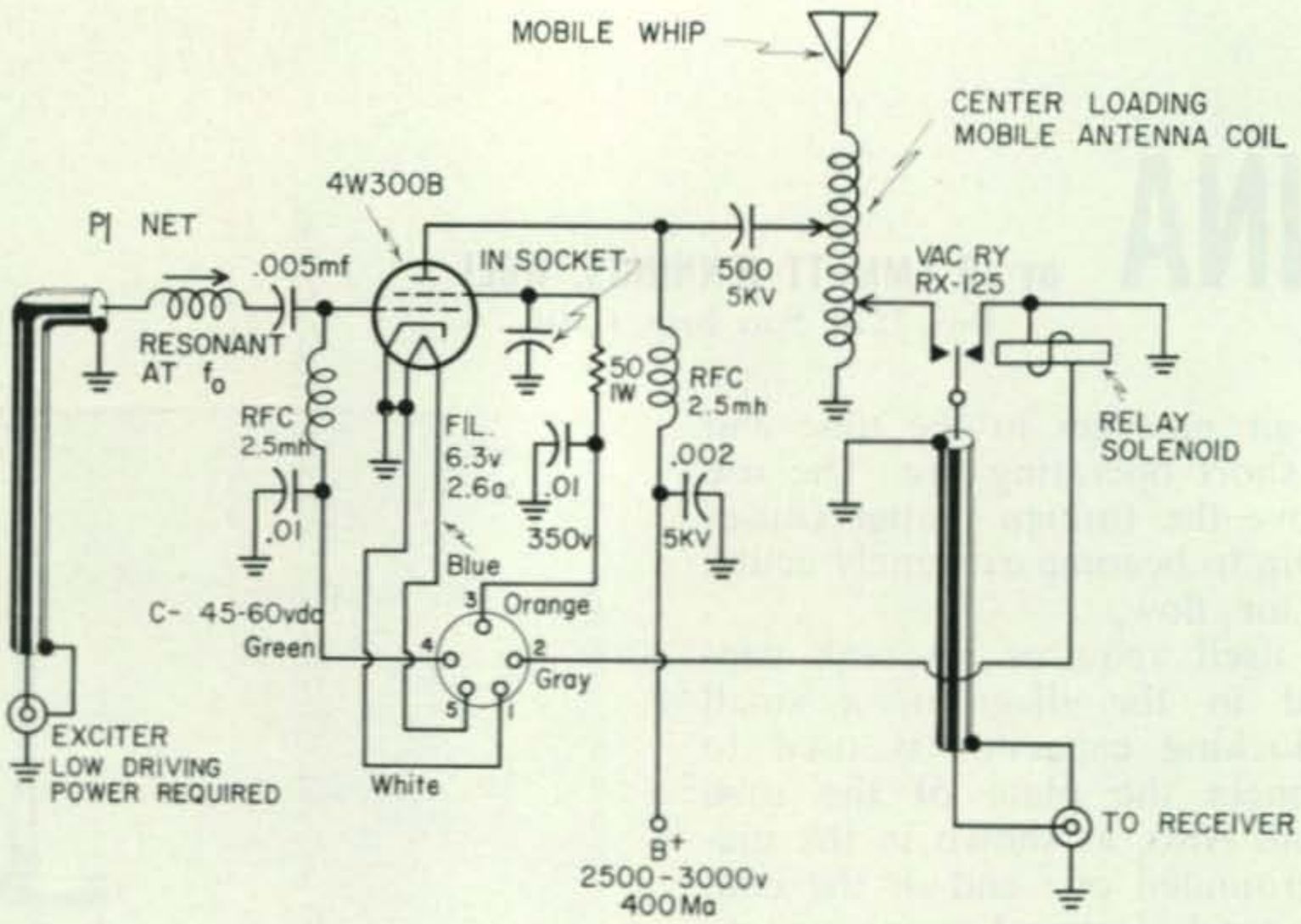
The amplifier itself requires no tank capacitor. As noted in the diagram, a small ceramic plate blocking capacitor is used to conductively connect the plate of the tube directly to the coil. Also, as shown in the diagram, we have grounded one end of the coil. This ground is a good electrical connection to the car. The tank coil is then tuned by adjusting the length of the whip, measured on a grid dip meter. Loading is achieved by placing the tap at the proper load point, which is between 10 and 20% from the bottom of the coil. The closer the tap is to the bottom of the coil, the more loading to the tube. As soon as the proper loading is evidenced, the screen current will remain at approximately zero. Tests with a field strength meter at approximately 1000 ft. correlated results with contacts between stations as to proper adjustment.

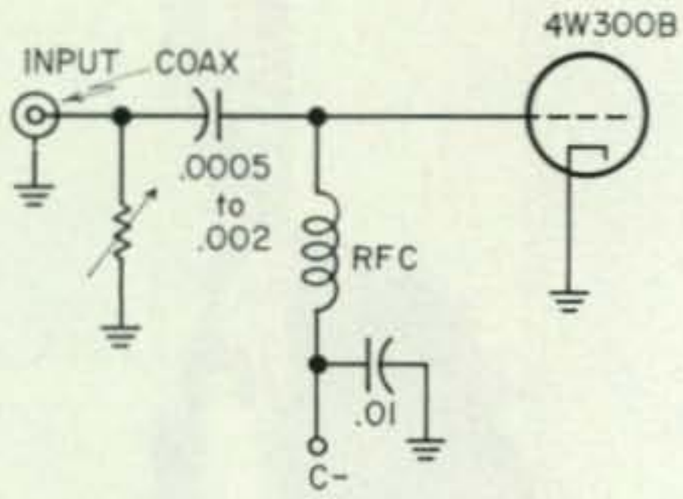
Instructions

We used a 2 ft. length of aluminum or dural tubing 2" O.D. for the supporting structure of the amplifier. This material acts as a low impedance to the ground of the car and becomes a physical protection for the wires and tubing. It also functions as a shield for the grid of the tube. The socket, being mounted directly to this aluminum tubing, produces a good rf ground. For visual inspection of the amplifier, a clear plastic cylinder is used to house the upper portion of the tube, the rf choke, TR switch and inductance. This whole unit is easy to assemble and remarkably simple in operation. Mechanical devices can be attached which will make QSY either manually, electrically or hydraulically. These first models have been kept very simple, in order to gain basic information and eliminate possibility of failure. So far, the only failure we have had was due to an inadequate rf choke. After replacing this part, everything operated as it should. This amplifier is equally effective on SSB, AM or CW.

The first tests were conducted with the new amplifier on one vehicle while one of our conventional miniaturized amplifiers was used on another vehicle. All tests were conducted on the same frequency. The intervening distance between cars was great enough to allow operation without one amplifier effecting the

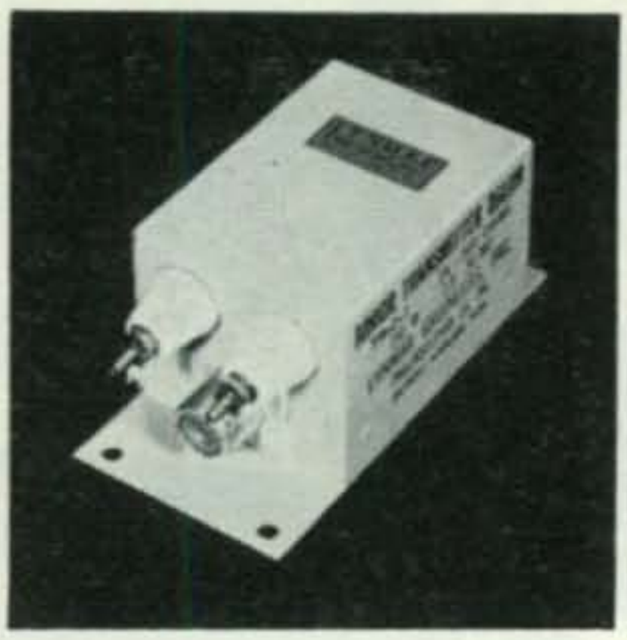






receiver in the other. The most important result was noted in signal strength from this new model when compared to our conventional type. In most cases the signal strength was equal to or greater than the standard amplifier. We attribute this gain to the reduction in power loss normally occurring as resistance capacitance and inductance in the transmission line. Due to the low efficiency of mobile equipment, any and all improvements in power gain are very welcome. Having improved the efficiency of the mobile amplifier, we feel that everyone should be acquainted with these basic concepts. Obviously more improvements will be forthcoming, now that this step has been taken. Too, I am sure the reduction of cost to about one-half or less than that of any previous kw amplifier is most important.

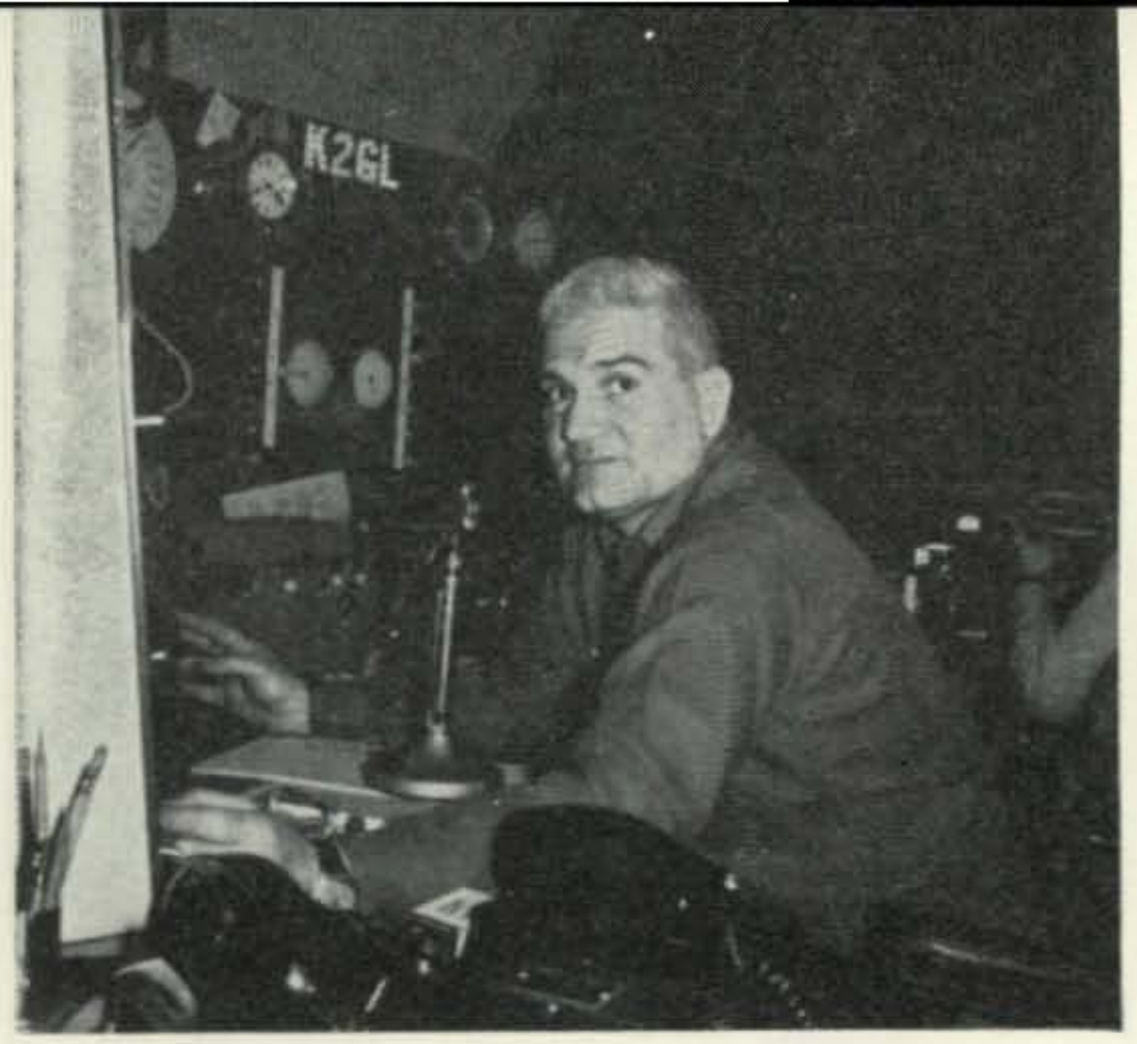
A point might be added at this time regarding the use of one tube instead of the conventional two tubes. Conventional antenna impedances vary between 10 and 15 ohms and it was always a problem to get full power out at low impedances. The losses in matching networks were always apparent. This new system does not suffer from that particular characteristic, since the plate of the tube is conductively connected to a proper load impedance point of the coil. The whip itself is the actual capacity applied to this coil and therefore the height of the whip becomes the simplified method of tuning. No capacity should be used on the plate of the tube, since it will reduce efficiency of this circuit. One word about the coil itself. We use a high Q, space wound coil of #12 wire, 2½" diameter. These coils will warm up with inserted carrier, but do not have the power loss noted in our previously designed high C circuits. Those coils would heat up 3/16" silver plated tubing to a point just under oxidation. It is hoped that this new development can be utilized by the mobile fraternity who are plagued with space and power problems. ■



NEW PRODUCT

Mobile Baluns

Here's a new series of baluns and impedance matching transformers especially suitable for mobile use. Their frequency range is 14 thru 60mcs, thus including the six meter band. They have baluns for 75 ohm coax which match 75 or 300 ohms balanced. Their transformers match 50 to 75 ohm unbalanced or 50 to 200 ohm unbalanced. All these little nifties sell for $11.95 each and require no switching or special circuitry. Want to find out more? Check AA on page 134.



K2GL — The Ole Master himself. W2SKE, Bill Leonard that is.

CQ DX CONTEST RESULTS—phone section

by FRANK ANZALONE, W1WY

We've got a new champion—F8CH. This will probably come as complete surprise to most of the boys, it was to us. We had expected one of the 4X4 boys to repeat. Or perhaps G3AWZ or CO2BL; but George did not even show up and even though Val ran up the highest multiplier, 287, he was nosed out of the runner up position by KH6IJ. Katashi accounted for the astonishing sum of 1,094 contacts. It's the old story, "should one concentrate on a multiplier or work as many stations as possible." Evidently our new champ used a combination of both; built up a good multiplier first and then sat back on 28 mc and worked 'em by the scores, 480 Qsos to be exact. Over 75 per cent of these were Ws. Must have been like shooting fish in a barrel. Congratulations Monsieur, start dusting off a spot for the W2SKE Trophy, it will be coming your way soon.

Speaking of W2SKE, Bill Leonard and the gang at K2GL did quite a job in the Multi-Operator Section. It was no contest, they were so far ahead of the pack. Their performance was one of the most outstanding in this section of the contest. All bands were used, 160 thru 10; and when conditions permitted, simultaneous operation on two or more bands was used. As I've always said, "a well organized group should run up a real score." That 866,250 points turned in by Bill and the boys should stand up for a long time. Unless the boys go out and beat their own record next year. The K2AAA Trophy donated by Don Mertens, will of course grace Buzz Reeves' shack up in Tuxedo Park.

The Single Operator gang had a field day on 10, and two of the EU boys put on quite a show. OH5NW's 792 contacts on one band, in a 48 hour period, surely must be some kind of a record. That was a splendid performance Axel. DL4AAP didn't have quite as many QSOs but Stew had a few more 3 pointers and was Top Man on one band.

Without a doubt most of the boys were up on 10, but 21 mc had its share of activity. A couple of old time rivals down South America way worked their share on 15. Ricardo, CX2CO almost exactly duplicated his

OH5PE — With that happy smile, Thor must have known he was the Top Man for Finland.

SINGLE OPERATOR
All Band
TOP TEN
F8CH — 436,974

KH6IJ—409,962 4X4BO—345,032
CO2BL—401,800 F8PI—324,870
4X4GB—372,735 I1BWN—305,172
DJ1BZ—369,900 I1CHJ—274,560
VE3AIU—269,533

MULTI-OPERATOR
All Band
TOP FIVE
K2GL — 866,250

ON4SZ—582,798 KA2MA—359,040
5A5TH—544,635 W3AOH—263,328

SINGLE OPERATOR
HIGH FOR EACH BAND

28. mc — DL4AAP — 248,745
27. mc — W8AJW — 1,296
21. mc — CE3DY — 177,012
14. mc — OD5BZ — 82,880
7. mc — JA1EF — 1,666
3.5 mc — W1ZBT — 320

Number groups after call letters denote the following: Band, final score, number of QSOs, zones, and countries. Letters designate power used. A–Up to 35 watts, B–Up to 150 watts. C–Up to 500 watts. D–500 watts and over. Winners are in **bold face** type.

Single Operator

NORTH AMERICA

United States

W1PST	**AB**	**123,765**	**246**	**66**	**119**	**D**
W1ONK	**28**	**68,448**	**260**	**29**	**64**	**C**
W1PWK	28	23,232	124	20	46	B
W1HFN	28	17,732	119	16	36	B
W1YPK	28	10,472	66	18	38	B
W1DFY	28	9,890	79	13	30	C
W1OHA	28	5,307	61	7	22	A
W1NEP	28	4,469	42	15	26	P
W1DXS	28	3,036	25	13	20	C
W1MGP	**27**	**713**	**27**	**12**	**11**	**A**
W1UOT	**21**	**3,705**	**40**	**15**	**24**	**—**
K1BFQ	**14**	**4,100**	**42**	**17**	**24**	**B**
W1ZBT	**3.5**	**320**	**21**	**3**	**5**	**—**
K2OPJ	**AB**	**90,992**	**268**	**42**	**79**	**B**
W2HTI	AB	20,900	79	36	74	B
K2KFP	AB	7,540	57	25	33	B
W2VCZ	**28**	**32,850**	**155**	**24**	**51**	**D**
K2VFR	28	9,240	58	19	37	C
W2EFE	28	8,695	81	11	26	B
W2CZT	28	7,744	65	15	29	D
W2QKZ	28	7,144	57	15	32	B
W2GFO	**21**	**58,948**	**227**	**25**	**67**	**—**
W2JEA	21	40,152	172	25	59	C
K2EAD	21	18,827	108	22	45	C
W2PUN	21	17,936	90	27	49	D
K2BQW	21	770	16	9	13	C
K2RLI	21	180	7	6	6	A
W2WE	**14**	**9,920**	**61**	**23**	**41**	**C**
W2DEW	14	9,161	55	24	39	—
K2MDL	14	2,920	31	15	25	B
W2YOG	14	1,421	20	12	17	D
W3CGS	**AB**	**15,484**	**70**	**29**	**50**	**C**
W3DBX	AB	8,372	62	17	29	B
W3ZAO	AB	1,740	21	13	18	C
W3NMP	**28**	**34,456**	**173**	**23**	**50**	**C**
W3RPG	28	31,275	150	26	49	C
W3ZEQ	28	26,151	135	24	45	C
W3NOL	28	12,488	85	20	36	B
W3ORU	28	9,306	81	16	31	C
W3ABW	28	6,318	45	21	33	B
W3GR	**14**	**6,251**	**52**	**16**	**31**	**C**
W4OM	**AB**	**66,368**	**171**	**46**	**90**	**D**
W4KYI	AB	29,193	106	42	69	D
W4H						
VH	AB	23,134	99	34	53	C
W4BQY	AB	10,032	58	25	41	D
W4DS	AB	8,642	57	24	34	C
K4BZJ	**28**	**6,195**	**61**	**10**	**25**	**B**
K4DLI	28	5,280	41	17	31	C
K4AZM	28	1,368	23	11	13	C
K4EQM	**27**	**850**	**19**	**13**	**12**	**—**
W4NQM	**21**	**49,200**	**220**	**24**	**58**	**D**
W4OVS	21	14,322	85	27	35	B
W4DRW	21	13,260	95	17	34	B
K4ILW	21	3,930	45	10	20	B
K4CFB	21	2,720	29	13	21	B
W4WSF	21	855	17	7	12	B
W4HKJ	**14**	**4,738**	**41**	**17**	**29**	**C**
W4OYG	14	3,239	31	16	25	—
W5ALB	**28**	**30,567**	**161**	**23**	**46**	**C**
W5DQK	**21**	**19,872**	**110**	**24**	**48**	**B**
W5KC	21	12,155	77	23	42	B
K5BHV	21	2,440	31	21	61	B
W5VUE	14	8	2	2	2	A
W6YY	**AB**	**265,630**	**396**	**110**	**161**	**D**
W6VSS	AB	182,328	323	86	128	D
W6UF	AB	28,938	110	39	52	D
W6RCD	AB	27,370	107	54	65	B
W6G VM	AB	25,248	61	35	61	D
W6PQW	**28**	**16,802**	**75**	**25**	**37**	**B**
K6GQH	28	10,750	80	20	30	D
W6KNM	28	1,350	32	9	16	—
K6SXA	27	460	14	10	10	—
W6AED	**21**	**25,575**	**128**	**27**	**48**	**D**
W6CBE	21	3,584	42	24	32	C
K6PDA	21	1,980	26	18	18	C
K6GWN	21	1,938	25	17	21	C
K6OPI	21	1,078	24	10	12	B
K6DJO	21	600	12	9	11	B
K6CQF	21	288	8	8	8	B
K6KG	21	264	9	6	6	—
W6LTY	**14**	**32,555**	**140**	**30**	**55**	**D**
W7HQC	**AB**	**25,938**	**104**	**41**	**58**	**D**
W7IUU	28	17,400	133	16	34	C
W7RQN	**21**	**6,100**	**46**	**24**	**37**	**C**
W7MGT	**14**	**19,856**	**120**	**26**	**42**	**—**
W8NXF	**AB**	**140,700**	**258**	**79**	**131**	**C**
K8ADY	AB	63,780	167	56	103	C
W8PCS	AB	1,276	20	10	12	B
K8AEK	**28**	**41,334**	**175**	**26**	**57**	**B**
W8UMR	28	25,976	140	20	48	B
W8AJH	28	24,452	141	22	40	B
W8BDP	28	7,520	60	16	31	B
K8CFU	28	6,106	51	15	28	B
W8HLW	28	2,075	30	7	18	B
K8BVB	28	1,468	27	6	12	A
W8GKB	28	1,378	20	8	18	C
W8AJW	**27**	**1,296**	**26**	**14**	**13**	**B**
W8CCD	**21**	**16,500**	**100**	**24**	**42**	**B**
W8TFU	21	10,175	74	20	35	B
W8WT	21	5,863	53	16	25	B
W8GKB	21	1,482	22	16	17	C
W8KC	21	1,260	22	7	14	C
W8TTN	21	1,210	22	9	13	B
W9 EWC	**AB**	**124,355**	**265**	**72**	**115**	**D**
K9CUY	**28**	**7,436**	**61**	**17**	**27**	**C**
W9MBF	28	5,986	54	13	28	B
W9DZA	28	5,476	56	12	25	—
W9QM	28	390	13	3	7	D
W9ZTD	**21**	**38,388**	**169**	**27**	**57**	**D**
W9UMJ	21	8,568	59	23	40	B
W9RKJ	21	2,272	29	12	20	B
W9LRH	**14**	**2,480**	**26**	**15**	**25**	**C**
WØ GUV	**AB**	**36,784**	**123**	**49**	**72**	**D**
KØ CML	**AB**	**5,566**	**46**	**16**	**30**	**B**
WØ NWW	**28**	**11,610**	**82**	**19**	**35**	**C**
WØPWJ	28	2,106	33	12	14	B
WØVAF	28	1,944	25	10	17	B
WØGEK	**21**	**23,392**	**102**	**30**	**56**	**D**
WØFUH	**14**	**5,238**	**41**	**21**	**33**	**D**

Alaska

KL7 JDO	**AB**	**31,380**	**466**	**31**	**29**	**D**
KL7AZI	**28**	**6,420**	**164**	**13**	**17**	**B**
KL7BHE	**21**	**46,292**	**340**	**24**	**47**	**B**
KL7RZ	21	35,035	249	22	43	B
KL7ALZ	21	33,020	293	23	42	B
KL7FAY	21	7,740	77	11	24	B
KL7CDH	21	5,053	66	10	21	B

Bermuda

VP9CY	**AB**	**194,579**	**337**	**66**	**143**	**B**

Canal Zone

KZ5KA	**14**	**2,280**	**53**	**11**	**19**	**B**

Canada

VE1NH	**14**	**18,428**	**143**	**26**	**42**	**D**
VE2 ADB	**AB**	**60,500**	**184**	**40**	**81**	**B**
VE2AVC	**28**	**9,063**	**73**	**15**	**35**	**B**
VE3 AIU	**AB**	**269,533**	**456**	**83**	**146**	**D**
VE3 BJO	AB	41,300	161	44	74	C
VE3DYB	**21**	**12,224**	**74**	**23**	**41**	**B**
VE3ARS	**14**	**31,125**	**153**	**24**	**51**	**C**
VE3BDB	14	5,742	52	19	30	C
VE3RE	14	5,353	43	21	32	C
VE5VZ	**21**	**7,150**	**58**	**21**	**29**	**—**
VE6NX	**AB**	**9,920**	**64**	**24**	**40**	**C**
VE7ZM	**AB**	**138,666**	**283**	**72**	**119**	**B**
VE7 AIH	AB	88,950	228	54	96	B
VE7MS	**28**	**29,029**	**138**	**26**	**51**	**B**
VO2NA	**AB**	**4,292**	**93**	**14**	**23**	**C**
W2ZRX /VO1	**28**	**3,768**	**88**	**6**	**6**	**B**
W4FOW /VO1	**21**	**67,412**	**295**	**28**	**59**	**C**

Costa Rica

TI2OE	**14**	**82,503**	**364**	**27**	**76**	**B**

Cuba

CO2BL	**AB**	**401,800**	**587**	**95**	**192**	**C**
CO8JK	AB	16,766	80	33	50	C
CO2KC	**28**	**30,876**	**195**	**20**	**42**	**B**
CO2HB	**21**	**17,010**	**108**	**24**	**46**	**B**
CO2OZ	**14**	**42,224**	**260**	**23**	**65**	**B**
CO5CN	14	1,404	27	9	18	—

Dominican Republic

HI8BE	**AB**	**11,115**	**103**	**15**	**30**	**C**

Guatemala

TG9AD	**AB**	**120,408**	**315**	**61**	**113**	**C**

St. Pierre Is.

FP8AP	14	747	73	5	4	—

AFRICA

Angola

CR6CS	**AB**	**10,553**	**76**	**23**	**38**	**B**

Belgian Congo

OQ5HP	**AB**	**140,930**	**312**	**59**	**111**	**B**
OQ5BK	**28**	**59,760**	**282**	**25**	**47**	**B**

Canary Is.

EA8BF	**AB**	**97,284**	**266**	**45**	**87**	**A**
EA8CF	**28**	**53,935**	**276**	**20**	**47**	**A**

Cape Verde Is.

CR4AD	**AB**	**9,592**	**74**	**14**	**30**	**—**
CR4AU	AB	1,104	18	11	13	—
CR4AS	28	918	18	5	12	A

Ghana

ZD4CH	**AB**	**57,200**	**210**	**30**	**70**	**—**

Libya

5AITB	**14**	**44,555**	**223**	**20**	**47**	**—**
5A3TF	**28**	**6,854**	**105**	**8**	**15**	**B**

Madeira Is.

CT3AN	**AB**	**43,977**	**143**	**37**	**70**	**B**

Morocco

CN8JX	**AB**	**195,624**	**432**	**54**	**102**	**—**

Mozambique

CR7LU	**AB**	**17,918**	**107**	**21**	**41**	**B**

Rhodesia, No.

VQ2AS	**AB**	**137,375**	**256**	**62**	**113**	**B**

Rhodesia, So.

ZE6JJ	**AB**	**28,674**	**174**	**20**	**39**	**—**
ZE1JE	**28**	**22,223**	**111**	**25**	**46**	**—**

Sao Thomé Is.

CR5SP	**AB**	**57,125**	**181**	**44**	**81**	**D**

Tanganyika

VQ3ES	**28**	**22,848**	**136**	**22**	**46**	**—**

Union of South Africa

ZS5JM	**AB**	**156,550**	**286**	**71**	**131**	**B**
ZS5JY	AB	154,284	383	55	83	—
ZS6UR	**21**	**65,232**	**250**	**33**	**64**	**B**

ASIA

Ceylon

4S7YL	**AB**	**44,652**	**142**	**53**	**69**	**B**

Cyprus

ZC4PW	**AB**	**62,715**	**194**	**32**	**79**	**B**
ZC4IP	**28**	**78,030**	**309**	**25**	**60**	**B**

India

VU2RC	**AB**	**7,182**	**55**	**26**	**28**	**B**

Israel

4X4GB	**AB**	**372,736**	**610**	**66**	**142**	**C**
4X4BO	AB	345,032	497	73	163	C
4X4FV	**28**	**33,800**	**175**	**18**	**47**	**B**

Japan

JA1QI	**AB**	**47,736**	**158**	**49**	**59**	**C**
JA1BFJ	AB	31,600	116	44	56	A
JA9BE	AB	18,231	106	29	30	B
JA5AF	AB	13,764	71	32	42	B
JA1KF	AB	750	18	7	8	C
JA1EC	**28**	**12,558**	**110**	**19**	**20**	**B**
JA1ANG	28	5,684	69	14	14	B
JA1BAE	28	4,437	52	12	17	—
JA1AS	**21**	**1,224**	**21**	**11**	**13**	**A**
JA2BL	21	286	12	6	7	A
JA3MD	**14**	**33,768**	**170**	**28**	**44**	**B**
JA8AA	14	14,357	107	21	28	C
JA1ACB	14	10,070	65	20	33	C
JA1EF	**7**	**1,666**	**36**	**8**	**9**	**C**
KA2LL	**AB**	**49,712**	**173**	**48**	**56**	**B**
KA2CU	**28**	**7,905**	**90**	**14**	**17**	**B**

Lebanon

OD5BZ	14	82,880	398	23	47	B

Ryukyu Is.

KR6JL	AB	31,878	168	38	39	—
KR6HN	AB	10,560	84	20	28	A
KR6RB	21	70,636	268	30	62	B

Tiawan

BV1US	21	71,533	315	27	50	C

Thailand

HS1B	AB	11,390	76	30	37	B

EUROPE

Austria

OE5CK	AB	224,908	399	77	159	B
OE2YL	AB	194,238	411	65	133	B

Belgium

ON4DM	AB	92,305	262	55	84	B
ON4DG	AB	67,410	234	46	80	B
ON4DH	AB	67,045	219	43	72	B
ON4VV	28	61,236	392	20	34	B

Channel Is.

GC6FQ	21	62,218	208	31	83	B

Czechoslovakia

OK3DG	28	7,800	96	13	26	B
OK1KGR	28	1,254	25	10	12	B
OK1MB	21	48,412	216	32	66	—
OK3KGI	21	16,992	184	16	43	B
OK2KTB	21	3,220	30	5	14	B
OK1MP	14	2,784	95	4	25	B

Denmark

OZ3Y	AB	84,992	265	45	83	B
OZ3WK	AB	39,248	135	15	11	—
OZ4FA	AB	6,174	56	19	23	—
OZ4PM	AB	192	12	5	11	A
OZ7BG	28	35,260	164	25	57	B
OZ1I	28	10,258	83	19	27	A
OZ7G	28	1,462	20	14	20	B
OZ7FG	21	648	16	7	11	B
OZ5KQ	14	18,157	152	18	49	C
OZ1PO	14	12,712	137	15	41	B

England

G2DYV	AB	110,397	297	49	98	B
G2AJB	AB	31,360	141	33	65	B
G2ACC	AB	26,574	130	31	55	B
G4JB	AB	18,952	102	33	59	B
G2HPF	AB	7,829	74	30	41	B
G2TA	AB	6,120	59	24	36	—
G3KHB	AB	4,600	56	18	32	B
G3IFB	AB	3,690	44	17	28	B
G3GNM	AB	529	15	10	13	—
G3DO	28	121,862	406	30	79	B
G3JHI	28	30,118	156	26	48	B
G3CS	28	612	7	6	6	—
G3WP	28	135	5	4	5	A
G2FRL	21	31,458	227	20	29	B
G3JUL	7	336	20	3	13	B

Finland

OH5PE	AB	254,567	578	64	129	B
OH2XK	AB	30,797	200	28	75	A
OH3NY	AB	1,204	25	10	18	—
OH3TH	AB	270	27	7	17	A
OH5NW	28	236,550	792	31	83	—
OH4NT	28	646	16	7	10	B
OH5QN	21	59,230	299	31	59	B
OH3PB	21	22,680	155	23	40	B
OH5QY	21	8,300	94	16	34	B
OH2TZ	21	5,715	71	12	33	B
OH2IK	21	760	35	5	14	B
OH5QX	14	104	13	2	6	B
OH5PN	7	195	16	3	10	B

France

F8PI	AB	324,870	556	69	152	B
F9RM	AB	176,490	378	69	153	B
F8XP	AB	31,312	138	33	70	—
F9GL	AB	12,462	82	23	67	—
F3JI	AB	988	24	10	16	—
F8PI	AB	324,870	556	69	152	B
F8HR	28	4,715	52	17	24	—
F9NT	14	1,035	35	6	9	—

Germany

DJ1BZ	AB	369,900	628	72	153	C
DL7BA	AB	172,530	304	73	140	B
DL6VM	AB	141,375	326	62	133	B
DL1FK	AB	99,224	250	56	101	B
DL3LU	AB	96,806	226	65	129	C
DL3YO	AB	68,552	193	55	97	B
DL7AD	AB	52,140	158	48	84	C
DJ2YA	AB	40,120	195	41	95	B
DL1MF	AB	33,449	149	33	50	B
DJ3CN	AB	29,760	157	34	59	B
DJ1MI	AB	9,856	74	28	49	B
DL7AU	AB	700	18	10	15	B
DL1YA	AB	588	12	10	11	—
DJ1LP	28	49,844	259	21	47	A
DL7AA	28	35,490	180	24	46	C
DL7CE	28	23,322	115	25	53	B
DJ3LC	28	21,960	87	19	26	B
DL7EX	28	11,904	71	23	41	A
DL7HU	28	5,088	57	15	28	B
DL6PC	28	3,960	37	19	25	—
DJ1TS	28	1,180	27	9	11	—
DL3AO	21	34,030	160	29	54	B
DL3TJ	21	7,592	59	20	32	B
DJ2OQ	21	1,680	41	10	20	—
DJ2AE	14	920	28	7	16	—
DJ2LB	14	624	31	5	11	B
DL4YE	AB	66,980	364	23	45	B
DL4AL	AB	19,389	140	20	49	C
DL4AAP	28	248,745	745	31	84	—
DL4VB	28	32,949	149	22	41	B
DL4ER	28	1,120	22	9	11	B

Hungary

HA5AM	21	228	17	3	9	—

Iceland

TF2						
WCC	AB	52,332	338	29	60	B

Italy

I1BWN	AB	305,172	653	62	111	B
I1CHJ	AB	274,560	512	71	137	B
I1AIM	AB	232,960	398	63	161	—
I1AMU	AB	220,032	402	65	159	—
I1ZCT	AB	182,905	431	65	168	C
I1BAF	AB	24,845	114	36	69	B
I1AHW	28	38,400	192	27	48	B
I1KDB	28	38,064	209	23	55	—
I1RC	28	30,745	150	20	45	—
I1ZFF	21	71,703	291	29	64	—
I1ZFT	21	31,520	169	28	52	—
I1CAQ	21	14,364	106	21	42	B
I1SGZ	14	1,176	47	5	16	—

Liechtenstein

HB1RS						
/FL	AB	22,176	156	24	53	—

Netherlands

PA0						
EEM	AB	49,178	183	40	94	B
PA0						
HBO	AB	25,623	175	33	84	B
PA0VB	AB	22,848	114	36	60	B
PA0UC	AB	15,960	105	28	56	—
PA0						
BW	AB	11,250	57	33	42	B
PA0TV	AB	1,200	26	10	14	A
PA0						
SNG	AB	899	15	14	15	—
PA0OTC	28	23,814	157	21	33	A
PA0XX	28	22,704	161	21	27	B
PA0ZJ	28	3,605	43	15	20	B
PA0NV	21	6,674	64	18	29	B
PA0LV	7	266	19	2	12	—

No. Ireland

GI3IVJ	28	27,336	183	19	48	B
GI3JIM	14	2,139	40	11	20	B

Norway

LA1ZE	28	25,480	229	15	25	—

Poland

SP3PL	28	9,435	100	14	23	B
SP3PH	21	1,364	38	7	15	B
SP1BC	21	288	10	6	6	B
SP7HX	14	7,802	106	13	34	B
SP1JN	14	7,440	170	9	31	—
SP5HH	14	7,009	106	15	28	C
SP3HC	7	931	49	4	15	B

Portugal

CT1PK	AB	86,005	248	57	110	C
CT1DU	AB	22,968	98	32	67	—

Roumania

YO3VI	AB	53,625	289	35	90	B

Scotland

GM8SQ	AB	36,900	228	27	48	B
GM3BCL	28	35,074	204	22	48	B

Sicily

IT1ZDA	14	22,631	183	15	46	—

Spain

EA7CP	AB	73,187	226	53	110	—
EA3KT	AB	32,125	144	41	84	—
EA3LA	AB	17,776	126	26	62	—
EA5EQ	AB	11,627	109	19	58	A
EA5DY	AB	4,230	57	15	30	—
EA1GG	AB	2,814	30	16	26	—
EA1AB	28	2,398	39	11	11	—
EA2CR	28	816	18	9	15	—
EA3IX	21	20,925	144	23	52	—
EA2CB	14	71,912	285	26	75	B
EA7EV	14	51,136	240	24	70	—
EA3HS	14	20,988	176	15	51	—

Sweden

SM3BIZ	AB	116,128	357	58	133	B
SM5LL	AB	67,200	217	54	96	—
SM3						
BFR	AB	20,659	132	26	43	B
SM5WJ	AB	2,812	35	16	21	—
SM5						
AGU	AB	210	7	7	7	—
SM2AKA	28	38,033	250	25	48	—
SM5TR	28	18,963	129	21	49	B
SM7TQ	28	4,082	55	11	15	—
SM3AST	28	598	18	7	16	A
SM3EP	21	24,150	170	25	44	B
SM5BZ	21	720	20	7	13	—
SM6SA	14	51,051	293	25	52	C
SM7BAH	14	3,680	85	8	24	B
SM7CAB	14	1,620	40	8	22	B
SM4BPJ	14	144	12	3	9	B

Switzerland

HB9MO	AB	26,355	134	40	75	C
HE9						
ERY	AB	480	12	12	12	A
HB9J	28	59,367	259	28	49	B

Wales

GW3						
AHN	AB	104,000	301	45	85	A
GW3LLU	14	25,978	186	23	39	—
GW3						
FPH	28	10,480	105	16	34	B

White Russia—U.S.S.R.

UC2						
KAB	AB	84,010	279	50	105	—

SOUTH AMERICA

Argentina

LU8						
BAJ	AB	39,900	148	40	65	D
LU0						
DAB	28	41,339	211	21	46	A
LU9DM	28	15,834	93	22	36	—
LU2FR	28	9,696	77	15	33	A
LU8CW	21	22,274	112	25	49	B

Brazil

PY2KD	AB	152,972	323	51	116	C
PY5QZ	AB	40,222	155	26	65	—
PY1						
BIG	AB	833	17	6	11	—
PY4AS	28	27,840	150	19	45	B
PY5GA	21	9,658	58	21	41	B
PY1AKT	21	7,191	53	19	52	B

Chile

CE3HL	AB	107,865	275	51	90	C
CE3DY	21	177,012	464	33	99	B

Colombia

HK4DF	AB	15,252	125	33	54	B

Netherlands, W.I.

PJ2AV	21	50,625	234	25	50	B

Peru

OA1K	AB	81,216	266	40	69	—
OA4FA	AB	4,810	49	16	21	B
OA4V	21	9,072	69	19	29	B

Uruguay

CX3BH	AB	226,504	439	65	119	B
CX6BM	28	30,222	149	21	48	—
CX9AJ	28	27,028	154	19	39	B
CX2CO	21	153,504	509	30	74	D
CX2CN	21	10,335	75	21	32	—
CX3AA	21	9,540	59	22	38	—

Venezuela

YV5						
ABD	AB	121,581	255	58	113	B
YV5DE	AB	2,730	31	15	15	B
YV5						
ABB	AB	336	8	7	7	—

OCEANIA

Australia

VK3HL	AB	14,742	86	28	35	B
VK4HD	28	17,078	114	22	31	—
VK4WF	21	17,485	103	25	40	B
VK5WO	AB	12,760	78	26	29	B
VK5AB	21	30,400	145	27	49	—
VK5XN	14	21,576	126	25	33	B
VK6RU	AB	197,098	374	71	116	B
VK7SM	14	2,508	40	10	12	B

Fiji Islands

VR2BC	AB	68,750	228	41	69	B

Hawaiian Is.

KH6IJ	AB	409,962	1094	54	75	D
KH6MG	28	7,128	113	11	11	C
KH6PM	21	36,270	193	25	40	C

New Zealand

ZL1MQ	AB	49,946	163	53	60	B
ZL1KW	28	52,316	305	20	38	B
ZL4BO	21	54,990	214	30	64	—
ZL1ACI	14	53,756	232	31	58	—

Philippines

DU7SV	AB	38,770	175	38	44	C

Multi-Operator

NORTH AMERICA

W1AF	28	31,620	166	21	47	C
(W1TCD—K9ABP—KØBIB)						
K2GL	AB	866,250	906	120	230	D
(K2GL—W2BAK—W2GLM—W2SKE—W7KVU)						
K2SGO	21	7,399	59	18	31	B
(K2SGO—K2RLI)						
W3AOH	AB	263,328	457	78	130	D
(W3AOH—W3LMM—W3MVQ W3QJJ—W3VKD)						
W3WQN	AB	153,970	330	65	108	D
(W3WQN—W3EAR)						
W6AM	AB	172,032	313	96	128	D
(W6AM—K6EWL—W6KFV—W6YMD)						
K6IYJ	AB	13,312	27	16	16	C
(K6IYJ—K6OIZ)						
K6EVR	21	37,932	175	29	58	D
(K6EVR—W6UED)						
K6ICS/6	21	2,016	42	12	16	B
(K6ICS—K6HXX)						
W6WZD	14	34,658	146	31	55	C
(W6WZD—W6VUW)						
W6GRV	14	15,550	67	18	26	C
(W6GRV—W6BWM)						
W8NWO	AB	171,795	334	69	127	D
(8NWO—W8HMI)						
W8NGO	AB	170,208	322	68	129	D
(W8NGO—W8CLR)						
W8ATK	28	9,212	69	17	32	—
(W8ATK—K8BPX)						
W8IBX	28	6,045	55	13	26	—
(W8IBX—K8ANX)						
W9AVJ	AB	237,840	383	89	151	D
(W9GVZ—W9NZM—W9PKW)						
W9IRH	AB	40,482	142	46	71	B
(W9IRH—W9FVT)						
WØYKE	AB	11,072	72	27	37	B
(WØLQC—WØQWS—KØIFC)						
VE3MB	AB	208,492	416	62	126	C
(VE3MD—VE3DMT)						
VE8MA	AB	34,920	217	35	55	B
(VE8OW—VE8WN & Bob & Rod)						

AFRICA

5A5TH	AB	544,635	763	79	168	B
(5A5TH—5A5TE—5A1TN)						
CN8IG	AB	169,740	468	42	81	B
(CN8IG—CN8IH—CN8HR—CN8JW)						
ZD2						
FNX	AB	47,214	202	24	62	—
(ZD2FNX—G3HRH)						
ZS5OA	AB	46,656	159	46	62	B
(ZS5OA—ZS5OB)						

ASIA

KA2MA	AB	359,040	711	66	104	D
(KA2MA—KA2GW—K4HFG—W6FJF) (Joe—Willy—Holt)						
KA2KS	AB	115,800	327	54	66	B
(K2OWZ—K5CPE—K5LAU—K7AKK) (W7VNX—K8HQK—WØUXZ)						
KA8RA	AB	39,798	142	45	54	C
(W1IHZ—K2BVF—W6UMB—W9QMU) (W9YFB—WØKGH)						

EUROPE

DL9GU	AB	145,563	431	44	77	B
(DL9GU—DJ3YV)						
DJ1HKA	AB	49,532	236	37	85	—
(DJ1HKA—DL7GQ—OH3SG)						
DL4DIB	14	49,634	257	24	59	C
(DL4MP—DL4RZ)						
DL4MSA	14	12,798	196	15	39	C
(8 oprs.—CLUB STATION)						
DL4TZ	21	12,552	116	21	35	C
(DL4NK—DL4TZ)						
G2AHC	AB	62,676	234	45	103	B
(G2AHC—G3AFM)						
GB3HAR	B	1,377	51	6	21	—
(G2TA—GB3HAR—G3EFX)						
GB2SM	28	59,414	338	21	40	B
(G3JUL—G3KAB—G5CS)						
GI2HML	AB	104,204	374	39	70	B
(GI2HML—GI3G8B—GI3KYP)						
OK1KTI	14	29,323	258	22	48	B
(OK1GT—Vladimir—Jiri)						
ON4SZ	AB	582,798	797	82	192	B
(ON4SZ—ON4TX)						
PI1RRS	AB	97,488	374	42	102	B
(3 oprs.—CLUB STATION)						
PI1MID	21	840	24	8	12	A
(4 oprs.—CLUB STATION)						
SM6QH	AB	204,864	512	58	118	C
(SM6QH—SM6NN—SM6ANC) (SM6APH—SM6BTT)						
SM6XA	AB	5,824	71	18	38	B
(SM6XQ—SM6AMR—SM6BVE) (SM6BGJ—SM6BXJ—SM6BDS)						
SM5XP	28	34,110	276	16	29	—
(SM5XP—SM5AE)						
SP5KAB	14	22,260	252	21	49	C
(SP5BT—SP5GM)						
SP5KMF	14	2,160	55	6	24	A
(CLUB STATION)						
UA1KBB	AB	47,328	383	26	70	B
(CLUB STATION)						

SOUTH AMERICA

CX1AK	28	64,467	255	25	62	B
(CX1AK's 1st & 2nd OP.)						

CO2HB — Ernesto and the rig that won him a certificate on 21 mc.

OQ5HP — Paul was Top All Band scorer from the Congo.

TF2WCC — Bob made a few of the boys, 338 to be exact, happy. He was the only active station from Iceland. He is W1ZMO stateside.

VQ2AS — John can always be depended upon to give the boys a contact from Northern Rhodesia.

CX2AN	28	10,032	71	18	30	—
(Juan & Fernando)						
HK1DZ	**AB**	**52,826**	**306**	**19**	**42**	**—**
(Galo & assistant)						
PY2ACA	**AB**	**32,200**	**201**	**51**	**95**	**—**
(PY2ACA—PY2AHS)						

We thank the following stations for sending in their check logs.

DL4UO	W1SRE	SM3AXM
EA9BH	W3MDO	SM5AJR
F9MR	W3VTH	SM6BDS
G3AS	W3MDI/W4	VQ2BH
G3FLR	W6NAZ	YO3RF
GW5TU	W8FTQ	ZE7JK
HE9ERU	W8KYY	ZL1CH
LU1LD	W8QQH	ZS1JU
LX1HM	W9RNT	ZS1RV
JA7BO	KL7FAY	4X4JA
OA4CX	Ve2ABS	Tilo Eldner
OH3RA	Ve7SB	(D6-SWL)
OK1CX	CE4EI	(DL-SWL)
OZ4IP	CX6BM	

SINGLE OPERATOR

F8CH	**AB**	**436,974**	**818**	**63**	**138**	**C**
ZS3BC	**AB**	**77,390**	**216**	**46**	**96**	**B**
F8LE	AB	25,110	107	33	57	—
ZP5CG	**AB**	**20,500**	**94**	**29**	**53**	**—**
ZP5JP	AB	13,082	79	21	41	—
EA5FH	AB	12,803	102	22	37	—
CN8CW	AB	10,175	65	19	36	—
ZP5KQ	AB	9,204	80	10	29	—
KA2WJ	AB	8,100	90	11	10	—
G2TA	AB	6,120	59	24	36	—
LA5HE	AB	3,621	59	15	36	—
DL7DF	AB	2,240	30	13	22	B
W7VY	**28**	**29,614**	**158**	**26**	**41**	**D**
W1IUU	28	17,400	133	16	34	C
DM3KJD	28	5,900	65	18	32	A
F8RB	28	3,920	40	14	21	—
W3LEZ	28	3,808	47	8	20	B
EA3LZ	**28**	**3,556**	**47**	**15**	**13**	**—**
HP2ON	**28**	**3,388**	**114**	**8**	**14**	**—**
G3IEF	28	2,460	34	12	18	—
DL4NW	28	2,280	37	14	15	C
F7CG	28	1,806	101	4	2	—
KB6BH	**21**	**2,666**	**40**	**13**	**18**	**—**
W7ZOH	21	1,075	27	13	12	—
DL4EH	14	5,640	83	15	32	—
YO8KAN	14	912	42	5	14	—
DM3KFD	14	88	9	2	6	—

MULTI-OPERATOR

KL7AZN	**AB**	**26,248**	**144**	**32**	**36**	**C**
(K6JQR—W7QKH)						
G3IZW	AB	42,636	124	48	84	—
(G3IZW—G3KLK—G3JXC)						
YO2KAB	**28**	**20,301**	**161**	**19**	**48**	**—**
(CLUB STATION)						

A few additional scores that were not ready when we made up the original report. These are just as important as the main report.

KR6AF AB 74,576 233 52 66 B

last year score (only 117 points difference) but Oscar, CE3DY came up with the big multiplier and beat him out for top honors on that band. His 99 countries was the highest for a single band. The popular band up Alaska way was also 21 mc. The high score for KL7 was turned in by an ex-YL, KL7BHE, whose operating aid was, "the OM who kept house and kids in some semblance of order." Hi! The OM, KL7PIV, we know will get in his licks during the CW section. Other active YLs, and winners, were KL7AZI, ZE1JE and 4S7YL.

Returns on 14 mc were not up to par, and some of this I am sure, was due to the reluctance on the part of some of the Side Banders to join the contest activity. We received several complaints from fellows who gave up on SSB and went over to AM, after spending considerable time trying to stir up some contest activity. A few exceptions were ON4DM and VE3RE who used SSB extensively. It was a close one between OD5BZ and TI2OE for Top Honors but here again it was a case of too many 3 pointers in spite of a much bigger multiplier.

The activity on 40 was confined mostly to Europe, except for JA1EF who again came up with the highest score altho not as good as last year.

Both 80 and 160 were a total loss except for the All Banders who grabbed a few extra multipliers and then scurried back to more fertile bands. The one surprise exception being W1ZBT, who stuck it out for an award on 80. Maybe we should do something to create more interest on these bands. Ideas, anyone?

The few that stuck it out on 27 mc, reported that the band was in good shape, but here again it was a case of catching the multiplier seekers before they shifted back to other bands. W8AJW again made it pay off for a certificate.

The Committee always gets a kick out of the real close ones, even tho it does mean

I1BWN — High All Band scorer for Italy. Alfredo's two worldly prizes, his rig and his baby Marco.

OZ3Y — When he is not QRL as a locomotive engineer, Hans finds time to win All Band honors from Denmark.

more work. For the third straight year the multi-group of W8NWO and W8HMI has nosed out the combo at W8NGO and W8CRL. This year by the narrowest of margins.

There were several close ones in the Single Operator division. One pair being ZS5JM and ZS5JY. Here was a case of the big multiplier beating out the higher number of QSOs. In the battle between I1AHW and I1KDB on 28 mc it was just a case of ending up with the mostest.

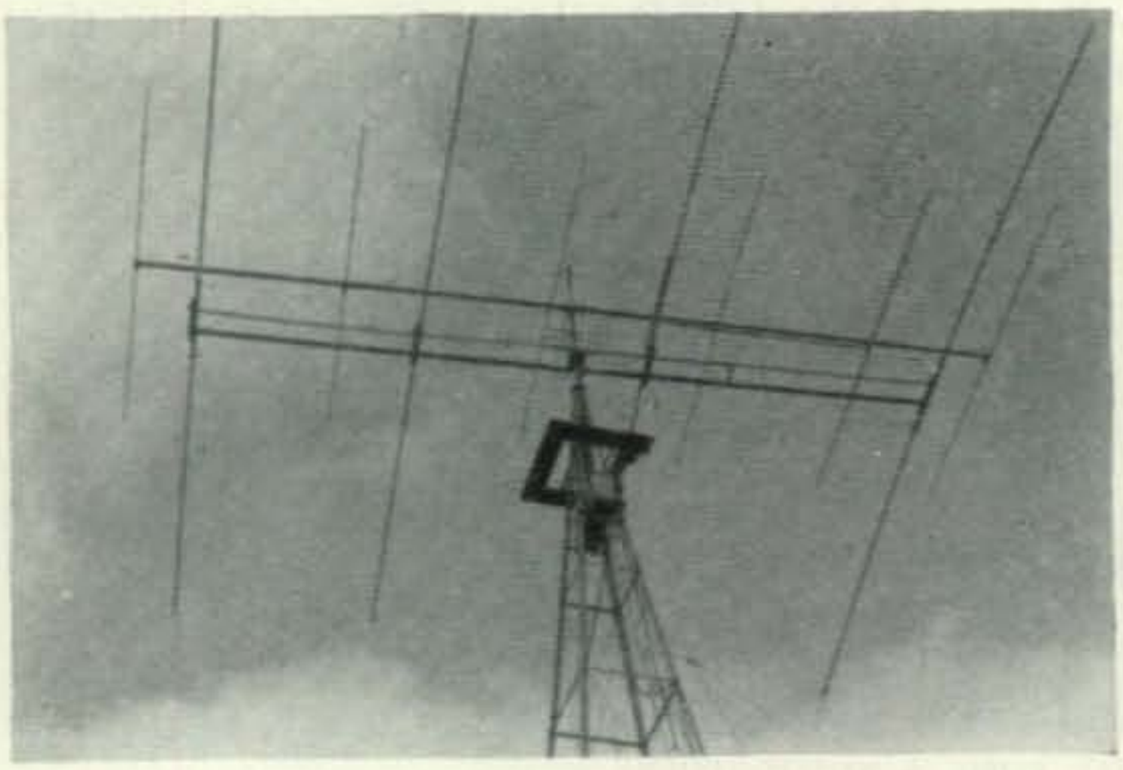
The number of logs received as compared to the estimated number of stations known to have been on the air, was very low, about 10 percent I would say. We are especially concerned that no reports were received from VQ4RF and VP5BL, both of whom we know were very active. Not to mention several well known Ws.

We received a total of 521 logs from 79 countries. This total was slightly higher than last year's returns but not so the countries. We received logs from 85 countries in 1956.

That's it for this year's phone results fellows. If you have any gripes about your scores, don't take it out on W2BO, W2JB, W1DHO, W1GYE or W1MDO who worked on, or rather worked over your logs. Just blame it on me, I have all the answers.

Next month a full report on the CW Section.

73, Frank, W1WY



W3NMP — Only the top 6 elements were used to snag high W3 score on 10. The 4 lower ones are for 20. What a waste.

by **FRANK ANZALONE, W1WY**
14 Sherwood Road, Stamford, Conn.

CONTEST CALENDAR

April 26-27	**PACC CW**
May 3- 4	**PACC Phone**
May 10-11	**USSR CW**
May 17-18	**Helvetia 22**

PACC

Still time to get into this one. Activity on both week ends starts at 1200 GMT Saturday and ends at 2400 GMT Sunday. Last month's column carried all the necessary information. Mail your logs not later than June 15th to:

P. v. d. Berg, Contest Manager
Keizerstraar 54,
Gouda, Netherlands

USSR

No details on this one but we understand it a world wide affair. This would indicate that you can work all DX stations and not confine yourself to just the USSR. Better be on during the above week-end, those hard to get Asians are bound to be on. You have no alternative but to send your logs to:

The Central Radio Club
Box 88
Moscow, USSR

HELVETIA 22

This is the last one of the current season and offers an excellent opportunity to fatten up your Canton total.

TIME: 1500 GMT May 17th to 1700 GMT May 18th 1958.

OBJECT: Stations outside of Switzerland will try to work as many amateur stations in each of the 22 Swiss Cantons as possible. All bands between 3.5 and 29.7 mcs may be used for CW and/or Phone contacts. The serial numbers exchange will be the usual five digit (phone) or six digit (CW) representing the RS or RST plus a progressive 001, 002 and etc.

SCORING: Three points for each completed contact. The total number of QSO points are multiplied by the total of all the Cantons work on CW, Phone or both on all bands. The maximum multiplier therefore is 44. (22 on CW and 22 on Phone.)

AWARDS: A certificate will be awarded to the two highest scoring entries from each country. (Ed. Note—Would suggest an award per each district in cases of large areas such as the U.S., Canada and Australia.)

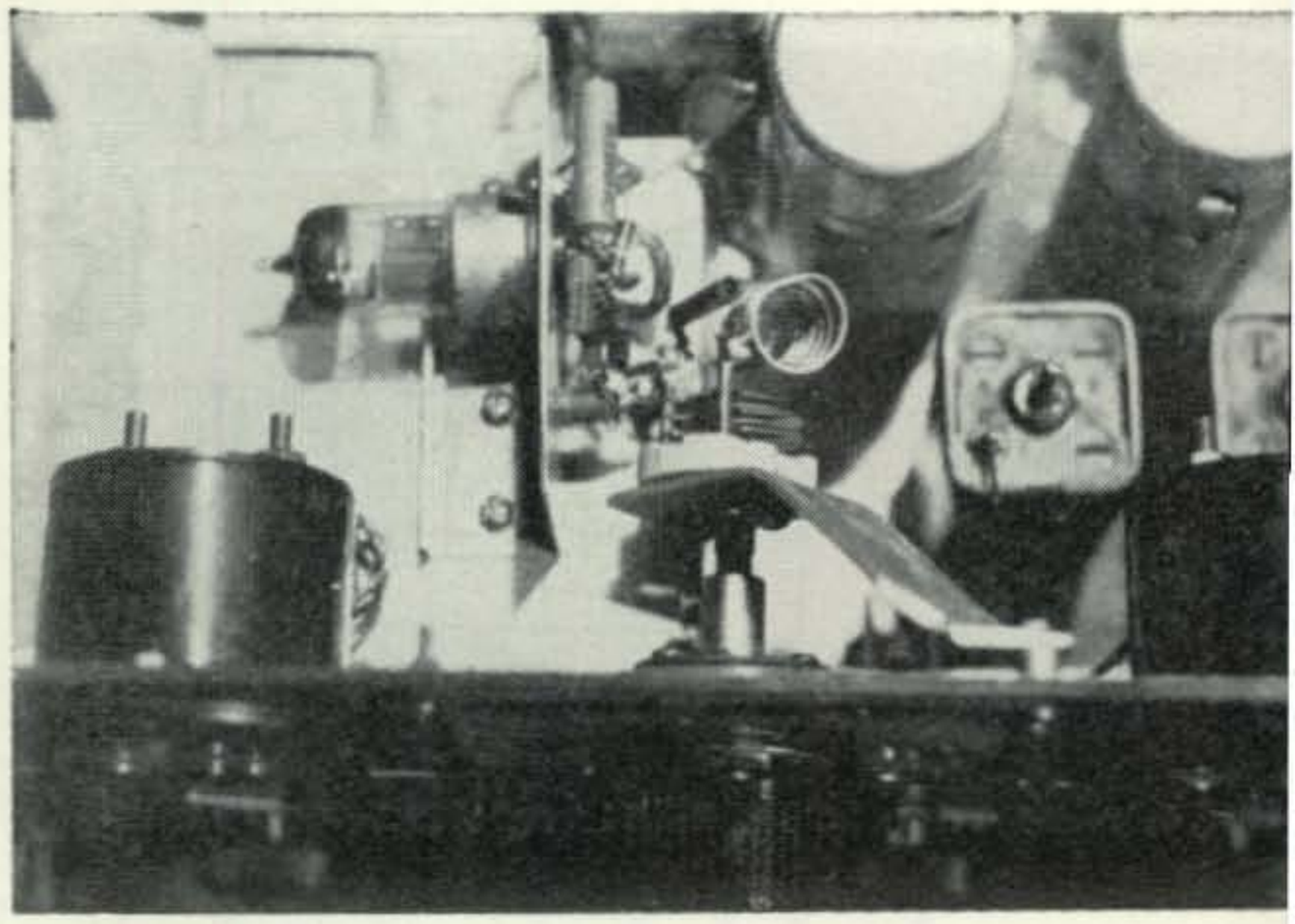
Entries will only be accepted if submitted on separate sheets for each band, using only one side of the paper. Sign the following declaration: "I certify that my station was operated strictly in accordance with the rules and spirit of the contest and I agree that decisions of the council of the USKA will be final.

Names and abbreviations of cantons:

Zurich	ZH	Schaffhouse	SH
Berne	BE	Appencell	AR
Lucerne	LU	St. Gall	SG
Uri	UR	Argovie	AG
Schwyz	SZ	Thurgovie	TG
Unterwald	NW	Tessin	TI
Glaris	GL	Vaud	VD
Zoug	ZG	Valais	VS
Fribourg	FR	Neuchatel	NE
Soleure	SO	Geneva	GE
Basle	BS	Grisson	GR

Logs must be mailed not later than June 7th 1958 to:

Utzinger Diethelm, HB9QU
Contest Manager
Bionstrasse 15,
Zurich 6, Switzerland
73, Frank, W1WY



by **KENNETH B. GRAYSON, W2HDM**
110-20 71st Ave., Forest Hills 75, N. Y.

SURPLUS

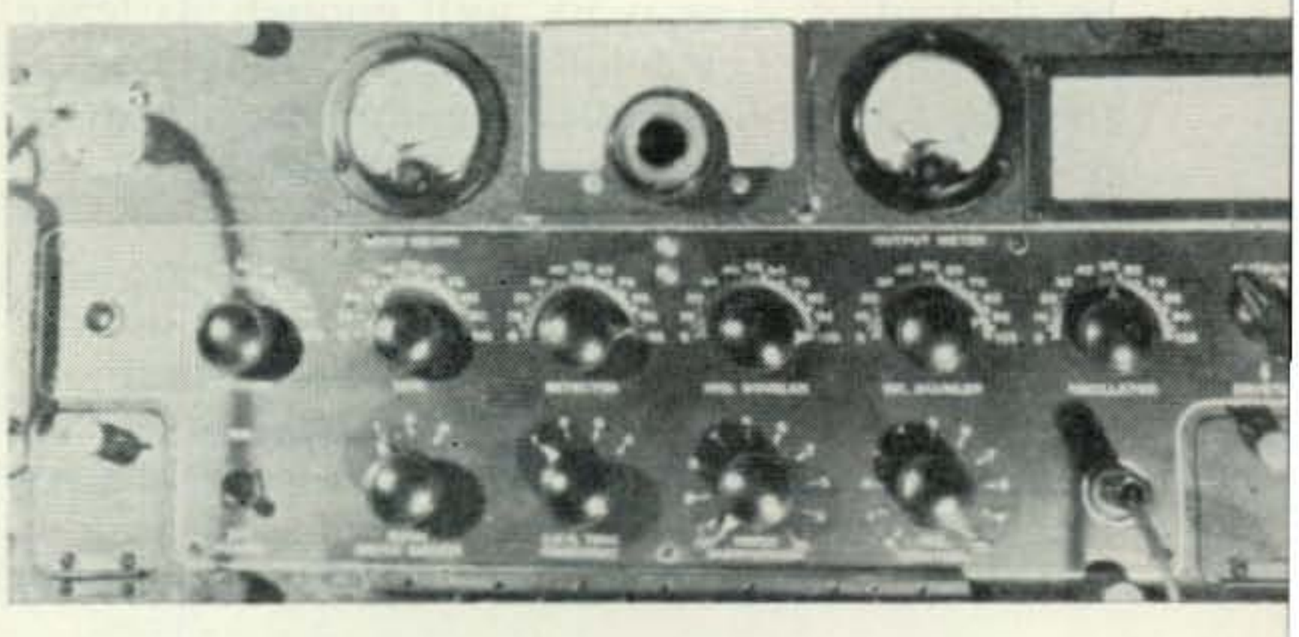
Some of the six-meter boys are going to be real happy with the news that the TBS equipment is available. Currently on sale in New York for about $18.00 for the receiver and between $25 and $30 for the receiver plus a separate transmitter should make this the buy of the year—or so we think.

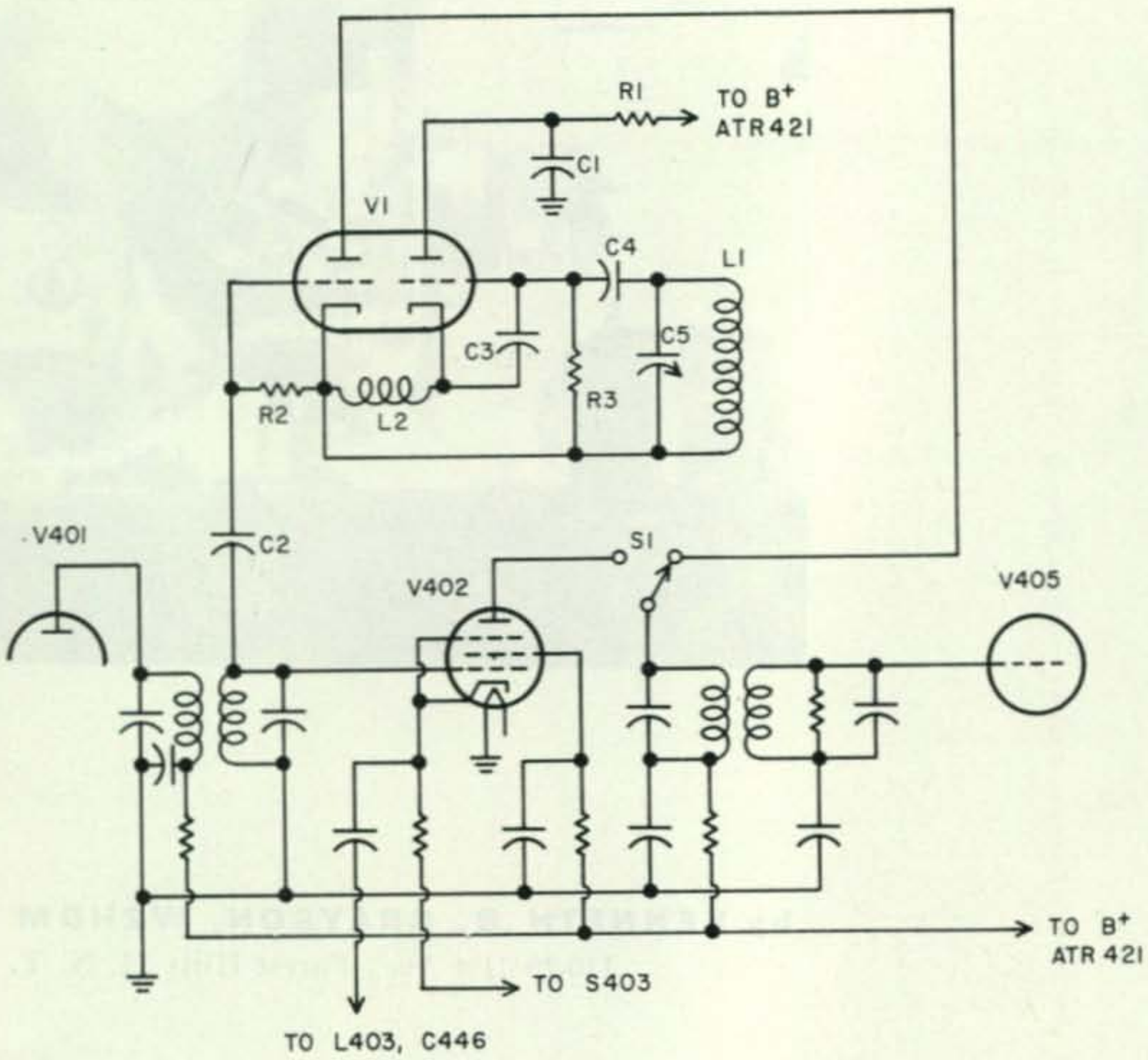
The transmitter offers a lot for the money but has the drawback of requiring a husky power supply—considering the power output. The transmitter falls into the pre-war category of high power low level stages common before the advent of TV thereby guaranteeing your neighbors of very fine TVI. These are our only objections to the trasmitter.

Anyway, we bought the receiver, and it is well worth the money spent. Aside from the husky 110 volt 60 cycle power supply there is room for much conversion . . . such as the addition of low noise stages of pre amplification, a built in transmitter using the audio as a modulator, etc.

Originally operated within the 60 to 80 megacycle band aboard ship, the TBS was later affectionately known as the "Talk-between-ships", since that was its primary function. The power of the transmitter, plus the operation close to some fine scatter frequencies (although this was unheard of in those days) gave some remarkable ranges when conditions were right. Most users of the TBS can cite occasions when signals from ships in the Atlantic were clearly heard in the Pacific. Right now DX on six isn't uncommon.

Crystal controlled on one channel, provision was made for all rf and oscillator tuning to be done from the front panel. A hinged front panel cover is used to prevent accidental misadjustment. The front end is a 957 acorn tube and by adding only a 20mmfd condenser across each front panel variable condenser we found the circuits would nicely cover the six meter band. The intermediate frequency is 5.3mc and since the oscillator uses the fourth harmonic of the crystal (also plugged in from a front panel access door) you will need a crystal somewhere between 11.175 and 12.175mc depending upon the frequency you wish to receive. So far we have merely converted the TBS to a crystal controlled six meter receiver.





Parts List

V1—12AT7
R1—47 k 1w
R2—1 meg ½w
R3—100 k ½w
C1—0.001 mf
C2—100 mmf
C3—5 mmf
C4—15 mmf
L2—rf choke *Ohmite Z50* or equiv.
C5, L1—to tune from 44.5 to 49 mc
S1—DPDT—the other half of this switch (not shown) is used to open B+ line to V-404 when variable oscillator is in use.
C404a, C405a, C406a — 20 mmf capacitors to bring frequency of xtal osc. into range for 6-meter band, in parallel with C404, C405, and C406 respectively.

Fig. 1

Now our problem is to make it tunable. By using a 12AT7 as an oscillator-mixer we greatly improved the sensitivity while also making the receiver tunable. The front end was left alone so once tuned we essentially had a broadband front end. We relocated the tuning chart and added the National MCN dial in its place between the two meters. We then added the mixer-oscillator sub chassis, connecting the output to the i-f as shown in Fig. 1. The original crystal oscillator circuits were left intact, though disconnected from B plus and the mixer so as not to interfere with the conversion yet available should fixed frequency operation be desired. Current plans are to use a relay or switch to perform the necessary changeover but it hasn't been done yet. The complete TBS receiver circuit is shown in Fig. 2. The metering system is used to tune up the crystal oscillator and also to act as an "S" meter. The output meter is a true decibel meter for use on a 500 ohm audio line and will eventually find other uses around the shack . . . like in a phone patch or tape-recorder.

While the noise limiter leaves something to be desired, it does work well enough to leave in, so we did. The majority of the tubes are of the old types but they do function well, so we left them alone. The circuit will show that the IF coils are loaded down with a resistor to improve the bandwidth. Removing this resistor to sharpen the IF response may cause oscillations due to too much IF gain . . . therefore don't plan on deleting those resistors.

Most of the TBS gear we have seen are remarkably clean. They weigh about 44 pounds —although K2ALM did get one weighing 150. Seems some have a case over the main case and this adds the extra 100 pounds to the shipping bill. Check with the surplus dealer before ordering so as not to waste that shipping money. Dimensionally the TBS is slightly wider than a standard rack, but nicely housed in a black crackle cabinet that allows the receiver to slide out and in for maintenance.

Real Lazy Linears

We got a fine publication from the Central Kansas Radio Club which has a conversion of the ARC-5 transmitter to a single band linear amplifier. While we haven't tried it out it should work well and add some more power to any station at little cost. Essentially they use the 1625's as before but change the 1629 and crystal to VR-150's, by rewiring, and thereby hold the 1625 screens to 300 volts. The lower terminal of T-53 (oscillator transformer) is removed from C-62 and brought out for bias. Bias is supplied by a pre-amp power transformer a selenium rectifier, a 40 mfd 150 volt capacitor and a 30K potentiometer for adjustment. The 1626 oscillator is removed from its socket and R-73 cut out. A coaxial line, with the shield grounded, is connected to T-53 for signal input. Bypass the 1625 cathodes and filament with 0.01 mfd disc condensers, add a closed circuit jack for metering. The connection from R-74 and C-58C to the centertap of T-53 secondary is also removed. Add an extension to C-67 for final tuning. A O to 1ma meter in the 1625 grid return will show a slight rise on peaks and is actually a worth-while operating aid in AB-2 operation.

AFØHAJ has commented on AF5LHX's

conversion (above) by adding that 150 watts PEP is available but with 400 volts on the screens and 1000 volts on the plates 250 watts PEP is available (this greatly exceeds the tube ratings . . . Ed.) He tunes up by using only 150 volts on the screens and then switches to 400. If additional link inductance is necessary wind two or three turns of well insulated wire at the bottom of T-54 in the same direction and connect in series with the link. K2IEG has tried this as well as other ARC-5 linear conversion and has a few extra linears not in use.

News

A lot has happened to the surplus market in the past two months—at least the New York surplus market. Seems all kinds of gear have been put up for sale—clean stuff too. Not only military surplus either, but a lot of good clean pre-war communications equipment and vhf gear from the various airports.

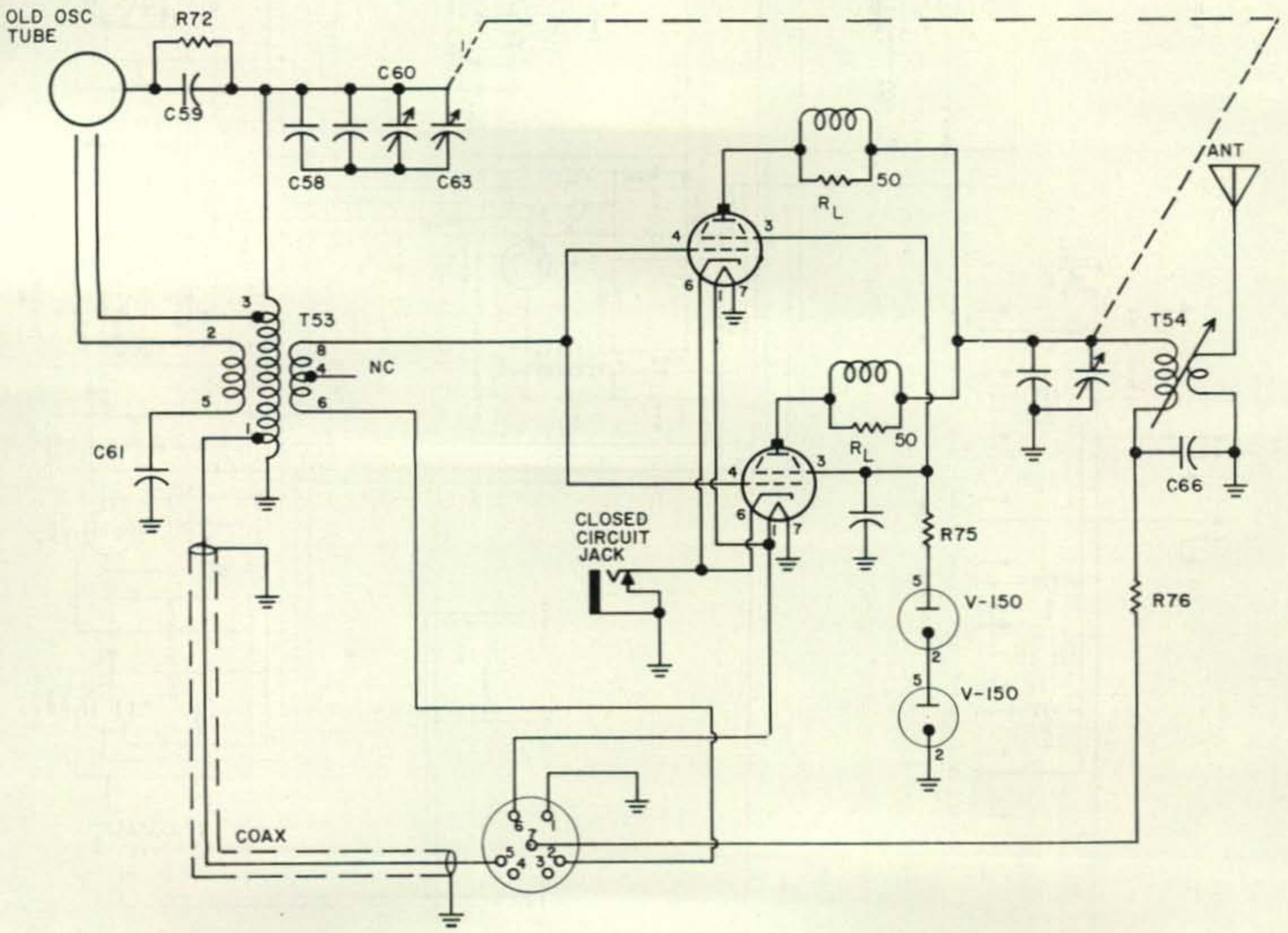
While the CRC-7 seems most promising from the novice and emergency point of view, the six meter boys will be glad to hear that the Navy TBS has been made available in quantity and at a good price. A lot of us have used these aboard ship and have come to know them as reliable. A perfect condition receiver is available for about eighteen dollars and although they are crystal controlled this can be changed with very little effort. The frequency range is 60-80 mcs and offers practically no work to make a good house receiver. One drawback is the size—slightly larger than rack size so that there is little chance of running this mobile, but it does have a good husky 110 volt 60 cycle power supply and that is half the conversion battle. The transmitter is a few dollars more in price and has the drawback of requiring a power supply since the original usually used a motor-generator set. It is amplitude modulated and needs only a slight change in the tuning capacity to drop it to the six meter band. This seems like one of the best buys in a long time.

The TCS equipment is available on both coasts and points in-between. Add a power supply and you have a complete AM and CW station, crystal and vfo, perfect for the Novice. It covers 80 and 40 with no conversion. We have a conversion all worked out for a very early issue of CQ and you'll be all-band by following it.

Now, about that airport vhf gear. A lot of them have appeared in various forms around the market and I will give a full report as soon as I convert it. Rack mounted, about 5 inches tall, the receiver originally covered 108 to 132 mc. The drawback is that it, too, was crystal controlled. Since the 6AK5 input stages

[*continued on page 123*]

Fig. 3 — ARC-5 transmitter to single band linear amplifier.



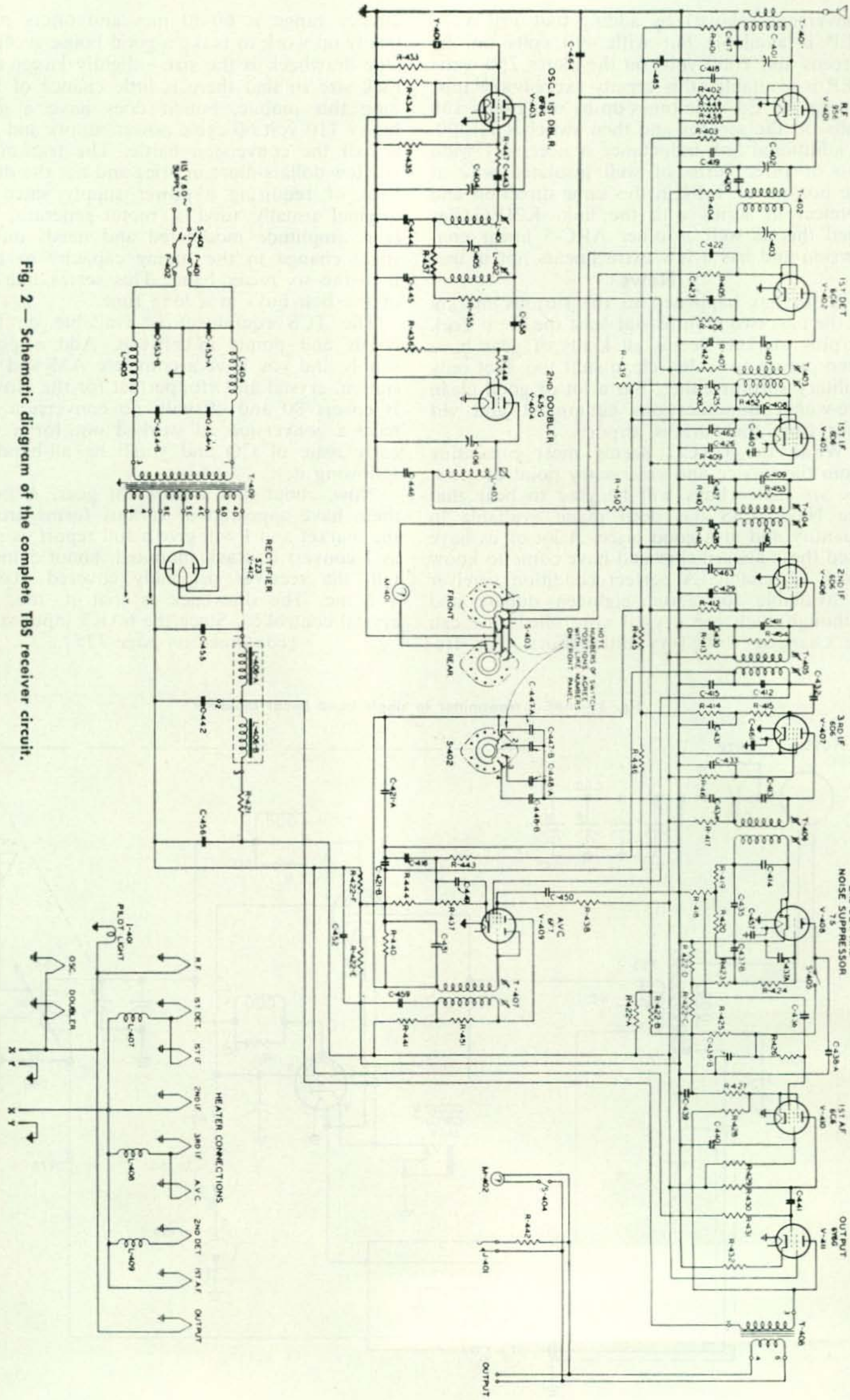


Fig. 2 — Schematic diagram of the complete TBS receiver circuit.

by **DONALD L. STONER, W6TNS**
P.O. Box 137, Ontario, Calif.

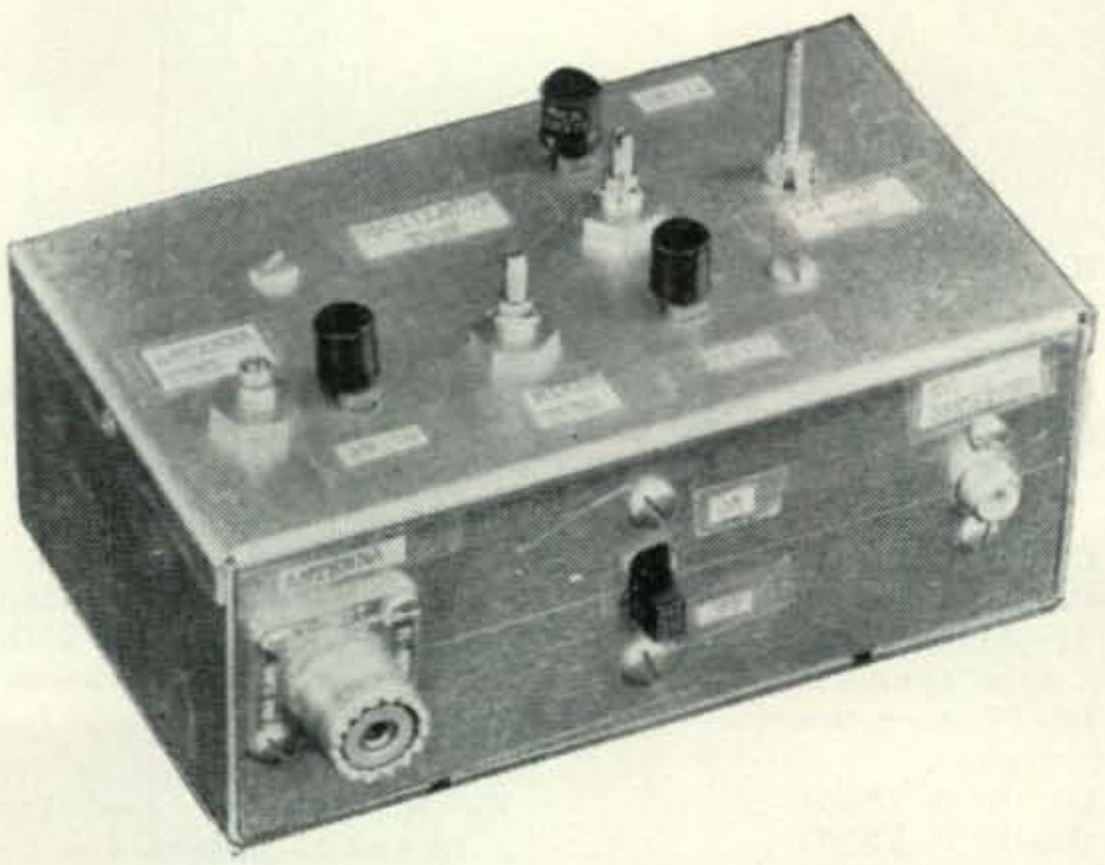
semiconductors

W6TNS's "Transistorettes"

May 1953 does not seem so long ago! As you may remember that was the date of the 2nd CQ Magazine Special Mobile issue. Time sure flies, for that was five years ago, and many things have transpired since that issue. Scanning through it now, I find a mobile sideband rig that was scoffed at as impractical by the "un-believers". Today, such equipment is commonplace! And how about the Twin Noise Squelch (no relation)? The TNS turned out to be the greatest boon to mobile operation since the invention of the wheel.

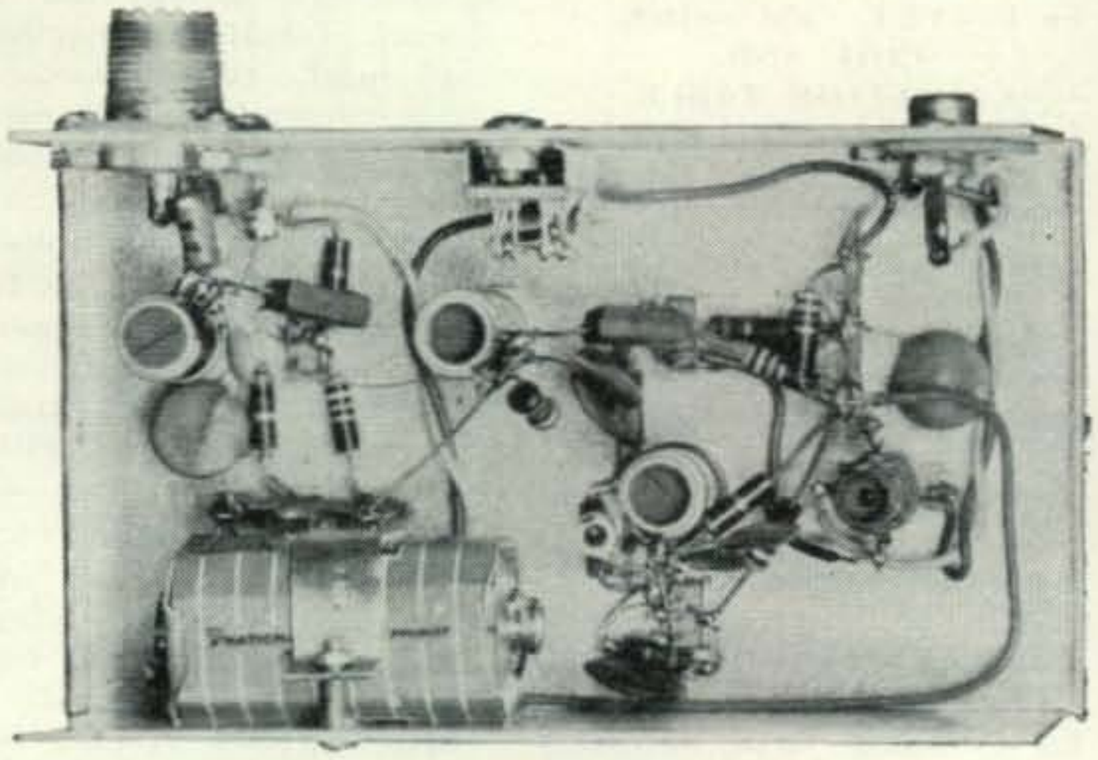
Of course what all this is leading up to is Bill Scherer's fabulous "Converterettes". Now, for this special mobile issue five years later, they have been completely transistorized! For those of you who do not have the 2nd Mobile Issue and have not purchased the CQ Mobile Handbook (shame on you) a brief description is in order. The original units were fixed tuned converters that were connected ahead of your car radio or home receiver to provide reception on the amateur bands. The circuits are peaked up on a particular band and the stations are tuned on the car radio. Since they were individual band converters, the conversion efficiency is extremely high.

Those nasty big glass things that were used for rf amplifier, mixer, and oscillator needed a B plus voltage from a power supply, usually the car radio. The power supplies in "modern" car radios are so marginal that they usually do not have the extra 20 ma. to spare. Also, the transistor-hybrid radios have no B supply at all. Hence the need for the transistor converters. Many of you reading this might hesitate to construct a shortwave converter with transistors for one reason or another. Allow me to dispel your fears. The transistorized unit is every bit the performer that the original



Inside view of the "Transistorette" showing layout of the components.

The "Converterette", 1958 style, with transistors.



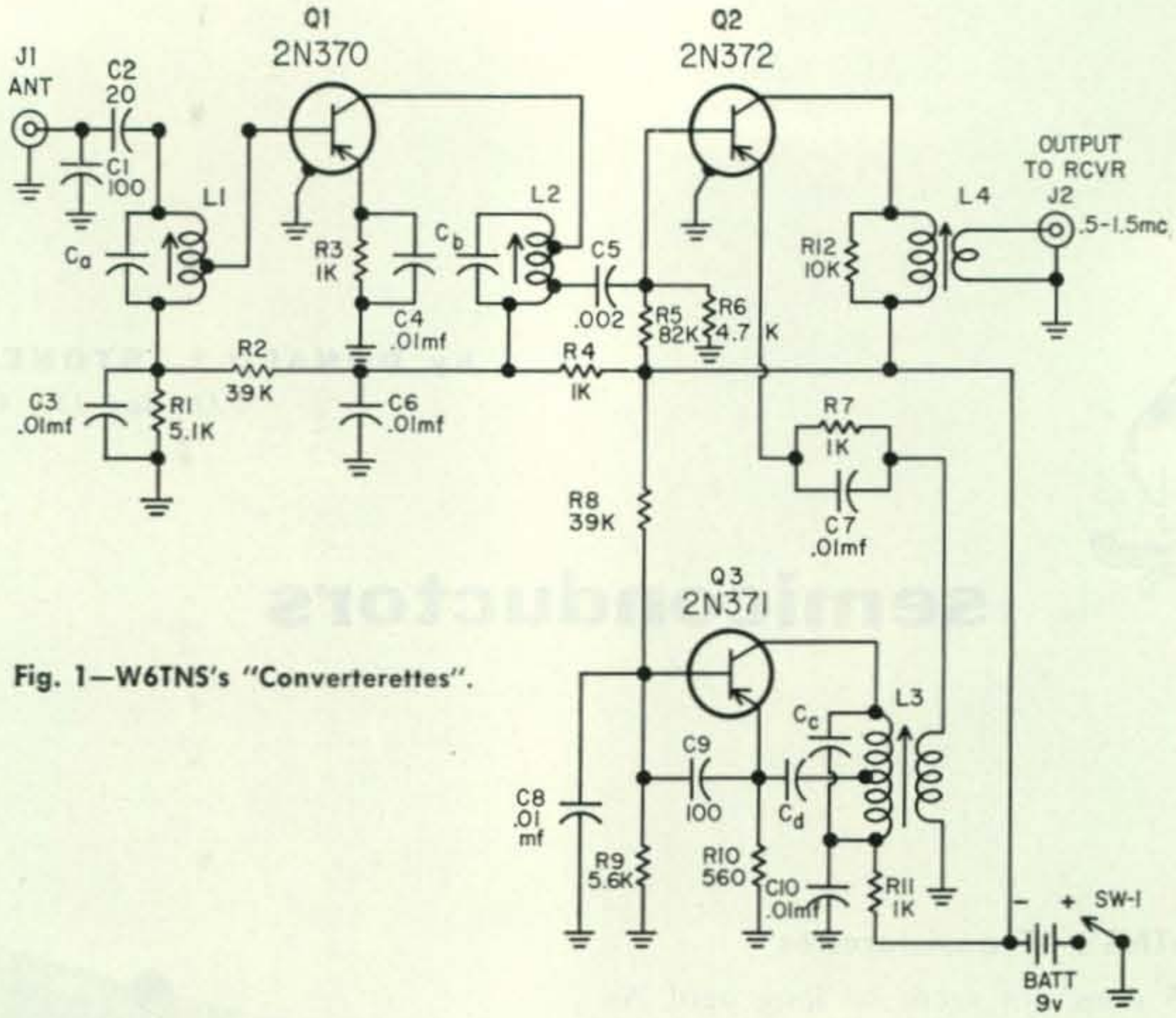


Fig. 1—W6TNS's "Converterettes".

Parts List

Batt—Eveready #
C1, C9—100 mmf. disc ceramic
C2—20 mmf. disc ceramic
C3, C4, C5, C6, C7, C8, C10—.01 mf. disc or mica capacitor.
C5—.002 mf. disc ceramic
Ca, b, c, d—see coil table.
J1—Amphenol SO-239 coaxial connector.
J2—Phono connector (RCA type).
Q1—RCA 2N370
Q2—RCA 2N372
Q3—RCA 2N371
L1-L4—See coil table.
R1—5.1K, ½ watt, 5%.
R2, R8—39K, ½ watt.
R3, R4, R7, R11—1K, ½ watt.
R5—82K, ½ watt.
R6—4.7K, ½ watt.
R9—5.6K, ½ watt.
R10—560 ohms, ½ watt.
R11—10K, ½ watt.
Sw 1—SPST slide switch.

COIL AND CAPACITOR TABLE

L1—18 turns, #26, tapped 3 turns up from bottom end, for 10, 15 and 20 meters.
30 turns, #26, tapped 5 turns up from bottom end, for 40 and 80 meters.

L2—18 turns, #26, tapped at 3 turns and 9 turns from bottom for 10, 15 and 20 meters.
30 turns, #26, tapped 5 turns and 12 turns from bottom for 40 and 80 meters.

L3—18 turns, #26, tapped 3 turns from bottom end for 10, 15 and 20 meters.
30 turns, #26, tapped 6 turns from bottom end for 40 and 80 meters.
Secondary link is one turn for 10, 51, and 20 and two turns for 40 and 80.

L4—Any small antenna coil. Author used Miller #6300 "ferrite loopstick", with 50 turns #26 scramble wound over primary for a secondary link.

Ca—No capacity used for 10 and 15 meters. Use 20 mmf. for 20 meters. Use 33 mmf. for 40 meters and 250 mmf. for 80 meters.

Cb—For 10 meters, use 5 mmf., for 15 meters, use 10 mmf., for 20 meters use 30 mmf., for 40 meters use 33 mmf., for 80 meters use 250 mmf.

Cc—For 10 meters use 5 mmf., for 15 meters, use 10 mmf., for 20 meters use 20 mmf., for 40 meters use 33 mmf., for 80 meters use 220 mmf.

Cd—For 10, 15 and 20 meters, use 47 mmf., for 40 15, and 20 meter L1 coil to one inch length in order to obtain full tuning range for antennas with impedances other than 50-100 ohms.

Note—All coils wound on ⅜ inch diameter slug meters use 180 mmf., for 80 meters use 390 mmf. Miller #4400. It may be tuned forms such as necessary to space the 10,

"Converterette" was. The noise generated by the transistors is as low as the most expensive bandswitching ham receiver! Transistors are not evil little devices designed to confound you. They are no harder to use than a vacuum tube. The only point on which the transistorized unit does not equal the original is *temperature sensitivity*. Any transistor is sensitive to changes in temperature. The author feels that since the passenger compartment of an automobile is subject to wide extremes in temperature, that some form of compensation might be required in the oscillator circuit. Since the temperature in Southern California is 80 degrees all year, this is somewhat difficult to verify! Thermistor stabilization of the oscillator is described later.

Circuit Description

Fig. 1 is the circuit diagram of the "Transistorettes". The antenna is capacity coupled to the antenna coil with the R9'er circuit composed of C1 and C2. Transistor Q1 (2N370) is used as a tuned rf amplifier. The transistor base is tapped down on the coil to prevent lowering the circuit "Q". For the same reason, base bias is applied to the cold end of the coil, rather than at the tap point. Dc stabilization is provided in the emitter circuit with R3, and C4 is used to by-pass the rf developed across this resistor. The collector circuit of Q1 is resonated by coil L2, with the collector tapped part way down to prevent excessive loading. Because of the low base collector capacity of the RCA drift transistors this stage exhibits no tendency to oscillate.

The base bias for the mixer Q2 (2N372) is provided by voltage divider R5 and R6. Again,

dc stabilization is provided in the emitter lead by R7. The collector circuit of the mixer is tuned to the i-f, 550 to 1600 kc, which in turn is tuned on the car radio. A J. W. Miller #6300 ferrite "loopstick" was used for L4 but it was necessary to swamp out its high "Q" with R13. Any broadcast antenna coil should work well in this position.

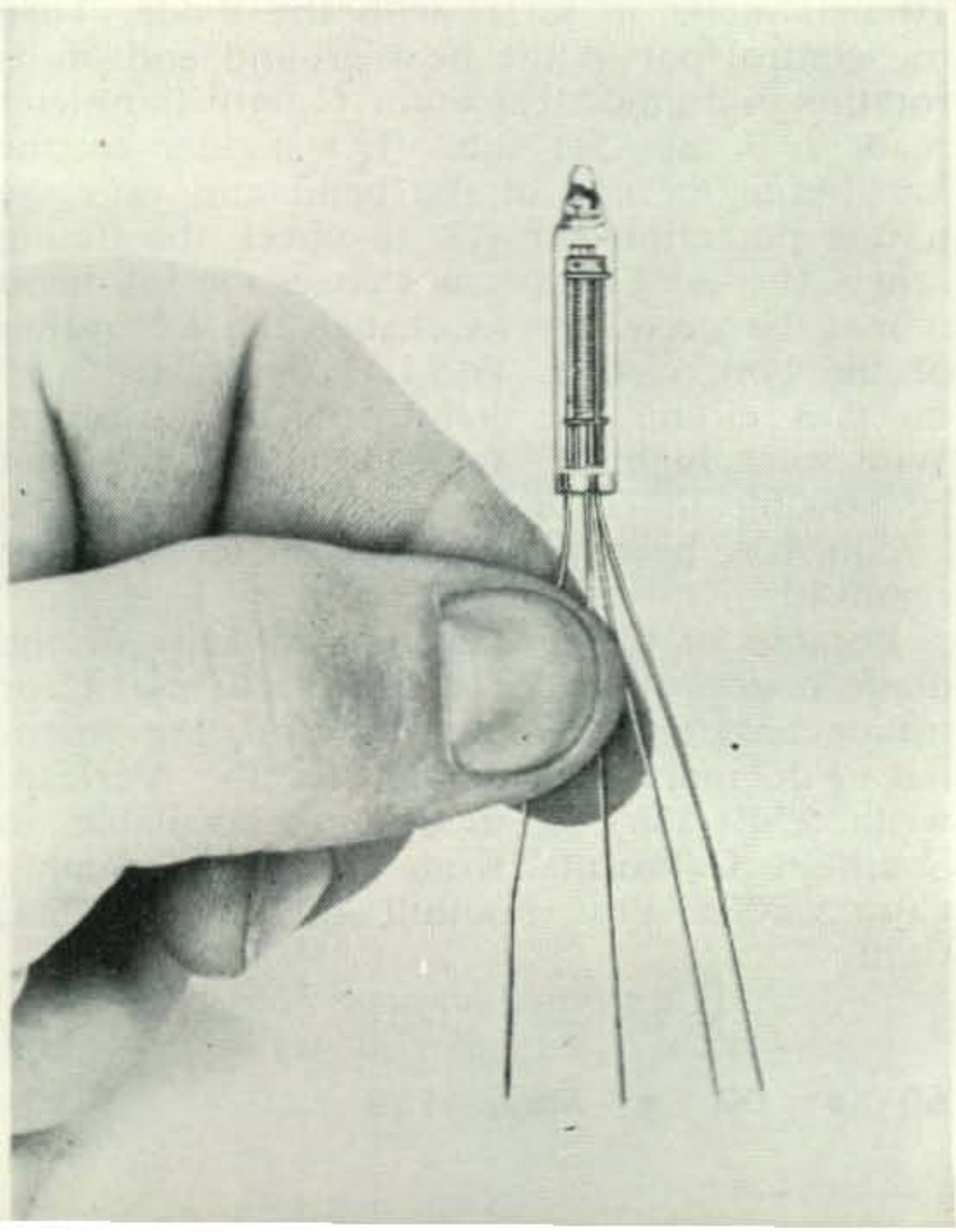
The oscillator circuit is analogous to the Hartly vacuum tube type. The collector signal appears across the primary of L3 and a portion is tapped off for feedback into the emitter. This stage is base biased by R8 and R9. The oscillator injection voltage is link coupled to the emitter of the mixer tube. This produces a high degree of isolation between these two stages. For temperature stabilization compensating capacitors may be used in place of C_b and C_c. To further improve the stability, a thermistor may be added as follows: Replace R8 (39 K) with a 100K ½ watt, and replace R9 (5.6K) with a 20K ½ watt resistor. Connect the thermistor across R9. The thermistor should have the following rating: 20K at 25°c, 78.6K at 0° C, and 6.52 K at 50° C.

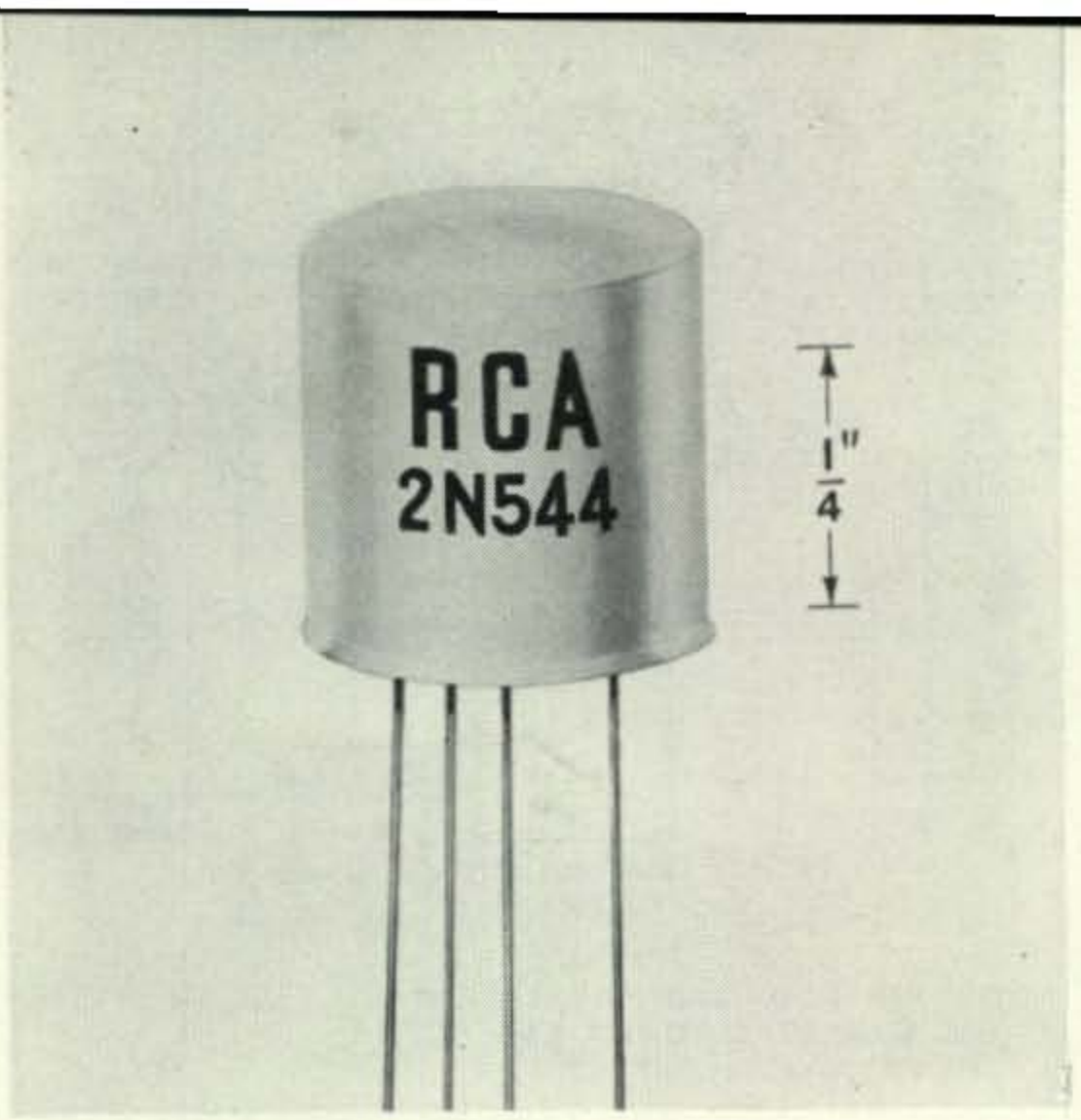
The oscillator coil is tuned on the low side of the signal on 10 meters, on the high side on 15 and 20 meters. Again on 80 meters, the oscillator is on the high side and on the low side for 40 meters.

Construction

The converter was constructed in an unpainted L.M. Bender (LMB) #136 chassis box. Referring to the photo, the antenna coil is mounted directly behind the antenna connector (coaxial type) the rf amplifier transistor socket is mounted between coils L1 and L2. Coil L2 can be seen directly behind the on-off slide switch. The mixer transistor is located

The Amperex indicator tube for transistor circuits, mentioned in the text.





Latest addition to RCA's family of "drift" transistors, the 2N544 broadcast band rf amplifier.

between coils L2 and L4. The oscillator transistor is located between the rear apron and coil L3. The battery was secured to the rear apron with a small aluminum strap. Connector J2 is located on the front apron and is an RCA type phono connector. Two Cinch Jones tie points are used to mount components. One is located between the rf transistor and the battery. The other tie point is located between the mixer transistor and coil L4.

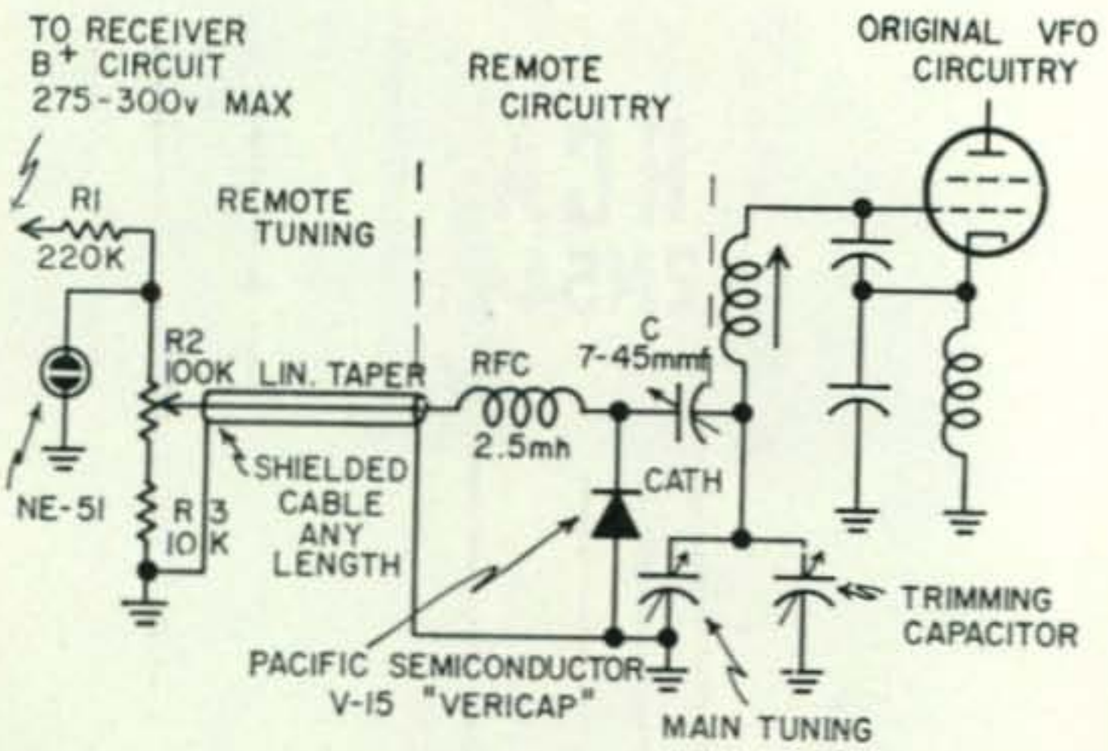
The coils are tapped by twisting a ¼ inch of coil wire at the appropriate place for the tap. This twist is then stripped and tinned. Be careful when placing the taps, not to short adjacent turns. The 10 and 15 meter coil L1 is spaced out to one inch to provide a greater tuning range.

Adjustment and Operation

For the most part, the original tune-up information by Scherer is valid for the transistorized version. It is necessary to use a length of *shielded* cable between the converter and the receiver. If you have wound the coils and wired the converter correctly, you should start to hear signals immediately upon applying power to the unit. First, adjust the oscillator coil so that the band being received lines up correctly on the receiver dial. As an example, the 10 meter oscillator would be adjusted so that 28.5 appears at 500 kc and 29.5 appears at 1500 kc on the broadcast band dial. Then peak up L1 at 28.8 (800 on the broadcast band dial) and peak L2 at 29.1 (1100 on the broadcast band dial). The v-if coil, L4, is peaked up for maximum signal strength at 900 kc.

I am intentionally cutting the tune up details to a minimum because of space requirements. The CQ Mobile Handbook section on the "Converterettes" will be helpful if you should have trouble tuning up the "Transistorette".

Although the transistors are somewhat more expensive than the vacuum tube counterparts (they are about $3.29 each) they have the

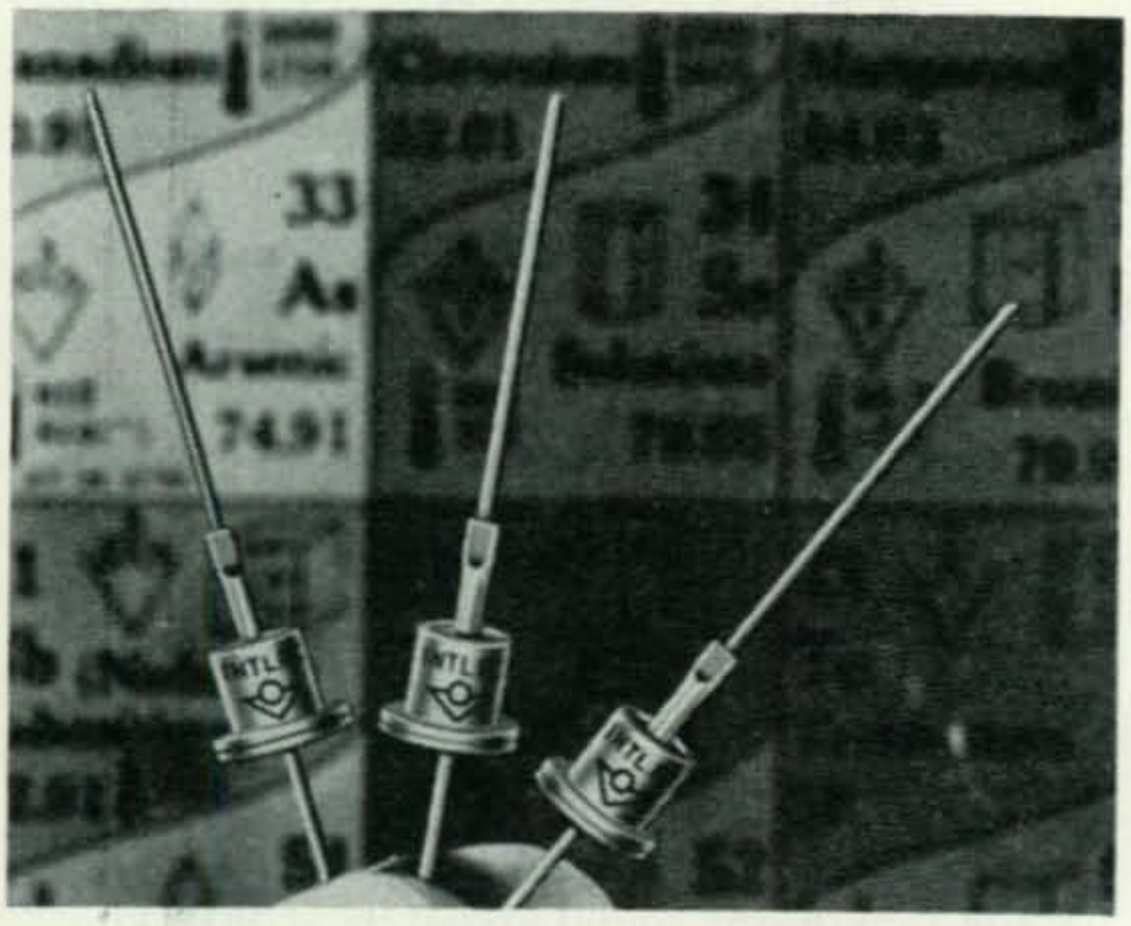


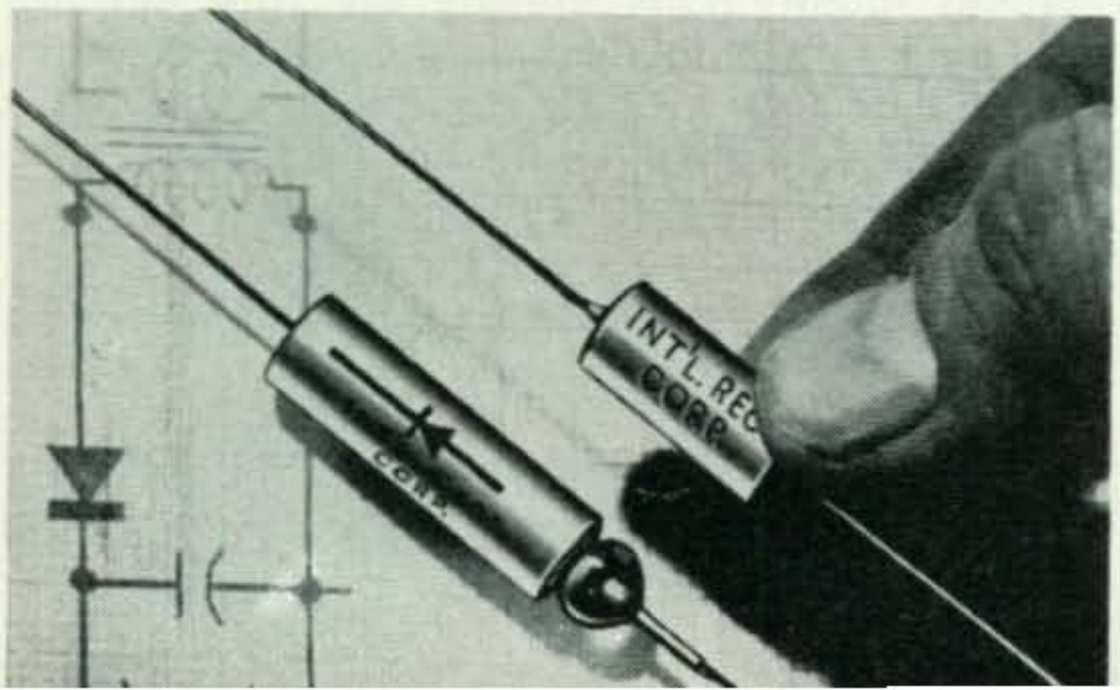
NOTE: FOR ECO VFO CIRCUITS, CONNECT C TO HOT END OF TANK CIRCUIT.

Fig. 2—Remote VFO tuning.

advantage that, with proper care, they will last longer than you will! Something like a lifetime guarantee, only longer! The fact that it is unnecessary to make any internal connections to the car radio should really sell you on them! Since the total current consumption is 2.7 ma (.025 watts of power with a 9 volt supply!) there does not seem to be any good reason for operating the unit from the car battery. This also appears to decrease the amount of ignition noise pickup. The internal battery will last for many months. However, if your automobile battery has a positive ground, it can be used to supply the transistor voltage. Connect the battery to the "Transistorette" through a 3.3K, ½ watt resistor. Be absolutely sure about the battery polarity! The voltage buss must be negative with respect to the chassis, or *instant destruction* of the transistors will occur!

If you would like to build a more elaborate bandswitching version of this converter, obtain a copy of *RCA Transistors and Semiconductor Diodes* (price 25 cents) at your local distributor. It includes a complete schematic and parts list for just such a converter using the same "shortwave series" of drift transistors. This publication also contains many other useful circuits, transistor theory, and complete specifications of RCA's line of transistors and diodes. It is a real bargain!





A Remote VFO for Mobile

The voltage variable capacitors manufactured by Pacific Semiconductors, Inc., 10451 West Jefferson Boulevard, Culver City, California are useful in many amateur applications. PSI have recently announced additions to the *Varicap* series with peak inverse ratings to 100 volts.

The Varicap is a silicon diode that exhibits a capacity change when a changing voltage is applied in the reverse or back bias direction. Since the diode is controlled by dc, it may be located at any distance from the control point. This brings up a very interesting application where the VFO is located in the trunk of an auto and can be tuned from the drivers position. Fig 2 is the circuit for the remote tuned VFO. B plus is removed from the receiver power supply and dropped to 100 volts with R1 and R2. An NE-51 neon bulb is used as a voltage regulator and is connected across the frequency control potentiometer. To exhibit the variable capacity effect, the diode must be back biased. The diode, however, will rectify rf from the oscillator circuit and the control voltage must always be higher than this rectified voltage. The variable capacitor C controls the amount of coupling into the oscillator circuit and controls the diode tuning range.

To set up the control circuit, insert a 0-10 ma. meter in series with the diode. Turn the control pot to the near ground end of its rotation and adjust capacitor C until the meter reads two ma. Set the VFO padder to the low frequency end of the band and vary the tuning potentiometer R2, to check the tuning range. If the VFO does not cover the full band it may be necessary to change the LC ration of the tank circuit. The less the capacity in the tank circuit, the greater the tuning range. With some high "C" tank circuits, it may not be possible to cover the full band. Once the circuit has been set up, the meter may be removed.

Because of the low current capacity of the diode it does not appear feasible to use it for tuning final tank circuits or resonating antennas. For more information on the Varicap, write PSI. Varicap diodes are available in Southern California from Electronic Supply Corp., 2085 East Foothill Blvd., Pasadena, Calif.

[*Continued on page 126*]

by **BYRON H. KRETZMAN, W2JTP**
16 Ridge Drive, High Hills, Huntington Station, N. Y.

RTTY

Amateur Radioteletype Channels

National, FSK 3620, 7140, 27,200, 29,160, 52,600 kc.
National, AFSK 27.2, 147.96, 144.138 mc.
Area Nets:

California	147.85	Mc.	AFSK on AM
Chicago, Ill.	147.70	Mc.	AFSK on FM
Detroit, Mich.	147.30	Mc.	AFSK on FM
Washington, D.C.	147.96	Mc.	AFSK on AM
	147.495	Mc.	AFSK on AM
New York City	147.96	Mc.	AFSK on AM
Livingston, N.J.	146.30	Mc.	AFSK on AM
Buffalo/Niagara	147.50	Mc.	AFK on AM
Boston, Mass.	147.96	Mc.	AFSK on AM
Seattle, Wash.	147.00	Mc.	AFSK on AM
Spokane, Wash.	147.15	Mc.	AFSK on AM
Minneapolis, Minn.	144.90	Mc.	AFSK on AM

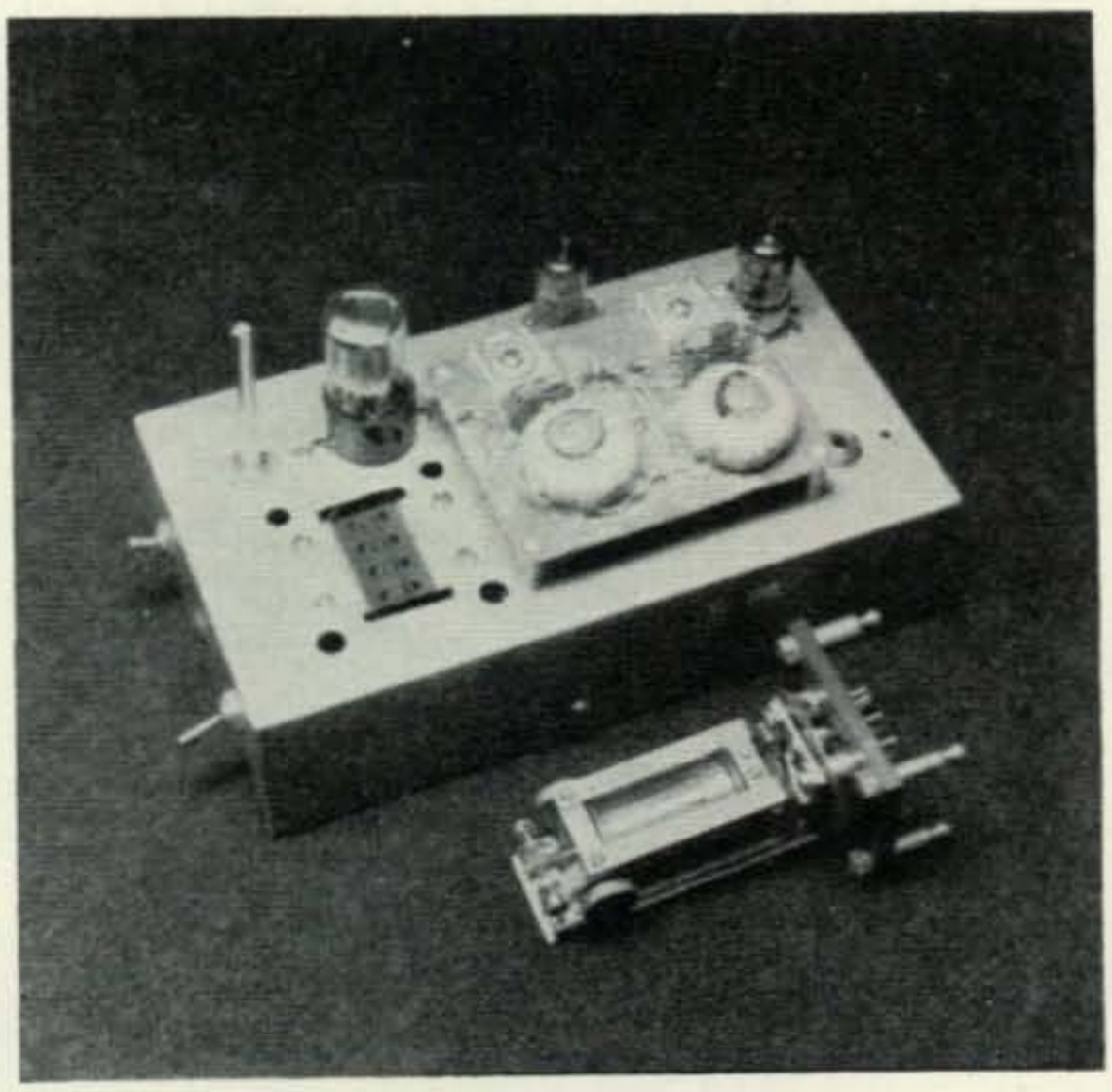
RTTY reception the "easy" way, generally speaking, is not as easy as some of us would like it to be. It means that we have to do a little building. Now, this doesn't bother the real dyed-in-the-wool RTTYer, but it does discourage a lot of newcomers, many of whom picked up a Model 26 when they were more handy and never got it on the air.

Well, the feature this month is a nice, simple, easy-to-adjust, converter. Its simplicity, though, doesn't mean that its performance is inferior. As a matter of fact, when used with the SX-101 it outperforms many other converters. But that is getting ahead of the story.

This particular converter for radioteletype is an i-f converter, which means that it is fed directly from the i-f amplifier of the receiver rather than through the detector, bfo, and audio. In addition to its simplicity, another advantage is that its discriminator-type of detector is not critical of the amount of shift used by the transmitter being copied. This means it can be used for narrow shift as well as the standard 850-cycle shift.

Based on the premise that all necessary selectivity is supplied by the associated receiver, the converter was designed to operate directly from the 50 kc (or 50.5 kc) i-f amplifier of the receiver with only limiting and detection being provided by the converter itself. Specifically, it was built to work with the new *Hallicrafter* SX-101. Other receivers with which it can work directly are the SX-76, SX-88, SX-96, SX-100, and the *Hammarlund* 510. You *could* use it with another i-f, such as 455 kc, by using a 6BE6 mixer to beat down to 50 kc, but remember: you have *only* the selectivity supplied by the receiver with which it is used. In other words, those receivers having the lower i.f. are most apt to have the kind of selectivity you need for RTTY; i.e., 1000 cycles when receiving 850-cycle shift.

W2JTP I-F Converter.



Circuit

Fig. 1 is the schematic diagram of the converter. A 6U8 is used as a limiter and amplifier. The plate circuit of the triode section is resonated by *L*, a TV width coil, such as the *Miller* #6315, and a 350-uufd mica capacitor. The plate circuit of the pentode section feeds the discriminator primary.

The heart of this converter is the toroidal discriminator assembly, the Type RTD-1, made by *d & r, Ltd.* Two precision toroids, the coupling, the fixed and the variable padding capacitors are all mounted on a bakelite board 4½ by 3½ inches. This assembly is currently available from *d & r, Ltd.*, PO Box 1500, Santa Barbara, California, for $16.35.

A 6AL5 is used as the discriminator diodes. If anyone is interested in saving space, two *Texas Instruments* Type 601-C silicon diodes should work equally well. The transfer characteristic of the discriminator is reasonably flat over 1000 cycles, thereby permitting some leeway in the amount of shift being received.

A 6SN7 was used as a push-pull d-c amplifier simply because it was in the junk box. A 12AU7 should work just as well with no circuit changes. The coils of a *Western Electric* Type 255A polar relay are in the plate circuits of the 6SN7 and its contacts are used to key the local loop to the machine. A built-in click filter consisting of the 390-ohm resistor and the .5-ufd capacitor effectively suppresses noise from this source. Switch S-2 is a reversing switch to correct a possible turn-over either from the transmitter or the receiver.

The closed-circuit jack connected between the coils of the polar relay must be insulated from the chassis as it is "hot" with B-plus. A zero-center milliammeter plugged into this jack is used to indicate static balance of the two triodes when adjusting *R*.

Being of rather conservative nature (Vermont '51), I decided not to use the accessory socket on the rear of the SX-101 to power the converter, but to provide its own power supply from a *Stancor* PA8421. It runs quite cool.

Connections

The 50.5 kc from the receiver is fed to the converter through an 18" length of prefabricated "low-capacity" shielded wire with auto radio connectors. The idea is to keep this lead as short as possible and with as little capacitance as possible to transfer as much i-f signal as we can from the receiver to the converter.

An auto-radio jack is provided to connect an oscilloscope to the plate of the 6U8 pentode section through a blocking capacitor and an isolating resistor. The cable used to connect to the vertical input of the 'scope is also that same type of "low-capacity" shielded wire. This lead, too, should be as short as possible unless your 'scope has plenty of gain.

The connections to the local loop should be shielded. Since there are so many variations of the local loop in RTTY stations we can't say exactly where to ground it or not to ground it. If you *do* get noise in your receiver from the keying of your loop you will just have to experiment to find out where grounds should be to eliminate the noise. (My ground

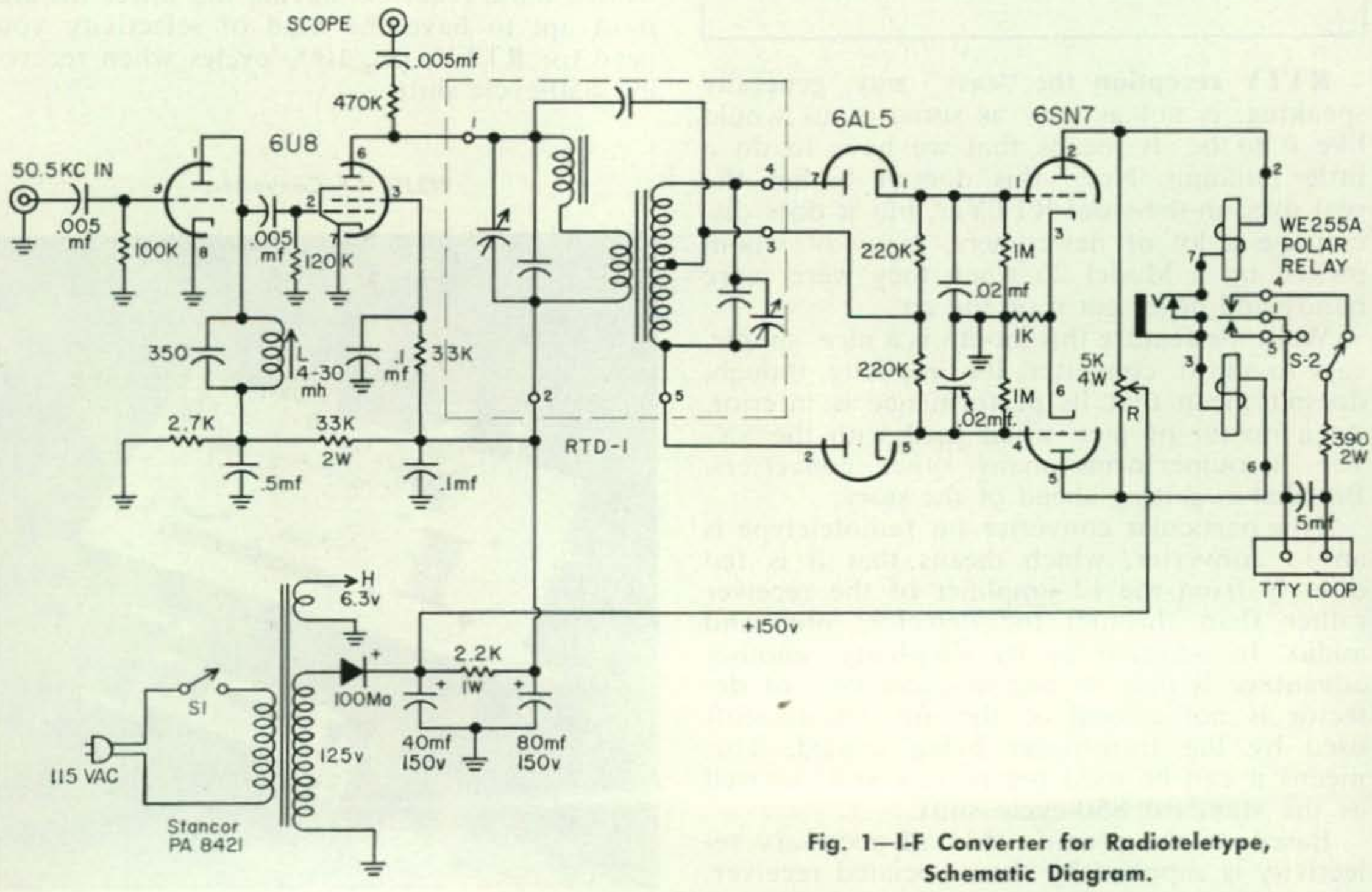
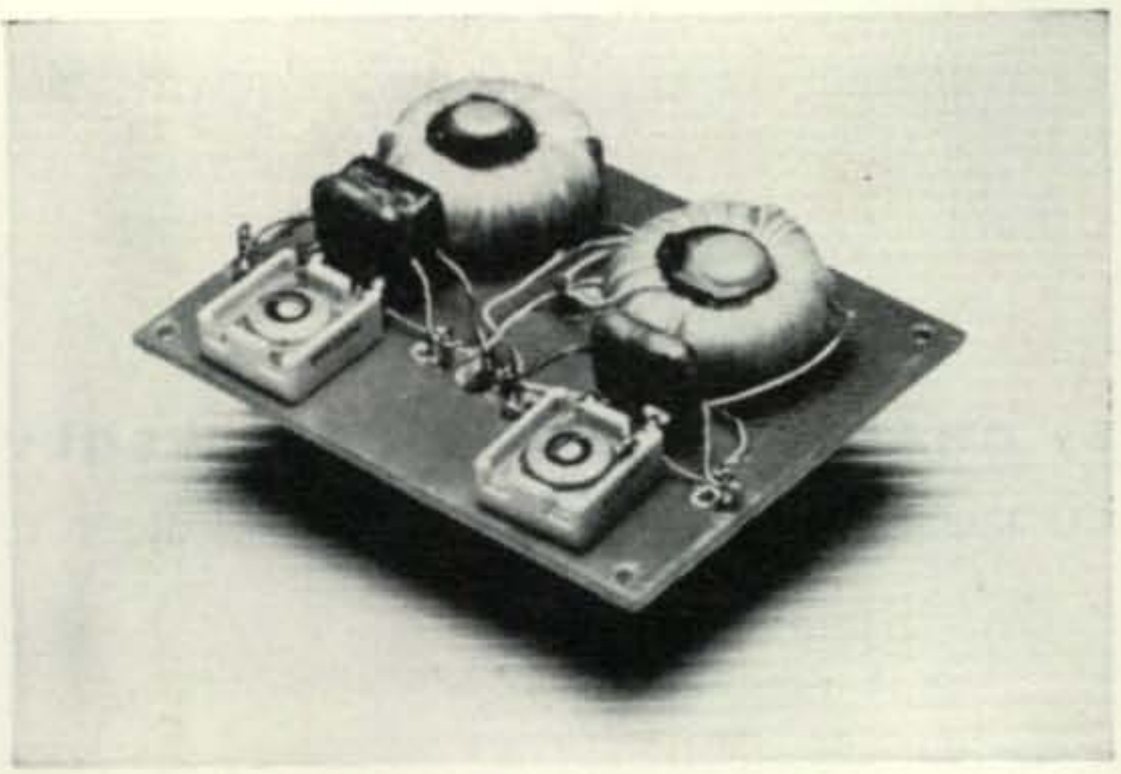


Fig. 1—I-F Converter for Radioteletype, Schematic Diagram.



RTD-1 Discriminator Assembly.

is right on the converter and I use "microphone" cable for the loop.)

Adjustment

All you really need to tune up the converter is a VTVM and a zero-center milliammeter. At W2JTP the zero-center meter is a surplus IS-180. This meter is usually found in surplus "bias measuring sets" if not found by itself. The basic movement is 1-0-1 ma and I shunted mine with a 10-ohm and a 36-ohm resistor in parallel. This gives a deflection of around 50 on the scale for either *mark* or *space*.

After you fire up and check to see that you have about 150-volts for the 6SN7, plug in the meter and set the 5k-ohm pot *R* to center the meter at zero. Next, temporarily ground pin 5 (cathode) of the 6AL5 with a clip lead. Now, connect the VTVM to terminal *3* on the RTD-1 discriminator assembly. Connect the converter to your receiver i-f amplifier and you can then use the receiver BFO as a signal generator. Turn the r-f gain down, set selectivity at about 1-kc, and then center the BFO in the receiver pass-band by watching the S-meter.

Tune the slug in *L* for maximum reading on the VTVM. Use as little i-f input to the converter as possible and still get a reading. You can double-check this adjustment with the 'scope connected to the 'SCOPE jack. After peaking *L*, tune the discriminator primary for a maximum reading on the VTVM. Reconnect the VTVM to terminal *4* and tune the secondary for zero reading. Go back to terminal *3* and re-check the primary, then back to *4* again to re-check the secondary for zero.

Remove the temporary ground from the 6AL5 cathode and with no i-f input to the converter check again the balance of the 6SN7 with the zero-center meter. Re-adjust *R* if necessary to make the meter read zero.

Operation

To use the 'scope for tuning, set its sweep to about 15 cycles and use only a little sync. The vertical gain is then advanced to give good deflection on a signal. Use the BFO only to locate an fsk signal, then turn it off. Use the 'scope to center your receiver tuning by getting equal vertical deflection for *mark* and *space*. You should be able to see quite clearly the keying pulses and the polar relay should be clicking in its customary rhythmic manner.

Turn on the machine and watch it copy. If you get garble, throw the reversing switch *S-2*. With the SX-101 receiver, switching from UPPER to LOWER (sideband) will require that you throw the reversing switch to get right-side-up keying of your local loop.

SX-101 Modification

Keeping in mind that most communications receiver owners are hesitant to dig into their investment in case it should affect the resale value, such modification was kept to the bare minimum. Nothing is changed, no holes are drilled; only a small capacitor and a wire about four inches long are added. If the whole operation takes more than 10 minutes you have been taking time out for other things.

FLASH! Europe on RTTY

At last, Europe is on RTTY. During the February SS contest W3PYW flushed DL4AT from Stuttgart, Germany, and got him on 14,330 kc. What a pile-up! Look for Heinz afternoons when the Europeans are coming through on cw or 'phone.

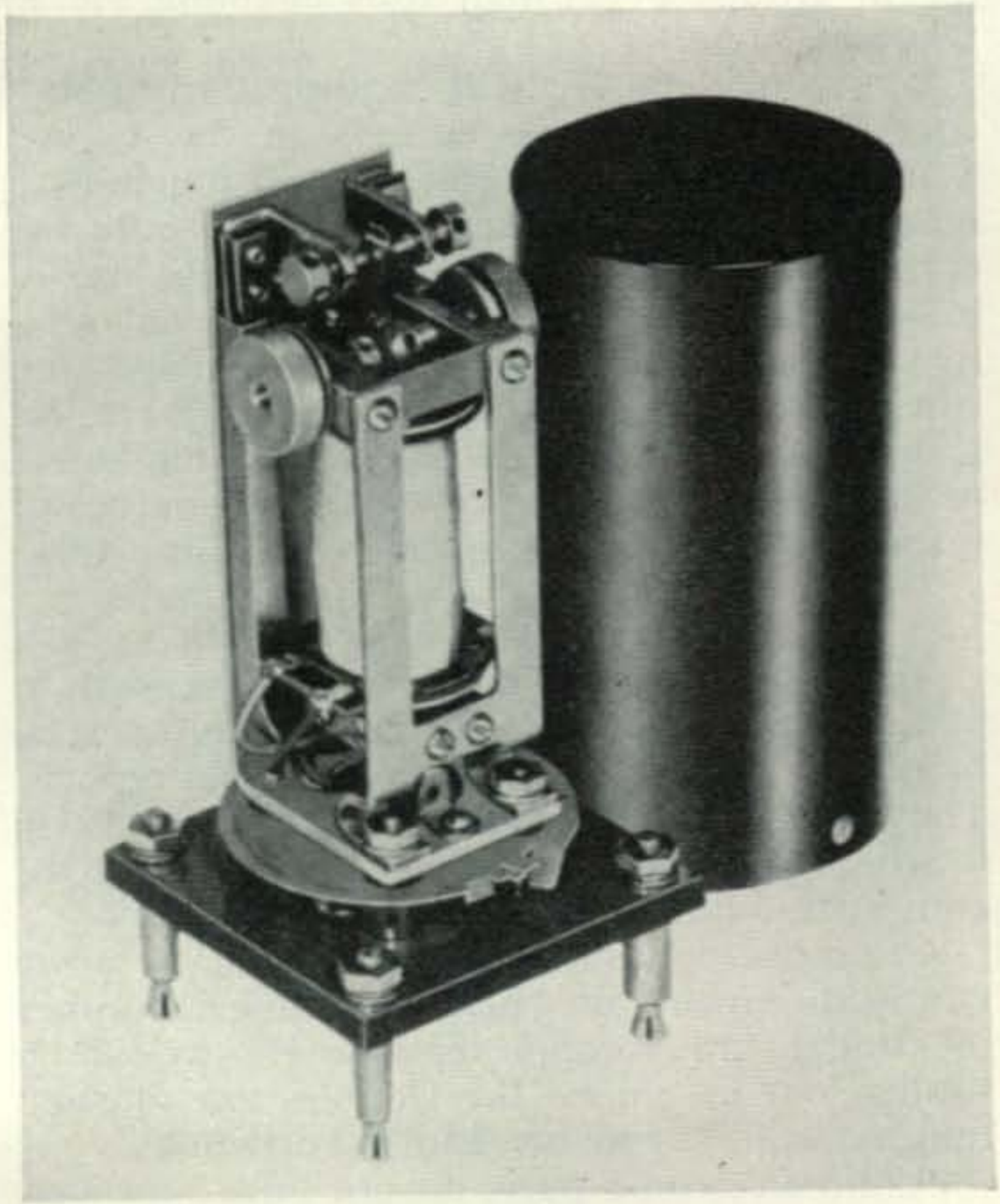
OBS

W1OUG in Stamford, Connecticut, transmits ARRL Official Bulletins five times a week as follows: (times EST)

Monday	2000	7140 kc
Wednesday	1900	3620 kc
Friday	1730	14,140 kc

[*Continued on page 118*]

Polar Relay made by Kurman Electric Co., Brooklyn, N. Y. can be supplied equal to Western Electric 215A or 255A.



ham clinic

by CHARLES J. SCHAUERS, W6QLV

CQ Magazine, 300 West 43rd St., New York 36, N. Y.

PLEASE be patient if you do not receive a rapid reply to your letters and cards. Although most queries are answered directly, there are some which must travel 6000 miles or more.

You must understand that the majority of my spare time is devoted to answering or relaying questions to those who have the answers. There are some questions which cannot be answered. However, about 95% of your questions have been handled personally, requiring 5 new typewriter ribbons and lots of time.

In order to give the other fellow a chance to receive an expeditious reply, PLEASE limit yourself to one question per card or letter. For quick service enclose a self-addressed AIR-MAIL card or envelope. Letters are sent to me in groups by airmail thus enabling me to take a "breather"!

Many readers are still sending correspondence to my old home address in the United States. Forwarding takes time (as much as a month) to my European address. So note the correct address given above . . . please use it.

Numerous queries have been received relative to old equipment. We will save these and run a couple of paragraphs requesting readers if they have information. As many as ten letters or cards have been sent out to likely sources of information on each request—with little luck.

Observations of the Month

Too often, some amateurs are inclined to make snap-judgment of a piece of commercial ham gear based on isolated trouble reports. They think that a trouble once experienced will inevitably appear in another like piece of equipment; but this is not true!

Of course, any intelligent ham will shy away from equipment on which he hears a number of similar unfavorable reports. He would be foolish not to, unless the troubles are of such minor nature as to be readily corrected.

Radio-electronic parts do not "live" forever. One "little old" ½ watt resistor can keep a good transmitter off the air.

When various troubles with certain gear are mentioned in this column, it does not necessarily mean that *everyone* is experiencing the *same* troubles; far from it!

No one can foretell with great accuracy how long a tube, resistor, condenser, etc. will last; for if this could be done there would be fewer electronic failures.

I think that manufacturers should include "trouble report cards" with all amateur equipment they manufacture. These cards, sent in by a purchaser would enable manufacturers to obtain information for design changes and the amateur would be afforded *concrete* service information.

Letters received from many readers indicate much reluctance on the part of some manufacturers to supply them with modification information which they *know* exists. But sometimes I do not blame the manufacturers because there are some amateurs who practically expect a "redesign job."

In one of the letters received by HAM CLINIC which consisted of 21 pages with over 40 questions, one manufacturer really got a "going over." But as I told the writer after I had answered 38 of his questions, he was slightly unreasonable. After all, one cannot expect gratis set service *after* 18 years!

When an amateur writes to a manufacturer he should make his request for information or assistance reasonable. For remember, the average cost for answering *one* letter taking into account: secretarial time; paper costs; typewriter upkeep; stamps; executive or engineering time, etc. comes to over $1.75! (And according to late informants—this is very conservative)

SSB Information

Although we like to pass on information we receive to the department in CQ specializing in that type of material, we feel that the in-

formation on W6SAI's novel SB rig in the July '56 issue of CQ, because it is of the "trouble shooting variety," has a place here.

Chuck Bird (K6HIM) sends in the following: "The 6AR8 tube used as a modulator in W6SAI's fine rig is not too widely available. Bill Orr suggested using the 6BU8 instead which works okeh. I left the circuit unmodified because all part values seemed to be adequate.

"There are two major mistakes in the original diagram which are no doubt typographical. The cathode return resistor in the 2nd half of the 12AU7 cascode stage should be 470 ohms and *not* 470,000.

"In the audio phase inverter, the plate resistor should be reduced from 470K to 220K. Additional audio was needed, so I used a triode as the phase inverter and the 12AX7 as an amplifier. This is to enable the use of VOX. Additional amplification was needed after the filter also.

"I had trouble getting the LFO to oscillate but found that not *any* 6AU6 would work. Additional capacity of about 100mmf in series with the grid input circuit would no doubt help.

"Carrier insertion was accomplished by putting a potentiometer in the LFO to the amplifier *after* the filter. Coupling was obtained by twisting the wires together at "A" and "B".

"A 6AF4 was used in place of the 9002 conversion oscillator and works fine. However, I found that an additional 3 volts of bias on the grids of the 6AG7s enables cooler operation.

"I hope this information will help those who have had or are having trouble."

Thanks again Chuck, you're a good ham and we believe your information will help those who sent in letters regarding this particular rig.

Questions

"What is the best harmonic oscillator using a crystal that you know of?" writes C.K. from Winnipeg, Canada.

Suggest the Colpitts. It has low crystal current; will oscillate readily with low frequency crystals without much adjustment; has good harmonic output and output tuning will not appreciably affect frequency or crystal operation.

Comment? (Ko-mahng?)

W.G., Los Angeles pens this question: "How do you say, 'It is home made' in French and German?"

French: L'appareil a été construit par moi. German: Es ist selbstgebaut. And in Swedish: Den är hembyggd. (You need a copy of the HAM'S INTERPRETER—see March 1958 CQ page 112)

Amplifier Check

G.A. who lives in Seattle writes: "What's a good way to check an audio amplifier?"

To do a good job you need a good square wave generator and an oscilloscope. Feed a signal into the amplifier with scope connected to the output. Observe the waveforms on the scope. If your amplifier is deficient in both lows and highs, your scope pattern will resemble a sawtooth form. If it is deficient in highs, you will note that the time rise will be limited. A deficiency of lows will be indicated by flat top canting of the wave form. (For further information see page 62 of the Radio Handbook, 14th Edition edited by Bill Orr W6SAI)

Mobile Antennae

E.S., Los Angeles inquires: "Undoubtedly, you have seen many different types of mobile antennae, some of which are monstrosities. As a mobile ham to-be I'm interested in finding out what you personally think and recommend (sic) for a good mobile antennae (all frequencies)."

That's a big order. However, I have tried most commercial mobile antennae from 2 to 160 meters and am partial to a high Q coil center loaded whip for 15, 20, 40 and 75 meters. I have used a coaxial type on 2 and 6 meters with some success.

Master Mobile Mounts, Webb and Bassett, to name a few, put out good antennae and coils.

I do not believe in "capacity hat" or top-loading. But regardless of the antenna, proper matching to your mobile transmitter final is the *secret* of mobile success.

Too many hams think that power is the only answer; I don't. I've heard 15 watts of SSB mobile on 75 meters 3500 miles!

Most commercially built antennae will give good service IF the manufacturers instructions are followed. However, there are too many mobileers who are prone to try their own methods too often and end up with low efficiency. Sure, there are many hams who have improved on certain commercial jobs and really "get out," but these are in the minority.

For six meters, Hi-Par Products Co. of Fitchburg, Mass. make a wonderful horizontally polarized mobile antenna. If this antenna is installed and matched properly few others can touch it in performance.

I also like Rafred Enterprises' positive instant band change antenna too. When it is wet outside it is just the thing!

Choosing an antenna will depend upon a number of factors; not the least being price. However, if I were you Ed. I would contact mobile hams in your vicinity (there's lots of 'em) and obtain first-hand information.

Technical Tactics

Little "twists" which make the amateur's technical load a little lighter are hard to come by. Do you have one? Send it in if you do and we'll print it.

This month's: plastic squeeze spray bottles obtainable at nearly any 5 and 10 store enables one to do a fine cleaning job of old equipment when filled with an oil-less type lighter fluid. Carbon-tet although a good cleaner is *not*

recommended—it is too dangerous.

Be sure you wipe off excess lighter fluid (especially around relay and switch contacts) and allow sufficient time to dry, before operating your rig. If you don't, you may find yourself with a gigantic cigarette lighter on your operating table!

Question of the Month

C.M. of Dallas, Texas (the land of the gold-plated antennae) writes: "What's an easy way to calculate grid bias in a class "B" linear using either a triode or pentode tube?"

For the pentode or tetrode, the grid bias will be *approximately* equal to the tube's maximum screen voltage divided by the screen-grid mu factor. For a triode, grid bias (with no excitation) will be *approximately* equal to the plate voltage divided by its amplification factor (mu).

Linears are nearly always biased so that they will operate at little or no plate current when *not* excited. In other words, when excitation is applied plate current swing will be indicated; with no excitation there will be little or no plate current indicated. But this applies to straight class "B" only and not "AB1" or "AB2".

Questions

A.M. from Albany writes: "I'm all by myself but desire to learn the code and obtain a license. What do you suggest?"

I'd suggest that you write to the Instructograph Company, 4709 Sheridan Road, Chicago 40, Illinois. They have just the "code teacher" for you and others who do not have others to help them.

G.V. writes from San Francisco: "What is your recommendation for a tiny oscilloscope that I can use around home?"

The James Millen Mfg. Co. of Malden, Mass. makes a terrific little one inch scope. Why not drop them a line?

K.B. of Hollywood, Florida says: "What do you think of the Heathkit 'Q' Multiplier?"

Tops!

C.D., Augusta, Ga. asks: "What's your recommendation for a 2 meter, 5 element beam for the least money?"

I would take the Hi-Gain, it's only *$6.95*. It works fine too.

H.J., Mexico City writes: "How about giving a run-down comparison of the HQ120, NC183, SX28, NC300 and the SX101?"

I have tried them all *but* am reluctant to take up space making "comparisons." The first three do not compare with the last two however. If you will tell me WHY (price, selectivity, sensitivity, power output, etc.) maybe I can help you—AND MANY OTHERS who have asked for the same type of information relative to these and other receivers.

A.M. writes from "glamorous" Honolulu: "Do you have design information relative to modulation transformer design which would enable me to build a transformer with smaller dimensions but greater efficiency than those commercially obtainable?"

No, we're sorry. Your's is the third request for such information. If any of you do have and can suggest sources for special core material, etc. we would appreciate hearing from you.

D.K. way down in Sydney, Australia drops us a line: "Why is it that you Yanks do not give us useable information on parts in the rigs you build and describe in the various American amateur radio publications? Anytime we want to build something we have to guess at items like this: 'L1, B&W 3106'. No inductance values—no nothing."

Sometimes that information is included and sometimes it is not. It all depends upon the writer. Personally, I agree with you. However, when an American builds something and describes it in CQ for example, he is usually only thinking of "home consumption." The next time you have difficulty, drop us a line, we'll try to help you.

L.R. from Tucson writes this: "Recently I sent in a question relative to a particular trouble in my hi-fi and you made several suggestions, one of which paid off. Tell me, how did you come up with the answer?"

Got the information from the "horse's mouth". . . . AND SIMPLE deduction.

F.G. from Akron queries: "I use a command receiver in my car and have difficulty tuning in SSB signals because of voltage fluctuation. My BFO is homebuilt and seems to work fine on CW but not side-band. What's your suggestion?"

Do you have a voltage regulator for the BFO? If not, it would be wise to install one. An OB2 or some similar regulator tube should work okeh. How about a control for the amount of BFO voltage injection? This helps too.

"I have had a receiver prior to the one I have now which caused no TVI. But the one I have now really raises cane with our TV set. The trouble only started about 3 months ago. Any ideas?" asks W.T. from Boise, Idaho.

You didn't say *what* receiver you have. Could be a number of things causing it. An old carbon resistor; bad tubes (including voltage regulator tube); bad transformer; intermittent ground contact and oodles of other things. Tell us what kind of set you have, how old it is, etc. Also let us know the type of TV set you have, how old it is, type of antenna and lead-in, etc. Give us sufficient back-ground information so we can ATTEMPT to help you.

Thirty

So that is it for this month. Again, thank you for being patient, tolerant and helpful. I like your *kind* complimentary letters on the service, even though we cannot guarantee to give 100% satisfaction in all cases. We try to do our best—that is about all anyone can do.

73, Chuck, W6QLV

VHF

by **SAM HARRIS, W1FZJ**
P.O. Box 2505, Medfield, Mass.

50mc. 144mc. 220mc. 420mc. and above

V.H.F. Contest

By the time you read this you should be all ready to give the April contest a real go. We have had a number of inquiries about the rules and regulations governing the contest. I would like to point out that the object of the contest is to have a good time. The object of the rules is not to make it a dreary drudge but rather to provide a common base from which we can judge who had the most fun. If you read the rules carefully you will see that the object is to work as many different stations as you can. Certain prescribed information must be exchanged. The reason for this exchange of information is to insure a valid contact. For scoring purposes you need to know his section (county) and state. We feel that you should know his name too and have so included it in the exchange.

Total Your Logs

In the past we have received many logs with no claimed score attached. It would be greatly appreciated if you would include your own total as well as the band you were operating, your name, address, and call letters with your log.

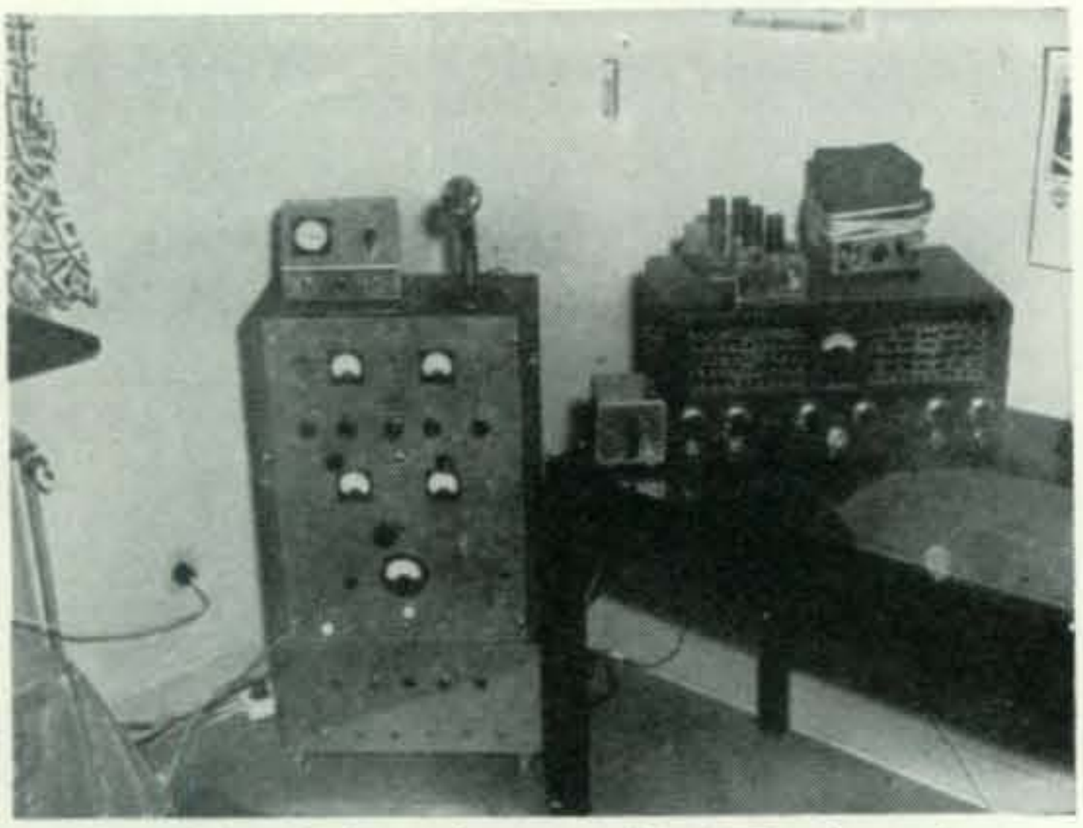
CENTURY CLUB CERTIFICATES may be obtained on the basis of your contest log *provided* that at least one hundred of the stations you contact send in their score. Partial credit for the Two Twenty and Four Twenty certificates will be credited.

Six Meter Century Club

Looks like we goofed in the announcement for six meters. The number of applications for the certificate far exceeded our expectations and caught us with our certificates still at the printers. (Patience)

The wording of the announcement was such that any one hundred contacts, regardless of when they were made, were sufficient to earn a certificate. That's the way it was printed and that is the way it stands. *Proof* of contact in amateur radio has always been, and still is, QSL cards. (Boy have we got QSL cards.) In order to eliminate the need for shipping large quantities of cardboard back and forth the award committee has approved the following procedure:

1. Prepare a list of the stations from whom you have received QSL cards. (Be sure to



V.H.F. Swedish Style. Len (SM6BTT), has since added a National NC300 to the receiving department.

indicate the date on which the contact was made.)

2. Have any licensed amateur affix his signature to a statement that he has seen the QSL cards.

3. Send the list and statement to the Rhododendron Swamp V.H.F. Society, P.O. Box 2502, Medfield, Massachusetts.

Acknowledgement of receipt of the application will be made on the day of receipt. Processing the certificate takes from two to three weeks. (Patience) You can still send in your QSL cards for proof of contact if you are so inclined. Return postage should be included. *PLEASE* do not forget to include your name and address. . . .

Six Meter C.C. Plaques

The engraved "Microwave Associates Achievement Plaque" for the first six meter C.C.C. (pre 1958) goes to Frank Miller, K9HMB. Frank led all the rest by a full twenty-four hours. Honorable mention should go to about twenty other blokes who came through the next day.

So much for past deeds. So far no one has come through with the first certificate for 1958. This certificate can only be earned by having made all your one hundred contacts since January 1 (inclusive) 1958. (One hundred different, confirmed contacts that is) The Microwave Associates V.H.F. achievement plaque for the first six meter century club certificate in 1958 is waiting for somebody. Who knows, it might be you. . . .

Jack, W8IWT, surveys the scene.

2 Meter Moonbounce (via W8KAY)

There may be some interesting developments on this subject during the coming months. KH6UK, Oahu T.H., has completed a new final using PP 4CX3OOA's, and is working on a tiltable array of 8 Gonset 24′ long yagis. He expects to have it ready to try for echoes in a month or two from now. W5VWU has a new high-efficiency, high-power final almost ready to test, and has done a lot of work on a tiltable array. Quite a few of the dx gang have expressed great interest in these developments. For those that are not aware of it as yet, there is a nightly sked on 14095 kc (A1) at 2300 EST for 144 mc dx liaison. Usually, there is activity on this sked. It is a convenient means of passing the word on aurora, meteor scatter, or other 144 mc developments.

Back to the moonbounce deal—it looks to me as if a great deal hinges on Tommy's (KH6UK) success in hearing his own echoes. If he gets any worthwhile results with his own sigs, there will be an effort to work Hawaii by this means. When the moon is an hour or two from setting on the western horizon at east-coast U. S. locations, it is approximately overhead in Hawaii, so you can see the possibilities.

Incidentally, the January 1958 issue of IRE Proceedings has some very interesting articles on moonbounce projects being carried on by NRL and others. In one case, NRL used 100 watt output rig on 198 mc, voice modulation, with a 225′ parabola scooped out of the ground, and said the bounced sigs were perfectly readable with no distortion, using 3 kc bandwidth receiver.

KH6UK and 5VWU expects to use 144,-000.00, synchronizing with WWV by means of harmonics of xtal frequency standard.

2 Meter Memoranda (via W8KAY)

W2CXY has a new final almost ready, using a single 4CS1OOOA in a 5′ long tank (coaxial).

WØSMJ, Indianola, Iowa, has new rig and antenna on 144,042 now. 40 el. and PP 4/125A final 700 watts.

While there have been a number of aurora sessions since the really big one of September 22, 1957, they have not been very widespread until February 10 aurora session. I will attempt to cover this one in a separate write-up.

WØIC Denver, 144,103 is working on new final using PP 4X25OB's on both six and two. He is going to put Colorado on the 144 mc map, having already worked W9KLR and W9WOK via MS with his 6n2 with only 100 watts. He is a good cw operator (and ARRL director—Rocky mountain div.).

W8PT is working on a new final using

single 4X500A in coaxial tank.

W4HJQ, Elizabethtown, Kentucky, 144,055 has his new kw final (Amplex-PP 4X250B's) on the air. With his 96 element colinear, he has a BIG SIG.

W4ZXI/W8KAY sked holding up very reliably this winter. W4ZXI 144,022 to as low as 013-slo drift runs 1 kw into 15 el long yagi. Sked time 2230 EST Friday-Saturday-Sunday with another check at 0030 usually. Distance around 400 miles. Sigs range from S1-S2 to S6 and 7 on some nights.

W8BKI 144,251 Charleston, West Virginia sked at same time daily (2230 EST).

2 Meter Frequencies

The following list of stations and their frequencies was supplied by Art (W8KAY). Incidentally he heard them all on one opening.

W1COT	144,095	W5RCI	144,205
W2RXG	144,022	W4RFR	144,082
K9AQP	144,250	W8GFN	144,148
W8BKI	144,251	W4UMF	144,088
KØEMQ	144,118	K2RLG	144,052
WØBFB	144,233	W9PBP	144,155
W1QAK	144,002	W8LOF	144,007
W5LPG	144,152	W1AJR	144,338
WØRYG	144,176	W3GKP	144,040
W8URO	144,155	W4HJQ	144,055
W4BUZ	144,082	WØHND	144,110
WØSMJ	144,042	W1OAX	144,047
W1REZ	144,008	W4AIB	144,038
W2WHX	144,021	W9REM	144,113
W9ZIH	144,049	W3KCA	144,193
W9AAG	144,012	W1RFU	144,177
W9EGH	144,022	W8QVK	144,184
	W1OBQ 144,056		

RECORD BREAKING AURORA via W8KAY 144 mc 2/10/11/58

As soon as I ups and sez that I never get any two meter news, in comes reams of it from Art, W8KAY. Enough news (seems to me) to keep you happy for a month or two.

Aurora first noted at W8KAY at approximately 2220 EST when turned receiver on. There were quite a few aurora signals on the band below 144,300, most were running S7 to S9 plus. In the few minutes available before turning antenna south for 2230 sked with W8BKI, W1COT, W1REZ, W1AJR, W2RXG, W2WHX, W8LOF and K9AQP were identified. W8BKI mentioned that he was just starting to hear some weak aurora signals, and that he could see the aurora in the sky high in the northwest. I checked, and saw a huge rose-red ball centered about 45 degrees above the NW horizon, almost a perfect circle.

On swinging antenna back to the NW, the band was crowded with signals. During the entire session 10/11 February, only a few signals were heard above 144,300, and the 144 to 144,100 portion was badly QRM'd as usual. Why don't some of the DX gang spread out a little?????? Guess there never will be a good answer to that one. Here at W8KAY, we have no trouble raising others with our 144,300 frequency which is the ONLY frequency used.

Around 2400 on the 10th, there was a lull —the comparatively few signals still heard were very weak. By this time, signals as far west as Cedar Rapids and south to Louisville had been heard.

Around 0045 (11th) things picked up rapidly. At 0117, W5RCI was first heard at W8KAY, then shortly after, W4RFR Nashville, W4AIB Aiken, South Carolina, and WØRYG Lincoln, Nebraska were starting to roll in. WØRYG was heard working WØIC (Denver) at 0158. Here at W8KAY, WØIC's signals could not be heard. W5LPG Laurel, Miss., was first heard at 0325, he is farthest south signal ever heard here on aurora—about 100 miles north of the Gulf of Mexico, and some 100 miles or thereabout south of W4AIB. When I first heard W4AIB, I called W4LTU Orlando, Florida, via landline and got him out of the sack and on the air. Nothing was heard of him.

At 0430 EST, I pulled switches to get some sleep. Activity wasn't as great as it had been around 0200 when band was really crowded, but there were probably 25 to 50 signals still rolling in, from W1 to WØ and south to W4 and W5. The visible aurora was due west, a big red display. W5RCI was rolling through S9. W5LPG was S6 or 7.

At 0830 I checked the band and found a few aurora signals. W9AAG was in QSO with W9VNW, no others heard on band. A CQ raised WØSMJ, signals S9A. W8BKI heard aurora signals on band when he got out of the sack at 0600.

Others in W8 area were hearing WØZJB and at least one other Kansas station, W5JWL in Arkansas, W5PZ in Oklahoma, etc.

WØIC Denver reports on aurora 144 mc, February 11 EST: worked WØRYG at 0158, WØZJB at 0324. Heard W4HJQ 0315-0345, W5RCI briefly around 0400, W8LOF briefly at 0356, WØWRT for several hours. He pulled switch 0422. Said no aurora visible from ground due to overcast skies, but airline pilots reported aurora visible Denver area.

KØEMQ reports hearing WØIC weakly. W8PT reports unable to hear WØIC at his QTH on Lake Michigan near Chicago.

W8BKI 144,251, Charleston, West Virginia in only active 144 mc in that state on aurora. He worked several new states during this aurora session.

W4BUZ 144,082, Greensboro, North Carolina, worked six new states. W4ZXI wasn't home, Russ still groaning about that. . . .

Prominent 6 Meter European Station (via W5AJG)

Leroy (WA5JG) was kind enough to let us use the following letter from Len Berg (SM6BTT):

"Thank you very much for the letter and all the papers about meteor work. I can tell you I am very glad to have received them, and later I will send you some news

from the 144 mc work in Europe."

"I want to ask you if you have a description of your own 32 element antenna, or of some other big beams. The boys over here mostly have smaller beams than 16 elements, maybe one reason is that there are no details about bigger beams in the ham-magazines here. I know a lot of fellows, who would like to try a big antenna, if they had a description. As you know, it takes a lot of time to construct a new antenna that works, and you need some instruments, which are rare among the hams here."

When I write this the 50 mc band is somewhat down, but do hope the beginning of this week will bring us an opening, as there was big aurora 28 days ago. Until this day I have 152 QSO's with 119 different stations in 23 states. During Christmas, when I was at home, 100 miles from the 50 mc rig, the conditions were very good and my friend, Ingvar, SM7ZN, brought up his total to 29 states."

"In Sweden, I believe there are 75 hams on 144 mc. I have never heard two 144 mc stations making QRM to each other! Most of the time you listen to an empty band and many kw's are lost in calling CQ before you get a QSO. But this aurora and meteors will perhaps raise interest and activity, but someone must show that it works before the conservative Europeans turn to it! During 1957 several Aurora QSO's were made (the first in Europe took place on the 24th of January, 1957.) and do hope Meteor-QSO's will be made this year." *Thanks a million for the very interesting information Len and Leroy. Now on to Leroy's news."*

Dallas, Texas Leroy May (WA5JG) sez:

"The boys around here finally got a crack at Africa. Last Saturday and Sunday, February 23 and 24, SW Africa and Rhodesia N and S. were in."

"Sunday, the 24th, ZS3G had a terrific signal for several hours and did one have to stand in line to work him!"

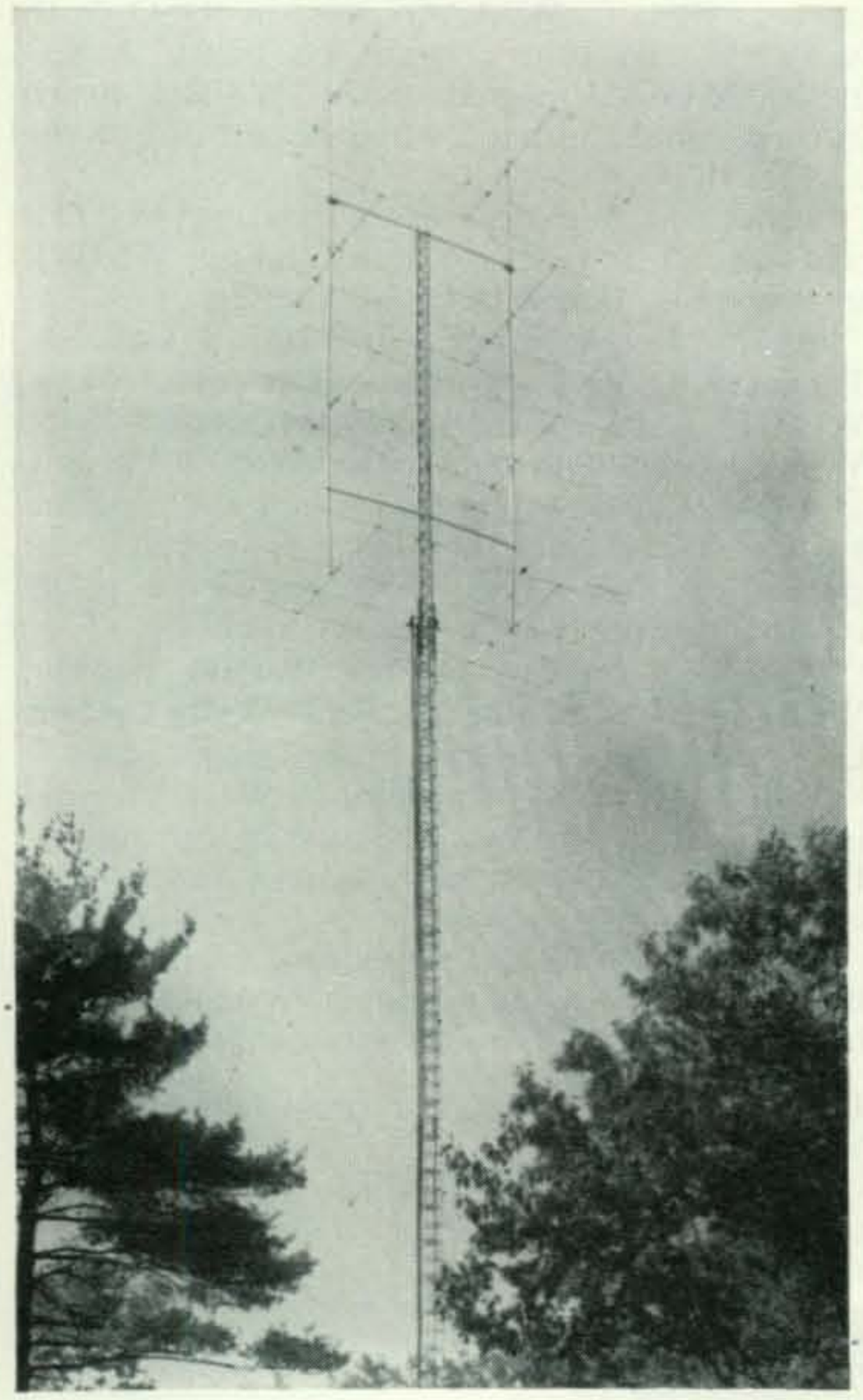
"Lots of piggy back riding going on so those without VFO had a rough time. Every half hour or so he would say he was changing his dial to give some one else a chance, hi!"

"Worked him and ZE2JE around 10 A.M. Heard VQ2PL in N. Rhodesia but didn't connect for the terrible QRM. It really sounded like 10 or 75 around the Dallas, Ft. Worth area. Also heard ZE2JV but didn't work him."

"Anything would have worked as far as power was concerned. Expect a grid dipper would have done the job."

"Believe the scarce stuff now is Japan around these parts." *Glad to know you got Africa, Leroy. When you get Japan, send it right along to the east coast please.*

32 elements on six at W1HOY. Antenna consists of 8, 4 element Finco beams. Bottom of array is 100 feet above ground.



Six Meters to the Rescue!

During a recent snow storm in Omaha, Nebraska, and in the western part of Nebraska, WØVZJ and his XYL, KØLHZ, did a bang up job on handling messages, etc., for those who were stranded and had no way to communicate except by short wave. Power lines were down and communication by phone, etc., were very limited. About thirty-five towns were affected by the snow and ice and were in bad condition communication-wise.

The fore-going information was received from KØLXK in Omaha who also said:

"My hat is off to both WØYZV and KØLHZ." *Our hats are off too and know that everyone concerned is most grateful. Another very good turn done via the VHF bands.*

Don't Forget

The "Fourth" annual family picnic of the "Royal Order of Hoot Owls", will be held on Father's Day, *June 15, 1958* at Gaffney's Lake Wilderness Resort in Maple Valley—16 miles east of Seattle, Washington.

"Pot Luck" at 1:00 P.M.—Prizes!—XYL "Hat Contest".

Open to "R.O.H.O." membership only.

Resort Station on 50.400 mc. Call "CQ Hootowls".

Dayton

Another big one of the Don't Forgets is "THE DAYTON HAMVENTION". Have you made your reservations? It'll probably be too late if you don't do it today. Get with it fellas!

Pictou, Nova Scotia A note from friend Russ, (W1QCC/VE1) who has been operating portable VE1 on six meters for some months now.

"Since January 1, 1958, I've worked a hundred and seventy-eight different stations on six meters, and have seventy-one QSL confirmations."

"The band in VE1 land has been pretty dead. We had just a few short openings to W5 land, back-scatter to W1 land, an opening to W6 and W7 land, an opening to Ecuador (HC1JW), and an opening to Mexico (XE1PY and XE1GE), and one opening to Guatamala (TG9JW). But—all in all February has not been too good here." *Fer Hevins sakes Russ, what more do you want at this time of the year.*

Spencer, Massachusetts A quickie from one of our locals, Roy (W1JAT) who included the note with his 100 QSL's for Six Meter Century Club Certificate.

"We are using a TBS 50C transmitter, running twenty-one watts input. Receiver is an NC173, antenna is a five element homebrew beam about twenty-seven feet off the ground. Elevation at my QTH here is 1187 feet above sea level." *And here on the east coast that's HIGH fellas.*

"My XYL is soon to be on six also. Took her tech about a month ago, so won't be too long now. Her call is KN1DTR, and handle is Charlotte." *Thanks for the information Roy, it isn't too often that we get local information, news, etc. Good luck to Charlotte and hope she's on six by the time this appears in print.*

Mansfield, Ohio Good ole Mansfield, Ohio contributes via Carl Willis (K8DKO).

"Have just been no six meters now for a year and two months and have twenty-five states, South America and Guatemala logged so far, with only forty-five watts. Have a new 4-125A amplifier just about finished now, modulated by a pair of 811's and when it's done I'm gonna give Ben (W8HXT) a little competition. *Go to it Carl.* Ben's almost my neighbor and when he turns on his kw I just get off." *Mean you're no longer friends and neighbors, eh, Carl?*

Bethlehem, Connecticut From the home state of the ARRL we receive a bit from R. Laubly (K1BML).

"Have recently received my certificate from the VHF Institute for twenty-five stations above 146 mc, and was lucky enough to place second on two meters for Connecticut in the last 'CQ' contest, finishing behind W1KLK from Meriden."

Irving, Texas Vic Armstrong (K5DCQ) emits with:

"On February 22 and 23 at approximately 1000 CST a VQ2 (PL?) and a ZE2 (JL?), ZS3G and ZS9G were heard and worked in the Dallas, Ft. Worth area. I don't recall the letters of the ZE and VQ, and don't have the log with me here at the YL's." *That's right Vic, don't distract her from her code practice with that useless dx. Kind of short Vic, but we surely appreciate the information, send us some more from Texas, huh?*

Albuquerque, New Mexico Much-wanted state on six meters comes through via the post-office and Jim (K5LJJ).

"I'm still looking for those eastern contacts. Worked ZS9G on February 21, 1958 at 0948 MST. It was a real thrill. Heard KP4ACH and KP4ABN on the 23rd, 5 x 5, but they didn't hear me. February hasn't been as good as January, I still have only New Mexico and Texas for states, plus Alaska, Nova Scotia, ZS9, but am sure looking forward to this summer and some more or less stateside openings." *Well at least you're getting some dx Jim, if you're not getting many locals. Stick with it, we'll surely be looking for you.*

Columbiana, Ohio The state of Ohio again represented by Jack Graft (W81WT).

"I was one of the lucky fellows who worked the African stations on 2-22-58. The band opened up good around 1100 and was very good for about an hour (EST)."

"ZE2JV—Ray—was contacted at 1116 (50.025 mc) and ZE2KM, Dennis, was contacted at 1131 (50.400 mc). Both had S-9+ signals in W8 land. Many others, ZE, ZS and VQ were heard at my QTH, but were not worked."

"ZE2JV, Ray, wasn't looking below 50.5 because of the QRM. I QSY'd up to 50.730 to make both of my contacts and I'm only running 45 watts input to a single 6146. Receiver is an NC300 and converter with a homebrew 5 element beam."

"An oddity to this whole deal is our friend Johnnie (W8HRV) is on vacation in Jamaica at VP5RS QTH and just about had a fit when he heard six meters had opened to Africa and he's over a thousand miles from his kw." *Did you know Jack that VP5RS (with Johnnie at the mike has been making contacts in the states for a new country on six?)*

"Just one other bit of information; on 1-19-58 at 1527 we were lucky again and worked W2IDZ/VE8 and had a F.B. QSO." *Congratulations Jack, on some fine DX work, and also the fine letter.*

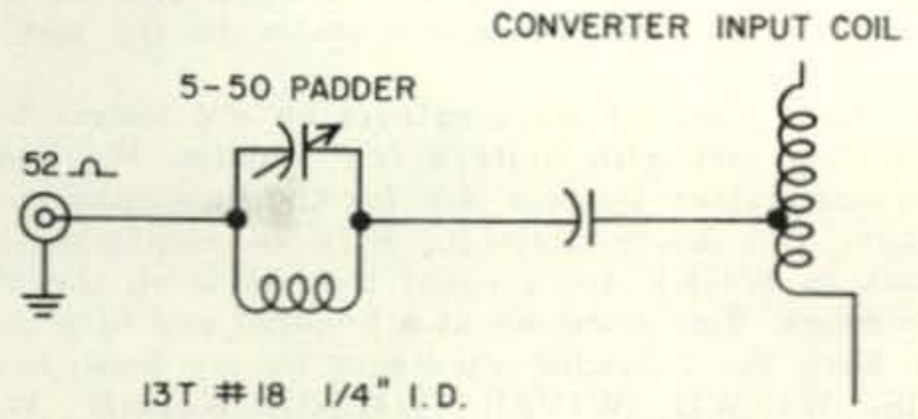


Figure 1, A. Channel 2 trap suggested by Amos Hawkins.

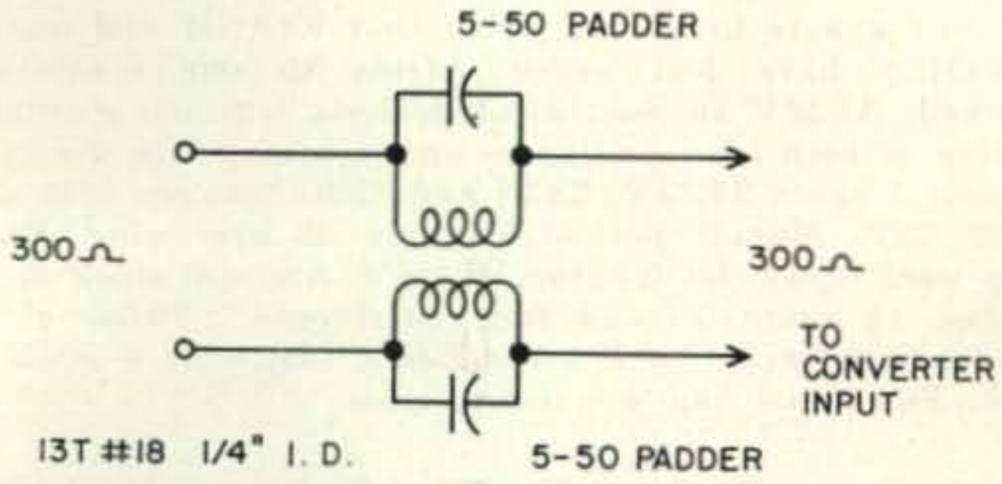


Figure 1, B. Channel 2 trap for use with 300 ohm line.

Channel 2 Birdies

Amos (W8INQ) sends the following information on a birdy trap:

"I noticed the article in the February issue about the 49.500 mc channel 2 birdies. So here is a help to those who do not care to build or like to have the tin-can filter cluttering up the shack."

"All you need is a 50-50 uuf padder condenser and a coil of 13 turns of No. 18 enameled wire wound on a quarter inch rod. A number of the input circuits on converters will have a coupling condenser between the input connector and the pick-up coil, so you unsolder the coupling condenser from the input connector and insert this trap. To tune this trap, tune in the 49.500 mc signal and tune out the signal. It will clear up the birdies in the first megacycle on 50 with no trouble at all. I use 52 ohm co-ax and the 'CQ' July, 1956, converter by W1WID."

"The same type of trap also works on two meters and two-twenty. If you are using 300-ohm lead-in, make two traps with one in each side." *Looks good although I haven't tried it. You?*

Akron, Ohio Another "quickie", this time from Jackie Busson (W8WRH) who included it with her six meter QSL's for six meter century club certificate.

"The O.M., W8WGB, and I work six meters and have been on for two years. I've worked over two hundred Ohio stations, seventeen states, a VE1, VE3 and VE8. I'm also active on two nets."

"The rig is homebrew, running eleven watts input. The antenna is a cubical quad, thirty feet high." *Thanks for the dope Jackie. Not often we hear from the YL's, so it's a double pleasure.*

East Point, Georgia Ezelle (K4DLE) sez through the post-office:

"Most of the boys around here worked ZS3G on the 22nd

and 23rd of February. We have worked Alaska, Cuba, Sweden, Ireland, and thirty-five states in the last nine months." *WHEW!!*

"We have about thirty amateurs on six meters locally with a good net with quite a few mobiles. We monitor 50.1 about sixteen hours a day for the past nine months but have not heard K4BLA. *He's in California now.* We talk to W4IKK every night that he is on the air at Chattanooga, Tennessee, about a hundred and fifty miles."

We have the following amateurs on six here, locally: W4GIS, W4FWH, W4VZR, W4LNG, W4FBH, W4ZD, K4DLE, K4KVB, K4OSW, K4GYZ, K4LVU, K4JGK, K4BPK, K4RZB, K5AWT/4, K4SHQ, K4ASO, KrKKT and several others that I can't recall right now. *"Thanks for the dope Ezelle, send us news as it comes in, Please.*

Pensacola, Florida Eddie (W4MS-W4RE) comes through with:

"Just a note to let you know that K4AGM and myself (W4MS) have just added Africa to our continents worked. ZE2JV in Southern Rhodesia was our Contact, giving us both four continents on six meters. On the 22nd (Feb.) I heard ZE2JV, ZS3G and ZS9G between 0830 and 0930 CST. Signals peaked at forty db over nine. Hope you were in on the opening. *Wasn't.* Am still stuck at 44 states, 12 countries and four continents." *Think about everyone is stuck for a while Eddie, just wait a week or two. You know how six meters goes.*

Santa Rosa, California Paul Boberg (W6BAZ), the fellow who won't admit the band is closed and still comes through to the east coast, has finally had his troubles ironed out (?).

"Went to San Francisco again yesterday, February 19. Guess what! *I know.* The band opened to ZL again. This has happened to me three times now. *Why don't you stay home once in a while?* Had the same luck last year on South America openings, so had to stay home till I caught one opening. Guess I'll have to do the same on the ZL openings."

"Had a ZL opening and I'm happy now. Ole W6BAZ, among others, worked ZL1DE and ZL2DS. Band opened to ZL at 1230 PST, approximately, and heard ZL1AHQ until 1338 PST."

"Worked two more ZL's on February 21, ZL1BJ at 1400 PST on phone, and at 1418 worked ZL2DS on cw. Also heard W5VY, KH6UK and ZL2DS all on at the same time, shortly after 1500, and all calling 'CQ'." *Verr-rr-ry interesting, Paul, keep 'em coming.*

Collierville, Tennessee Another Paul is heard from, W4HHK of two meter fame now operating six meters also.

"Am pleased to report an opening to South Africa on 50 mc this morning, February 23, 1958. At 0844 CST worked ZE2JV in Southern Rhodesia, using a twenty watt phone transmitter and a four element yagi. Made this contact from the home QTH then raced to the farm walking the last half mile through mud and worked ZE2JV again at 0909 CST on twenty-four elements, 750 watts, and the cw set-up. Logged ZE2KM *(One we hadn't heard of from anyone else Yet)* at 0923 and worked VQ2PL, Northern Rhodesia at 0926 CST. Received 599x reports from them. They were 5-9 plus on phone. Heard no backscatter during the opening, but after the Africans disappeared began hearing W4RMU, W4IKK, and W4RFR via backscatter. On big aurora opening of February 10th and 11th, it was clearly visible in these parts. Did much listening, little calling. Best dx worked was W1REZ, all this (aurora) on 144 mc only. No new states picked up." *Thanks for the info Paul, always nice to hear from Tennessee.*

Nescopeck, Pennsylvania A fairly new-comer to six meters John Brosious (W3FMF) contributes his share:

"I've been reading the VHF section in CQ for about two years now, and I've finally decided to write and let you know I enjoy reading it and also let you know what's going on at this QTH." *Thanks for the bouquet, John. 'Taint always as simple as it looks.*

"I've been on six now for about three months. The transmitter is a homebrew *(congratulations!)* running twenty-one watts input. The receiver is an NC-101-X with an international converter on it. The antenna is a three element beam, thirty feet high, which is soon to be replaced by a three over three stacked array."

"I've heard some of the European DX this winter but I haven't succeeded in working any of it yet. I intend to keep trying though." *That's the old VHF spirit.*

"I'd like to arrange skeds with anyone on six, and also exchange letters with other fellows who operate the band and other VHF bands. I'm mainly interested in VHF but don't know too much about it." *Fine business John. Hope you get more correspondence than you can take care of.*

Issaquan, Washington An Issaquanian *(I couldn't resist it)* Wayne Paschal (W7NX) comes through for seldom-heard-from-Washington.

"I am a VHF man these days. Work mostly two meters, some six. Running a modest 25 watts input to a war weary surplus ARC3 to a six over six beam. Am located on a suburban hill, locally called Cougar Mountain, with my QTH at about the 1200 foot level. Not much traffic and no neighbors to holler about what mast I put up. As a result, have done pretty well working what DX is generally available, that can feed a readable signal into a (horrors) war surplus BC639A receiver. Yep, been at it a long time with strictly beginner's equipment."

"Read your VHF news regularly and like it a lot except I never see anything about this area to speak of—and that's perfectly understandable—there isn't much to report. *From here on in, we're depending on you Wayne.* Activity out here comes and goes. A few years back there was lots of two meter men around, now there are just a handful of faithfuls except when a Field Day of some sort rolls around, then some of the boys crawl out of the woodwork or where ever they are hibernating. Of course, it's like the rest of the country, not many work above 146 mc. 's a shame, really, with all that wide-open space. Tried to advocate moving up the spectrum without much success so far. Oh well!" *As you said Wayne, it's the same all over the country.*

Ottowa, Illinois Alex Scherr (W9EU) starts off the two meter news with:

"Trust you were listening on 144 mc, Monday night, 2/10/58 during the Northern Lights. Here is the log of W9EU—heard from 0400 Z to 0430Z. W2BV, K2LVR, W3LNA, W4MKJ, W4HJQ, W5LPG, W5RCI, W5PZ, W8KAY, W8GFN, W8SVI, W8ZTU, W8URO, W9ZJI, W9OJI, W9YLY, W9EGH, W9CUX, W9ZIH, W9JBC, W9NVK, W9REM, W9EGI, W9RUK, KØEMO, WØSMJ, WØUMO, WØIAC." *Some log Alex, and it surely was a good one eh!*

Middletown, Rhode Island Andy, W1AJR, emits from that li'l ole state:

"The aurora of the 10th and 11th of February was the best one that I worked on two meters and I don't miss many if I am not out of town. It was best from 0200 to 0415 on the 11th of February, peaking up strongly during this period."

"I worked W4TDW in Knoxville, Tennessee at 0205 for state #19; W9ZIH in Chicago, Illinois, at 0225 for #20; also worked W9AAG in Woodhull, Illinois at 0245; and W5RCI in Marks, Mississippi, at 0326 for #21." *Aurora does pay off on two meters, doesn't it, Andy?*

"The signals after 0200 were quite a bit stronger than the normal aurora signals. It was necessary to check all strong signals instead of assuming it was a W2 or W8. I nearly missed W5RCI that way since he was a 5-5A on his 'CQ'. W9ZIH was so strong that I worked him through local QRM. Also worked W8SDJ, W8EHW, W8PT, and W4BUR. Some of the other DX stations heard were W4MDA, W4RFR, W8BKI and W9REM. Did not hear W4AIB, W9GAB or any WØ's but was looking for them."

"I am now running a pair of 826's on two meters at 400 watts on phone and 500 watts on cw. Have a new Tapetone XC-144 converter, but the antenna is still 20 elements. Doing some operating on six meters, but the only DX there is PZ1AE, CT1CO, SM7ZN and an abbreviated QSO with XE1PY. At present the 220 mc antenna is down but hope to get one back up shortly." *A real good letter Andy, do it more often.*

Portsmouth, Rhode Island Another contributor from the wee one, Art Westmont (W1ZJQ).

"I keep hoping when every issue of 'CQ' comes out that there might be some information there regarding SSB for the VHF fan. I have just gone SSB on the lower frequencies *(what's them?)* and would like to convert my present two meter rig for SSB operation, hoping there would be enough activity on the band to warrant the conversion. I am sure that other hams would like some dope on methods of frequency conversion and all the other techniques that would help. Personally, I hate cw and I feel that SSB would give cw ranges." *O.K. gang, GIVE! Get together with Art and arrange some articles or somepin'. Hope to have some of same in an early issue Art.*

Meriden, Connecticut Another from our neighboring State, Connecticut, and Doug (W1KLK).

"At present there are sixteen two meter stations on the air (in an area of two square miles) but *no* cw activity. The QRM on two can get bad with a sensitive converter. *Glad to know of one place in the country where there is QRM on two meters.* I have been on two for one year and in that time have worked 356 stations in 12 states and Canada. I started off with a Gonset, 19" whip, and carbon mike. The sixteen element two meter beam came down recently so I'm going to add more elements and put it back up. Those db shore help on two. I am still working on six meters and hope to be on by the end of spring with a 6n2, converter, and a 4 element beam. K1DME is building a 100 watt six meter rig also."

"Last month the Connecticut VHF club was formed. Officers are: W1QAK president, W1KAC vice-president, and W1EYF secretary. The club is to promote interest in VHF, helping the boys get big antennas and build rigs, and *contests.*"

"Starting in 'CQ's' April contest ,we'll be on six to 432 from the local high spot (1080 ft.). Large antennas and plenty of power will be used. As soon as we get organized we'll be looking for members." *Good luck to the new club Doug. We'll be looking for you in the contest.*

Irving, Texas Vic Armstrong (K5DCQ) included a note with his plea for a Six Meter Century Club Certificate which sez:

"On March 7, 1958, 1721 CST I worked HC1JW in Quito; he was running 300 watts and four elements, his signals S9 plus for three hours. I think he is the first foreign (DX) station to contact ten members of the Six Meter Club of Dallas for the Certificate." *Very interesting Vic, and congratulations to Victor, (HC1JW) also.*

Roswell, New Mexico Friend Frank Greene, (K5IQL) sez:

"Regarding cw on Six—it would be no advantage at this QTH. Oddly, we never hear cw when signals are weak. But when the phone boys are booming through, the Charley William boys are in there. Most of those we have stopped to copy have been stations we have worked on phone!"

Upper Saddle River, New Jersey One of the New Jersey gang, Bob Morrison (K2RRG) comes through for us this month:

"My kw for six meters will be ready for operation in April. The new antenna setup will be a pair of six element beams stacked a full wave on a 70 foot tower. For 220 mc I'll have a kw final on by at least June 1. Antenna for 220 will be a pair of 15 element beams stacked."

"Needless to say, I'll be looking for skeds on each band. One sked, already in the works is with Bob, K6RNQ, on 220 mc. More on that later when final plans have been made. I will say that Bob will also be running a kw along with high gain antennae. We are optimistic about this——, the impossible just takes longer." *Seems like optimism has been paying off with VHF the last year or so Bob.*

"As for DX, I worked Tommy, KH6UK, on phone January 31, 1958, at 1500 EST. By the way, we tried in vain to reach you and Helen by land line to tell you KH6UK was calling Helen's station. *Heard him and called several times, but he kept going back to other stations.* Also worked PZ1AE, January 26th at 0920 and HC1JW, 1015 EST, February 19 and again at 1005 February 20th. Haven't had any luck with LU land since 1956 (Oct.)."

"Just heard VQ2PL, time is 1140 EST 2/22/58. What better reason to sign!" *Hope you made it Bob, and congratulations on the dx you've been working.*

Winchester, Virginia Another one of the seldom-heard-on-six-meters-on the east coast states, comes through this time from Paul Chamberlin (K4KTV):

"I received my Technician license last October and enjoy your VHF department in 'CQ' very much. *Thank you.* I would like to see or hear more cw on six meters but am not sure that setting aside the bottom 100 kc's would increase cw activity in the band."

"My best DX on 6 is ZE2KL in Southern Rhodesia, who I worked on February 22nd. I also worked W7NGW in Portland, Oregon during an opening in December. My rig here is a Globe Scout 680 and the receiver is a Halicrafter SX-43."

"We have recently formed a Tri State 6 Meter Net here of which K4BRK is net Control. We check in at 1220 P.M. each Sunday. At present there are about 12 stations checking into the net. Any one whom we can copy is welcome to check into this net. Six meters is really picking up in this area."

"This might be a little early but would like to invite all hams on all bands to attend the Hamfest of the Shenandoah Valley Amateur Radio Club which will be held on Dickie Ridge on Skyline Drive near Front Royal, Virginia, Sunday, August 3, 1958. I am secretary of the Club and will be glad to answer any inquiries regarding the Hamfest." *Good to hear from Virginia, Paul. It's never too early to mention Hamfests.*

73, Sam, W1FZJ

sideband sideband sideband

SIDEBAND

by **BOB ADAMS, W3SW**
919 McCeney Road, Silver Spring, Md.

Seventeen SB stations have now worked 100 or more countries and the number is increasing rapidly. VQ4EO, Paul perhaps more than any one else is responsible for this activity. Paul has been on safari across Africa in a specially built station-wagon and so far has operated from VQ3, VQ5, OQ5, FQ8 and FE8. He will be in ZO2 this week, and hopes to receive permission to operate from FD8 when he arrives there later this month. Also scheduled on his trip are ZD2, and FF8DZ. Paul normally operates between 14320 and 14330 and listens for W/K on or around 14270. Best times are 0500-0600Z. QSL's are handled by W4IYC and the Richmond Radio Club. Don't forget to send self-addressed envelopes with your QSL to insure receiving your cards.

Mannie, ZS6AJH made his appearance from Swaziland on March 7th as scheduled and signed ZS6AJH/ZS7. When worked by your Editor he was going strong on March 8th and said he would stay on the air until March 9th. Mannie promises to QSL 100%. This made country number 100 for me since moving from W2 last May.

We understand that ZS6AJ will soon be operating from ZS8 land.

HC2AGI is still very active and Jerry is very dependable on QSL's. His QTH is: Jerry McConnell, Playas, Equador. He is in HC2 to study scatter propagation for IGY.

Mickey, W8YIN is justifiably proud to be the second QSO on phone in the States for Ludwik, JT1AA. Mickey was on SB running only 100 watts so it is good news to learn that JT1AA can read SB. We understand that Don, K2AAA is shipping a SSB exciter to Ludwik. This could be a real exciting country for the sidebanders.

K6GMA, Walt advises that CT1BH is active on SB. With this rapid increase in new countries to look for we will soon have to print up "Worked 200" certificates. Only a few month's ago we wondered if we would ever hit 100.

We have our confidential correspondents out attempting to learn where VE3MR, Martin's dxpedition will be operating on April 11-12 and 13. So far it is a well kept secret. Flash! Just learned it will be from HKØAI's QTH with TI2IO using a KWM-1.

VK3AEE, Cyril now has worked 108, and claims that all are *single* side-band. He also disagrees with the practice of counting Ghana and the Gold Coast as two countries for those who worked ZD4 before the change of the country's name. This is OK according to DXCC ARRL rules Cyril.

From John, W8QNW, we learn that KC4USA is now operating on ten meter SB from 1700 EST until the band goes out. His frequency is 28,660 and you won't have much difficulty in hearing him.

Walt, K6GMA is now handling all W/K QSL's for VS4JT. He already has a large stack of VS4JT cards which he will forward provided he receives your card and a self addressed stamped envelope. No envelope, no card says Walt.

While on the subject of QSL's, I have nearly 1100 cards for W/K and VE stations from EA2CA, and I will forward these on receipt of a self addressed and stamped letter with a QSL made out to EA2CA. My address appears at the head of this column.

In response to many letters, I have contacted

Danny, W2GG/4

"Paul, VQ4EO/OQ5 and his landcruiser"—Photo courtesy OQ51E—Print by W4IMP.

Art, K4LIB/FQ8 and hope to have those elusive cards pouring out soon. Have a little more patience fellows.

Mert, K6HS who operated from Papeete, Tahiti last August 2 and 3 worked six W/K on 15 meters and 15 W/K on 20 meters from that garden spot in the Pacific.

Bob, W4RQR who travels around the Caribbean has attempted to obtain licenses in some of the British countries without success. He then took a SB rig to VP5AB and VP6LT and gave the gang a new country in South Caicos and Barbados. He hopes to be operating from VP5BH, Grand Cayman and also from VP4TE at Trinidad, and VP5RS in Jamaica.

The DX Editor of CQ, Don, W4KVX, accompanied by John W8FGX; Frank, W8RSW; Red, W8EZF and Wayne, W2NSD Editor of CQ were on the air for four days from Navassa Island as KC4AF giving sideband contacts on all bands, 10 thru 75, for a new SSB country. Operation was during the period March 27-30. Send all QSL's to W8TJM for confirmation and mark them "Two Way Sideband". Details of the trip will be in the June issue of CQ . . . it was quite a trip.

I received a bundle of choice QSL cards from Ted, W6UOU to be checked for future listings in a new "Countries Worked List" soon to appear in this column. Only those who have sent in verified lists or the actual cards will be listed. Ted has 90 confirmations.

Harry, W2JXH is still looking for five cards to qualify for his DXCC on SB.

John, PY2JU who was the first SB station on the air from Brazil has qualified for his "Worked 50" certificate. John had Ray, W4KEJ/MM verify the application. John now has worked 75 countries. He advises of two new comers to SB: Jose, PY4AS, and Lourival, PY2BEW and that PY4APE is now PY4TK.

Empty, ZS6KD is now up to 108 and also continues to keep his daily schedules with Butch, W9EWC. These contacts have been going on for years which testify to the superiority of SB.

There has been considerable discussions on the air and many letters written to this column advocating that SB operation now around 28,650 be moved up higher and a 100 kilocycles to be established for SB. There is also plenty of SB activity from 28,600 to 28,650.

W2JSW, skipper of the Bar-L-Rick shoots the sun.

Mac, W9ARK who wrote a long letter on the subject admits that many of the boys have trimmed their antennas and would not want to do so again. We would like to reserve our opinion on the subject until we have heard from more of the regular ten meter boys. Why not think about the problem and let us know your opinions? Ten has been very good lately and seems to be getting better all the time.

Dave, W4ABY, Luke, W5VGE/4 and Roy, W4IFW who are all officers in the Armed Services in the Washington area have put up new Mosley tri-band beams this month with excellent success. Competition is getting keen around here on all three bands.

This time next week we will all be working in the CQ World Wide DX SB Contest. It should be a wonderful affair if the first one of last year is any comparison. The annual "W3SW Award", a silver cup properly engraved is the first prize, with certificates being given to the next 24 places. Last year Eva, CN8MM was the winner.

We are also looking forward to the Sideband Dinner on March 25th in New York where nearly 900 sidebanders are expected to gather during the annual Institute of Radio Engincers Convention.

This month 35 "Worked 50" and 21 "Worked 75" certificates were issued. I have been sending these certificates in a mailing tube to protect them by air mail and would appreciate your enclosing the necessary postage or International Coupons with your applications, as it is becoming an expensive project.

We are all glad to learn that "Miss Mama" General Gregory's (W3CO) Mother is recovering at Shelby, Mississippi. Many of the twenty meter boys have talked to this grand lady over K5JRZ, Dennis's phone patch.

"Butch", KØDWC flew two "tired" naval officers, Captain Fred Schnell, W4CF, and Commander Earl Dannals, W2GG/4 to Houston, Texas, on March 1st and while enroute nearly 300 QSO's were made on SB. Your Editor enjoyed a wonderful visit with Fred and Earle in Florida last month.

We thought that Frank, W6IAL had lost interest but he popped up with a report of 98 countries worked. Quite a sleeper!

Earl, W2UE, and Stu, W2ZE are moving to South Jersey. Good hinting in the new QTH's.

Received a nice note from our old friend Don, Ex KT1DD now CN2DD in Tangier. Don was one of the earliest DX stations we worked on SB. Thanks Don for the nice remarks about the SB column.

We are happy to announce that Charlie,

[*Continued on page 102*]

by THOMAS K. AALUND, K2VBI
8525 90th Street, Woodhaven 21, N. Y.

overseas echoes

Sooner or later the average ham is bound to wonder if there might not be something interesting happening in other parts of the world—electronically speaking. Perhaps someone has developed a tube that can be used in the two-meter band with only 6 volts on the plate, directly from the car battery? Unlikely as this sounds, such things do happen occasionally, but there is no way for the average ham to find out about them, unless he subscribes to a dozen or more foreign publications in the field of electronics and begs, borrows, or steals the required amount of dictionaries. Foreign magazines admittedly being a very good source of information they have given this author a good excuse for starting this column, which is to be a monthly feature. But let us get started with this monthly feature . . .

Mobile converter design may take on new aspects if a recently announced (*Das Elektron*, January 1958, OE) tube indicates a trend for things to come. The tube is the *Telefunken ECC 86*, designed for a plate voltage of 6.3 v (30 v max) and requires 6.3 v at 330 ma for the filament. Similar to a *12AT7* in size, socket, and lay-out, it is a twin triode. It can be used as an amplifier, mixer, or oscillator up to the two-meter band. Pin connections are the same as for a *12AT7*, except that pin 9 connects to a shield separating the two triodes. There is no filament center tap. The possibilities are very interesting and before long a practical design is bound to appear in the pages of *CQ*.

Going from small tubes to bigger ones we find that *Revista Telegrafica Electronica*, January 1958, LU, describes a high power audio amplifier and claims several advantages for using a large number of medium power tubes in push-pull parallel for the final stage, rather than one pair of high power tubes. The circuit described uses ten type *KT 88* tubes in the final, giving 400 w with only 525 v on the plates. While such a unit might be bulkier, it has the advantage of not requiring any high voltage components in the power supply or amplifier circuit. But the main point in favor of such a design is the fact that not much is lost if one or two of the tubes in the final stage should fail, as you can continue to operate with 80 to 90 per cent of the original output and will not have to shut down, it being possible to replace tubes while the unit remains in operation. A selector switch permits checking the cathode current of all tubes in the final stage, and thereby keeping an eye on the condition of the individual tubes.

Revista de Radio de la Union de Radioaficionados Espanoles, January 1958, EA, carries an article on diversity reception principles by EA4EW, which in a few short pages explains the theory involved fully; and yet in a manner understandable to any ham.

RSGB Bulletin, February 1958, G, has a description of a wideband multiplier unit, from the pen of G3JZK. It is designed for all bands from eighty meters to ten meters, and contains several nice TVI suppression features. G3FPK, in the same issue, describes a DX-pedition to Monaco, where a station under the call of 3A2BT was activated. He also mentions that the local government is preparing two rooms with facilities for future ham activities of this nature in Monaco-Ville. Any takers? The use and design of an easily built tilting beam for two meters is described by G3CGQ. G3ENY describes his two-meter mobile/portable transceiver, which is small in size and not much bigger in power output, yet gained him second place in the Mobile Section of the 1957 144 mc Field Day. An interesting design note is the use of a surplus i-f strip, selling for 42/6 (with 'valves'), and advertised in the same issue.

It seems that the surplus market in G is well equipped with all kinds of gear and even contains a lot of items of US origin, such as *BC 906D*, *ARC-5*, *SCR 522*, etc. The writer is at present investigating the possibilities of obtaining a piece of British surplus equipment, a transceiver with a frequency range of 44.0 to 61.0 mc. Price is advertised as 59/6, brand new; calibrated wavementer for same is 10/- extra. Used units are listed for even less.

[*Continued on page 120*]

Novice

by **DONALD L. STONER, W6TNS**
P.O. Box 137, Ontario, Calif.

Frankly, I'm quite unhappy about the whole situation! Helping Novices, I mean. You probably remember the "Do you need help blurb" that ran in the February Novice Column. It brought in a flood of "I sure do" letters as evidenced by the help wanted section this month. However, what I am unhappy about, it brought in all too many letters saying the local hams didn't want to help a prospective Novice. I read the first few with tongue-in-cheek but then they started coming in, in every mail; dozens of them! I have received a few of this type of letter before, to the effect that the local ham was too busy oiling his rocking chair and operating with the "boys" on 75 meters. Other hams had spare time but liked to work dx on 15 meters and didn't want anymore local QRM than they already had. Do you think I'm exaggerating? Let me extract a few quotes: "I found a ham in my neighborhood, noticed a monster antenna and introduced myself. He's an old timer, W6ZZZ and I'm afraid in spite of what I had heard, all hams are *not friendly*. I guess he was too busy DX'ing for he had a whole wall covered with Century DX stamps". Or how about this one? "I can't say I find the hams around here too enthusiastic about a new recruit. I have received luke-warm reactions with the contacts I have made". And they continue: "One member of a radio club here told me that club did not care for anyone to become a new member that knew nothing about radio. This left me with the idea that they did not want to help a new person. Also, I have gotten the idea that some of the fellows with experience have something against the Novice". "I have met one or two hams in this area but they are too busy to help out". "It becomes rather discouraging to work on these things without anyone to share your interest and give a little stimulation when the going gets rough". "There is a MARS station here but they know of no hams".

These are just some of the letters that I picked out at random to illustrate my point. The unfortunate truth is that not *all* hams are friendly. There are slobs and snobs the same as any other group. Fortunately, these "hams"

Bob Staples, KN7BHL, 337 Florida Pl., Williams AFB, Arizona, has had over 250 QSO's for 42 states, Alaska and VE land. Bob will sked anyone still needing the "Baby State" at 21.117 mc or early in the morning on 7.183 mcs.

Another device for adding punch to your signal is the World Radio Labs Globe Linear Model LA-1. You can multiply your power many times with this linear amplifier. For more information on these units, write to World Radio Labs, 3415 W. Broadway, Council Bluffs, Iowa.

are in the minority and there are still operators around who are willing to lend that needed helping hand.

I could quite easily write up a whole column devoted to tuning up a transmitter, load an antenna, and make a contact. A ham helping a beginner could accomplish the same thing in five minutes. Whether it is selling shoes or helping a beginner over the hurdles, nothing is quite as effective as personal contact.

Next year the hams are due to lose a big slug of frequency allocations. Unless we have strong fraternity, with lots of members, to voice opinions, I am afraid that the hams are going to come out of it second best! We need all the new hams we can get. Otherwise we might wind up on the VHF bands exclusively. Or at least until someone decides that they need those frequencies too!

Have I made sense? I certainly hope so. I realize that I have taken more of your time, and column space, than I should but I feel that this situation should be corrected. How about getting each one of the "help wanteds" on the air? Thanks.

Net News

The Alabama Teenage Net (AENT) meets daily on 3905 at 1630 CST for the generals among us. They have about 20 stations in the south, but would like many more. For information, write Warren L. Culpepper, K4LNQ, 119 McRainey Loop, Andalusia, Ala.

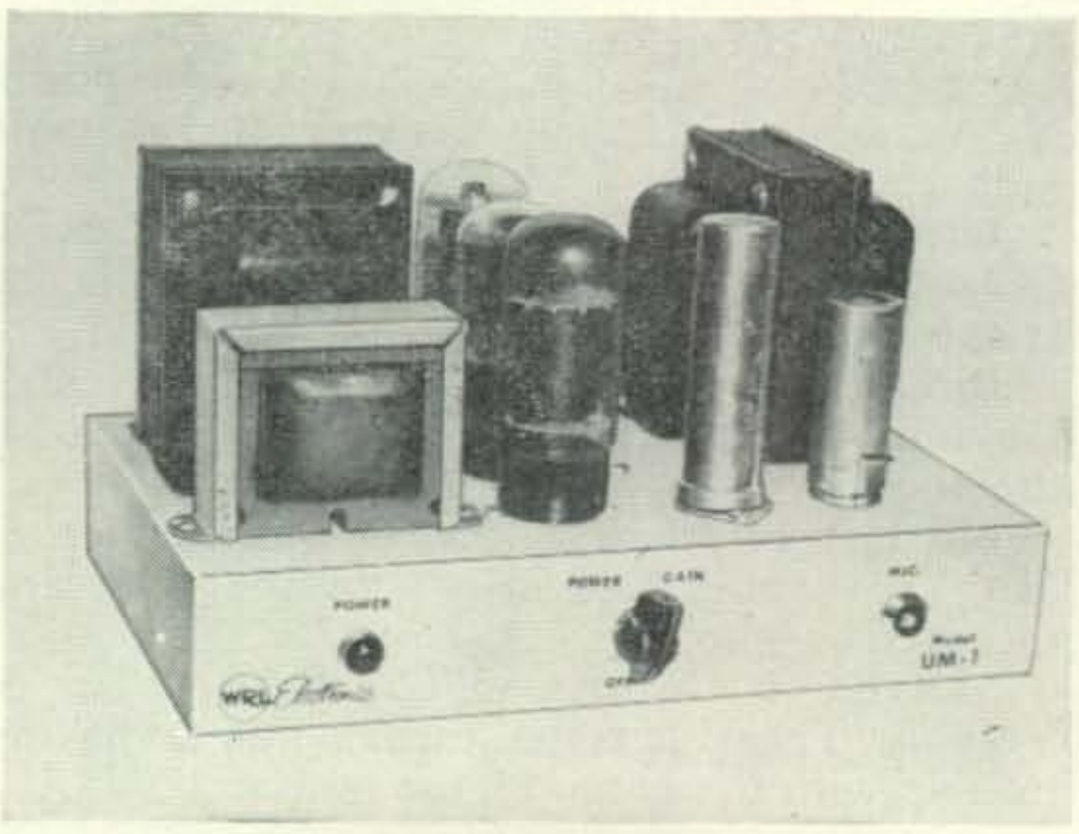
John Edwards, K2TNW, 71 Armour Road, Mahwah, N. J. is starting a new six meter net on a probable frequency of 50.85. Anyone in the N.J., N.Y., east Mass., or R.I. area should drop John a line. If you live in west Mass., Vt., N.H. or Maine get in touch with Ronny McCloud, W1DVT, 20 Wellington St., Shelbune Falls, Mass.

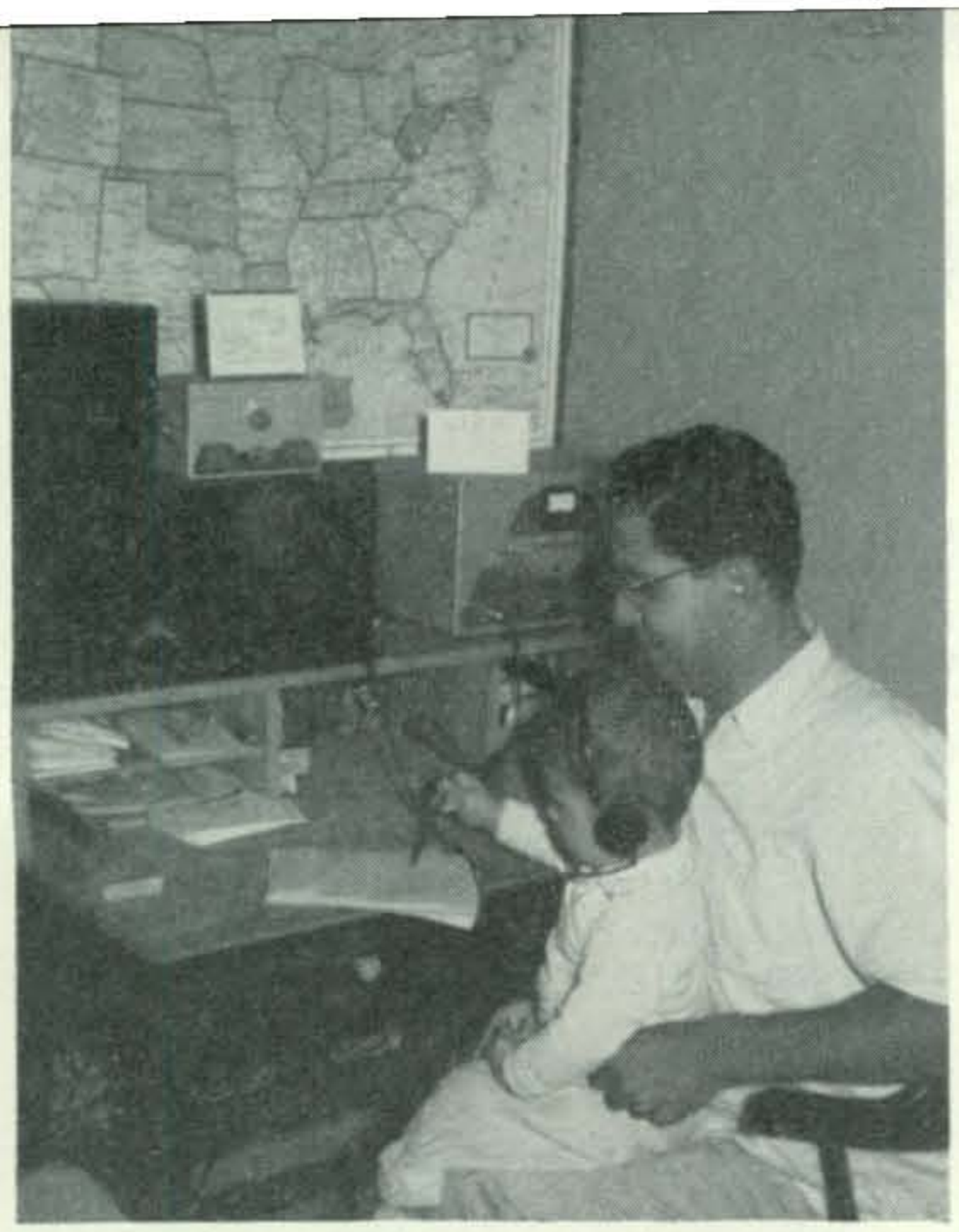
John Fried, 227 B St., Redwood City, Calif. tells us of a new Novice net on 3735 which meets at 1500 PST each Saturday. John has crystals available at a very reasonable figure. For more information, write him.

Who's DX?

Our friend Tima Popovic, YU1RS-357, Banat Novo Sello, Yugoslavia continues his reports on Novice reception in that country. Remember, when writing Tima, or the other DX reporters, to include International Reply Coupons to cover the postage charges. Here's Tima's report: 7 Mc. Novice band—Jan. 8, 0030 to 0215 GMT: KN1CUY, DEB, DQQ, KN2AIE, BLL, CEP, CKI, DHU, DNZ, EUG, EUZ, JJK, JSN, WN2PFG, KN2RPN, WN2TPC, KN5ARM, ARH, BYD, WN3LQE, MEK, KN4MNY, OER, PXK, QIA, REH, SAA, SOL, THD, TKQ, KN5COB, KN8GLH, GMI, GPC, CWS, HGT. 21 Mc. Novice band November 17, 1945 to 2230 GMT: KN1ASO, AYQ, CBL, CKJ, CMF, CRB, CVJ, KN2CCV, COJ, WN2COK, KN2DLX, WN2KTJ, OPE, PVM, KN2TKU, WN2TSZ, KN2ZAT, ZCT, ZQJ, ZXM, KN3AJL, BOW, KN4HDW, MLE, OKZ, PRQ, QCT, QMG, RCL, RMD, RTC, RTN, RTU, SCO, SDT, KN5LZO, KN8BTA, ENV, ETI, HJS, HJY, HKB, KN9HFG, HFT, HRC, HUB, IDZ, IJB, JAU, JFA, JTS, JXA, OYW,, KNØJPN, JPT. November 23, 1825 to 2130 GMT: KN1AYG, BJI, BSM, DBC, KN2BFF, DRW, WN2GIX, KN2PVW, WN2-TFB, KN2YJN, ZEH, KN3AIH, ARG, BTE, BVW, WN3JZR, WP4AKUM, KN4MQB, ORK, PAD, QLH, QMT, RCO, RID, RJA, SFO, KN5JIP, KN8DTF, EAA, EIO, EJY, HSX, HZT, KN9EBE, GXB, IDM, IKP, IYC, JMS, JTO, KNØJFI, JSZ. December 6, 1700 to 1810 GMT: KN1BSM, CKH, CPF, KN2BOU, KN4SLQ, KN5, KYR, N6EED, YZO, KN8IBW, HSZ. January 28, 1700 to 2145 GMT: KN1BGZ, CHD, CHY, CIZ, DBC, DFT, DMA, DMG, DQQ, DUF, DXA, DZA, EGD, EHD, EJI, KN2CDV, WN2CGA, KN2DNX, GJX, HBV, HQA, ISZ, WN2PUC,

When you earn your General ticket, I am sure that you will be interested in WRL's new Universal Modulator. It may be used for plate modulating rigs in the Novice class.





Guess which one is chief operator at KNØLQU. Is it Pat Cedeno, 709 N. Woodland Pittsburg, Kansas or is it the other one? Pat says Phil (age 16 mos.) is trying to increase his code speed. The theory is fb and he is looking forward to his ticket and two letter call!

QJL, SSX, SRU, WN2SRW, KN2ZMU. 73 Tima. Thanks for your dx report, Tima, it is appreciated.

Help Wanted

PFC Billy L. Nielson, RA 17 377 233, HQ. & HQ. Co. c/o Post Signal. **Fort Leonard Wood, Mo.** would like help obtaining his Novice license. Phone no. is Ft. Wood 702.

Irv Matus, 43 Marlboro Road, **Brooklyn 26, N. Y.** would like to become a ham.

Dr. Tom W. Whittle, 4223 Miller Street, **Fort Worth, Texas** would like help with the code and theory.

J. Michael Cox, 121 Third St., **Elizabeth, Penna.** would like help with the code and theory. Phone is Elizabeth 27.

Charlie Stewart, 1204 Scott Avenue, **Beckley, W. Va.** would like help obtaining his amateur license.

Jerry Tory, 14 Church St., **Cold Spring, N. Y.** would like help getting into amateur radio.

Jerry Martin, 316 W. Truman Pl., **Purcell, Oklahoma** (15) would like help on the theory and code.

Jordan Lowry, 1164 Orange Avenue, **Daytona Beach, Florida** would like help with the theory.

Bill Harper Jr., 8011 Davis Dr., **Clayton 5, Mo.** (14) would like help with the code and theory. His phone is PA 7-6807.

Morgan T. Morris, 3705 Buffalo, Rt. 5, **Vernon, Texas** has the theory but is having trouble with the code. Phone him at 27048.

Jan Clarkson, 5170 Huckleberry, **Houston, Texas** needs help with the code and theory. The phone number is MO 4-9375.

Gene Cummingham, 430 E. Holt, **Pomona, California** would like to become a ham and needs help with the code and theory.

Tom Martin, RR3 Lake Drive, **Greenfield, Indiana** would like to obtain a ham license. Tom's phone number is Hopkins 22082.

Virginia M. Simpson, 416 9th Avenue S., **Clinton, Iowa** would like to become a ham but needs help with the code and theory.

Herbert Erdman, 1432 Western Avenue, **Green Bay, Wis.** would like to meet someone to help him obtain his license. Herb's phone number is Green Bay 50270.

Margaret and Leonard Cole, 12422 Volkwood St., **Garden Grove, Calif.** are SWL's but would like to become hams, and need help on the code and theory.

Ruben Puta, 1651 N. Highland, **Arlington Heights, Illinois** would like help on obtaining his ham license.

Gerry Bedard, 346 Keeney St., **Manchester, Conn.** would like to get started on the way to a hamshack. Phone him at MI 9-0247.

Miles R. Bleech, 904 Evanston Drive, **Jackson, Michigan** would like to meet someone to help him with his ham license.

Allan Larson, 509 East Worden Avenue, **Ladysmath, Wis.** would like help with the code and theory. His phone number is 608-R.

Charles R. Nunmaker, 8121 Crocket Blvd., **Los Angeles 1, Calif.** (37) would like to become a Novice.

James Wagner, 44 Custer St., **Buffalo, N. Y.** needs help with the code and theory. His phone is W 16416.

Norman Selby, 221 North Sycamore, **Greensberg, Kansas** (14) would like help obtaining his FCC ham license.

Soloman Goldhirsch, 71-11 Austin St., **Forest Hills, N. Y.** would like to obtain the first eight tapes for his TG-34 code machine.

Richard L. Cronin, 706 Van Buren St., **Huntingburg, Indiana** (17) would like help with the code and theory.

William J. Rave, RFD #1, **Rock Tavern, N. Y.** needs help with the code.

Larry Manson, 101 Georgia St., **Travis AFB, Calif.** would like help with the code. His phone is ID-72477.

Harold B. Jamison, Jr., 1879 Tacoma Ave., **Berkeley 7, Calif.** (14) would like to become an amateur.

Don Jensen, 61 E. Wentworth Court, **Minneapolis 19, Minn.** (40) would like someone to get him going in ham radio.

James Lane, 39 Valley Rd., **Milton 86, Mass.** (16) would like to become a ham. His phone is BI-84751.

Howard Vollweiler, 600 W. 161 St. (or 61 St.), **New York 32, N. Y.** needs help with the code and theory. His phone is WA 8-1986.

David C. Goodfellow, Division 9101 Hoist,

USNTC, **San Diego 33, Calif.** is KN7BKX/6 and needs some help with the code and theory for the general examination. His phone is AC 2-6411, extention 633.

Tom C. Sawyer, 2866 Mountview Rd., **Upper Arlington, Columbus 21, Ohio** (12) would like to meet a local ham and get help with the code and theory.

Dorothy L. Ingraham, 435 West 119th St., **New York 27, N. Y.** would like to become a radio amateur.

Vernon G. Packard, 3323-A West Center, **Milwaukee 10, Wis.** would like help becoming a ham.

Robert Dallas, 827 Woodlawn St., **Memphis, Tenn.** is greatly in need of help on the code and theory. His phone number is JA-56984.

Merl Clark, Holyday Run Road, RD#1, **Oil City, Pa.** is very interested in becoming a ham. His phone is 84194. *Merl, look up my friend W3LST, Joe Szabat, maybe he can assist you. 73 Don.*

James Reed, 712 Shadyside S.W., **Canton, Ohio** would like help getting started as a ham.

George Martin, 2544 Atkinson, **Detroit 6, Michigan** would like to become a W8. How about it Detroit?

Richard R. Piety, 8119 Redbush Lane, **Panorama City, Calif.** would like to get his ticket.

R. J. Dukay, 15 Sherwood Road, **Lancaster, N. Y.** (31) needs help with the code and would like to contact a local to help him out.

Chet Heather, 413 W. Jackson St., **Ottawa, Illinois** would like help becoming an amateur.

David Vadney, 541 Widson St., **Bound Brook, N. J.** would like to become a ham. His phone number is EL 6-0431.

Marvin L. Howe, 3031 So. Fork Court, **Wichita 16, Kansas** would like help with the code and theory. Phone him at MU 39367.

James D. McMechan, 216 Stanton Avenue, **Ames, Iowa** needs help learning the code and theory.

[*Continued on page 98*]

Dave Loder, WN2HQN, 17 Church Avenue, Islip, L. I., N. Y. operates on 80 meters only and runs 25 watts to an AT-1 loading a 126 foot doublet. Best dx is VO1 in Newfoundland.

Bob, KN1DFT, 1050 Main St., Warren, R. I. runs 65 watts to a Globe Scout and loads a 40 meter doublet. He uses a Navy Ra1-7 which has helped him to work 14 states with the furthest station being Oklahoma. So far, Bob has had about 200 QSO's.

A pretty face graces the pages of the Novice column. Behind the pretty face is Geraldine Thorn, KN5LMQ, Pascagoula, Miss. She will be glad to sked anyone on 80, 40 or 15 meters. Look for her OM, K5HUW on six meters.

YL

by **LOUISA B. SANDO, W5RZJ**
212 Sombrio Drive, Santa Fe, N. M.

10th National Convention

Fun for the ladies with plenty to keep them entertained, is the plan of Tex, W3CN, ladies' committee chairman of the 10th National Convention. Scheduled for August 15-17, the convention will be held at the Sheraton-Park Hotel in Washington, D.C., one of the leading hotels in the Capital and completely air conditioned. A nursery will be available if the jr. ops are brought along.

In brief, the YL-XYL program will be this: Friday—Three sightseeing tours of Washington for all the ladies. There will also be two tours in the afternoon the YLs may wish to attend along with the OMs—to the Pentagon and a Nike site, or to the Naval Research Laboratory.

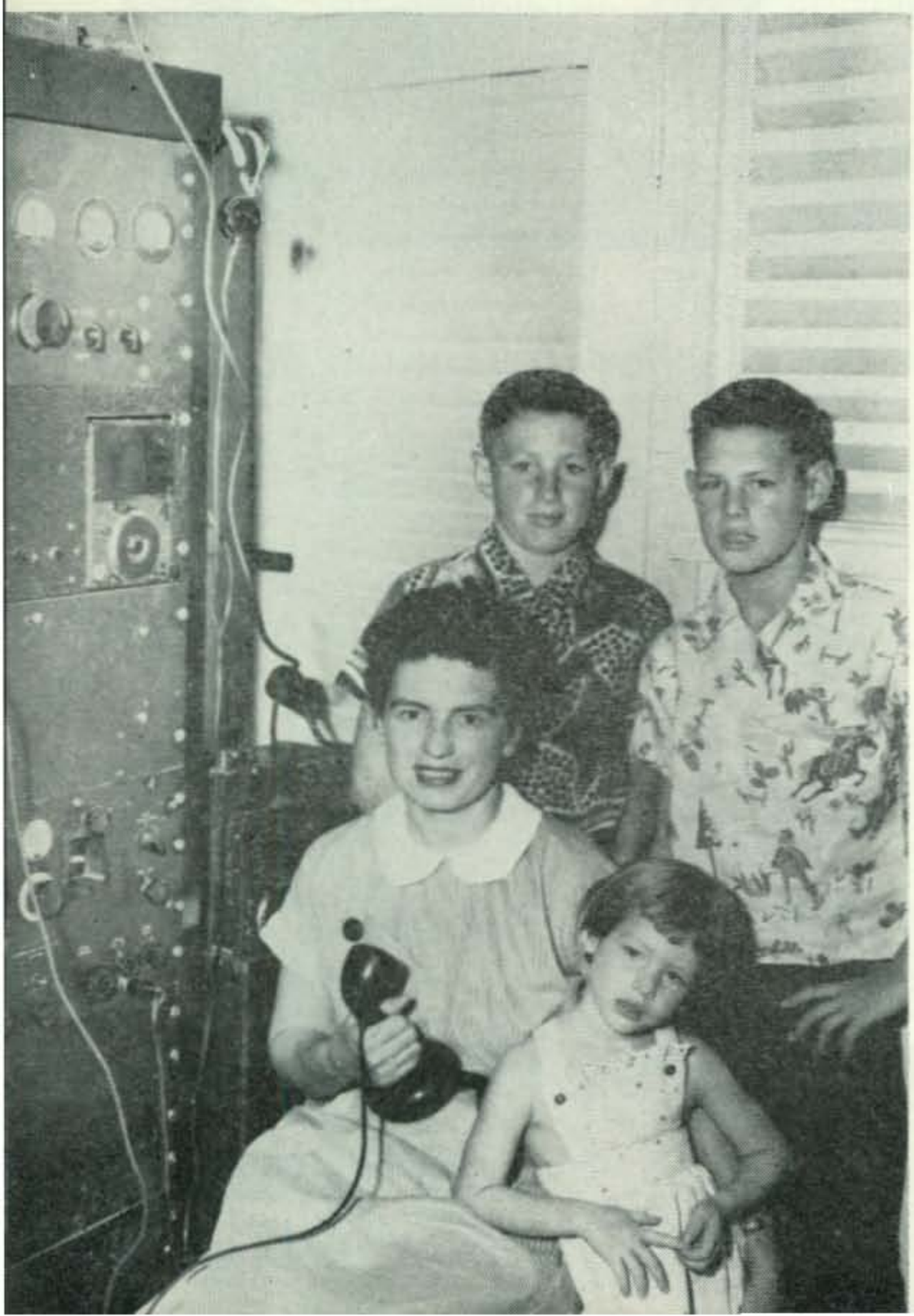
Saturday — Breakfast; White House tour; luncheon and fashion show; YLRL Forum for licensed YLs, SWOOP initiation for XYLs; buffet supper open to all in evening, or dinner at your choice of restaurant and later enjoy a concert at the Watergate.

Sunday — Church of your choice; free boat trip on Potomac River to Mount Vernon, or choice of other tours; main banquet.

The XYLs will be eligible for special prizes. Throughout the convention the ladies will have available a Hospitality Room in which to register for various functions and obtain information and advice concerning shopping and sightseeing. Bridge parties, teas and travel movies will be given here. Licensed YLs will be interested in the technical sessions, other tours, contests with prizes, and special luncheons. A unique arrangement will be the Ragchewers Corner in the exhibition hall, open to all, where free coffee, plus juices and doughnuts will be available till noon and coffee and cold drinks in the p.m.

Working with Tex on the ladies' program will be K4LMB, Ethel, in charge of the XYL activities; W3CDQ, Liz, and W4TVT, Claire, in charge of YLRL activities. Working with them will be W3TSC, Camille; W3SLS, Betty; W3UTR, Meg, and other members of WAYLARC. W3RXJ, Irene, will be hostess for the convention YL luncheon. KN3AMT, Joan, is chairman for the fashion show.

W4TVT, Claire, at her rig while operating as VP4BC in Trinidad in 1955. With her are jr. ops Michael, W4TVU; Henry and Jeanne.



Rocky Mountain Convention

Are any of you Hams planning a vacation

trip out New Mexico way in June? If so, you are cordially invited to attend the Rocky Mountain Division Convention which will be held in Santa Fe June 14-15, with a pre-convention party scheduled for Friday evening, the 13th. A big turnout of New Mexico and Colorado OMs and YLs is hoped for, with as many others as can make it from Utah, Wyo., Texas, etc.

Of special interest for the gals will be the YL-XYL luncheon Sat. noon and the YL Forum that afternoon, as well as the general meetings, banquet and entertainment. There will be other special activities for the XYLs and jr. ops. In addition to the convention attractions, Santa Fe itself is highly scenic and a fascinating old city to browse around. Pre-registration price of $7.50 includes banquet and prizes.

8th Midwest YL Convention

Just a reminder of the 8th annual Midwest YL Convention to be held May 23-25 at the Mid-City Motel in Toledo, Ohio. For details see April CQ.

DX-YL Award

The Young Ladies Radio League announces its newest certificate, the DX-YL award, the purpose of which is to encourage YLs of all countries to contact each other. The certificate will be given to any YL who works 25 other licensed women operators outside her own country on or after April 1, 1958.

DX-YL Award rules:

Keep your log as you usually do and when you have worked 25 DX YLs, make a copy showing the following information: Date, time, station worked, frequency, her report, your report, phone/CW, her name and QTH.

All QSOs must be made from one QTH, or within a 25-mile radius.

Send copy of your log to YLRL Vice President, Kay Anderson, W4BLR, 5210 Raleigh Rd., Richmond 23, Va. YLs in the U.S.A. may send postage stamps in any amount to help with cost of mailing their certificates if they wish.

Stickers will be awarded for each 10 additional YL operators worked.

QSL cards are not necessary for this award.

Contacts do not have to be with 25 different countries; just 25 different DX YLs.

U.S.A. and possessions are counted as separate countries for this award. (Use ARRL countries list as a guide.)

ontacts will count if the YL holds an operator's license according to the rules governing amateur radio in her country. She may be using her OM's station, club station, etc.

Contacts made before April 1, 1958 will not count for this award.

So how about it, gals—see how many DX YLs you can work. Certificates will be numbered and the first correct log received gets No. 1.

Here and There

Speaking of DX YLs, here's one to look for —OD5CH, Martha Edwards, who is on 20 phone and cw. Martha, whose W call is 6QYL, and her OM Noel have spent many months listening to the DX from Beirut, Lebanon;

[*Continued on page 128*]

Who has the gavel? When the Los Angeles YLRC held its very successful YL-OM Valentine banquet on Feb. 15, members of the San Gabriel Valley Radio Club "captured" the YLs' gavel. On March 4 the YLs turned out en masse at the San Gabriel club meeting and not only retrieved their own gavel but the YLs' president, W6DXI, Gladys, pictured above, captured the San Gabriel gavel as well from the president, W6DTQ.

Members of WALARC are working with W3CN, chairman of the ladies program for the 10th National Convention. L. to r., W3CN, Tex; W3CDQ, Members of WAYLARC are working with W3CN, Liz, WAYLARC treasurer; K4LMB, Ethel, founder of the club; W3RXJ, Irene, president; W4TVT, Claire, vice president.

by MARVIN D. LIPTON, VE3DQX,
311 Rosemary Road,
Toronto 10, Ontario, Canada

club bulletins....

One Ham Bulletin received monthly from South Dakota is THE PRAIRIE DOG'Ssss BARKS, the official publication of the Prairie Dog Amateur Radio Club. The history of this 12 page club effort dates back to January 1953 when the first edition appeared. The flourishing club journal has expanded considerably since the first copy was "rolled" and today the paper's circulation spreads from New York to California. Les, WØSCT, is the chief editor, but Dorothy, WØDVB, Grace, KØARP, and SCM, Tony, WØRRN, lend a helping hand. The exceptional name of the publication is intended as a play on the words "Bark" and "Spark". The former coming from the club name and the latter from the electrical term.

Contained between the covers of the "125-copy" journal are reports about DX, Mobile, XYL, Nets, and other South Dakota and neighboring state clubs. A monthly editorial also lends much color to the contents.

As in the case of most club publications, the editorial and printing work consumes the greatest portion of production time. Les, being a single member of the Ham Fraternity, has more leisure time than the majority of OM's with family responsibilities. He devotes 25 or 30 hours per month to the club news sheet and from its general appearance one can justly say that the time so spent is very worth-while.

Much credit goes to the Prairie Dog Amateur Radio Club and its publication staff for the fine job it's doing. We shall look forward to many future editions.

After many moons we have finally compiled a list of affiliated clubs and their papers. The roster of 75 members stands corrected to February 15, 1958. No doubt new members will have joined us between then and now and we shall welcome these new clubs in a supplement to be printed subsequently.

You can put the name of your club paper on our list by dropping us a card and putting us on your mailing list. You will then be eligible to receive CQ NEWS, the news release of the Club Bulletin Department. You can't afford to pass up this news sheet of the best articles from the above papers! Let's hear from you.

Among the first requests for free membership in our news service was one from an editor of a Ham bulletin sponsored by a distributor of commercial Amateur gear in Madison, Wisconsin. Since our news service is non-profit and non-commercial, we were reluctant to grant this party admission, but upon a second glance at the submitted paper we discovered that this bulletin deserved our endorsement. SATTERFIELD'S W9-ER, is edited by Bill, W9UTV, and mailed to 1400 Hams in and around W9 land. Club news, net news, editorials, a "free" trading post, and a fine technical section comprise the monthly issues. An interesting article about VHF was "lifted" from the W9-ER for CQ NEWS last February. We think that the boys behind the W9-ER deserve much credit for providing the neighboring Hams with a free service. We would like to see other distributors take a similar sincere interest in the welfare of the Amateur, in addition to their interests in regard to the lucrative potential in Amateur Radio.

We have harnessed the talents of a number of the associated club editors, and we now present their FB opinions in our news release, CQ NEWS, under a column headed "Guest Articles". Guest articles are accepted from anyone wishing to express a few ideas concerning Amateur Radio. Why not take us up on this free offer to address club-going Hams through their club papers via CQ NEWS?

We take great pleasure in extending a heartiest welcome to the following new members in the CQ news service, who have helped extend our total membership to 82: HARC NEWS, Heat of America R.C., QRZed, Ramona R.C., GROUNDWAVES, Joliet A.R. Ass'n., HAM HASH, Montgomery County

A.R. Emergency Club, THE VHF QSO, Midwest VHF Club Ass'n., THE LINEAR, Mobile A.R.C., and THE YARC MITTER, Yonkers A.R.C.

Next month we shall tell the story behind the ATLANTA HAM, the club paper of the Atlanta Radio Club, Georgia. Until then, best.
73, Marv, VE3DQX

Name of Publication	*Sponsoring Group*
Alabama Section Bulletin	Alabama Radio Section (ARRL)
AMA-Chewer	Indianapolis Radio Club
ARC	Asheville Radio Club
Auto-Call	Wash. Mobile Radio Club (DC) & Dist. Clubs
Bison	Indiana Radio Club Council
Buckeye Net News Bulletin	Ohio Buckeye Net
Carascope	Columbus Amateur Radio Association
CKRC Ink	Central Kansa Radio Club Incorporated
Collector-Emitter	Aeronautical Center Amateur Radio Club
County Statie	Genesee County Radio Club
DARA QMN Bulletin	Detroit Amateur Radio Association
Duneland A.R.A. News Bulletin	Duneland Amateur Radio Association
DX-Club	DX Club Louisiana
Feed Back	Battle Creek Mich. (club unknown)
Florida Skip	Radio Amateurs of Florida
Groundwave	Ottawa Amateur Radio Club (Ontario)
Ham Gab	Hamfesters' Radio Club Incorporated
Ham Hum	Aksarben Radio Club Incorporated
HARC News	Houston Amateur Radio Club
Hilo Amateur Radio Club News	Hilo Amateur Radio Club (Hawaii)
Hi-Plains QRM	Hi-Plains Amateur Radio Club
Key KLIX	Gateway Amateur Radio Club (Ontario)
Key KLIX	Santa Barbara Amateur Radio Club Inc.
Loudspeaker	San Gabriel Valley Amateur Radio Club Inc.
MARC Sparks	Michiana Amateur Radio Club
Metro Modulator	Metro Amateur Radio Club (Ontario)
Midwest Chirps	Jayhawk Amateur Radio Society Inc.
Mike & Key	Greater Cincinnati Amateur Radio Assoc.
Natter	S. African Radio League (Un. of S. Africa)
Northern Lights Carrier	Anchorage Amateur Radio Club (Alaska)
North Penn Statie	North Penn. Amateur Radio Club
Northwest Ham News	Arrowhead Rad. Amtrs. & all N. Minn. Clubs
PANN	Pacific Area Net News
Parasitics	Pensacola Amateur Radio Club
QTC	The British Two Call Club (London Eng.)
Radio Association of Erie Bulletin	Radio Association of Erie
RAGS Review	Radio Amateurs of Greater Syracuse
RAMS News	Radio Amateur Mobile Society
RF	Calgary Amateur Radio Association
RF Carrier	Dayton Amateur Radio Association
Riohon Listening Post	Riohondo Radio Club
Satterfield's W9 ER	Satterfield Electronics Incorporated
Semi Monthly Notice	Mon Valley Amateur Radio Club
Short Skip Radio Club Bulletin	Short Skip Radio Club
Sidebands	St. Louis Amateur Radio Club
Sideband Splatterings	Raritan Bay Radio Amateurs Inc.
Southern California DX Bulletin	Southern California DX Club
Southeast Arkansas A.R.C. Bulletin	Southeast Arkansas Amateur Radio Club
Southern Chester County R.C. Bulletin	Southern Chester County Radio Club
SPARC	Spartanburg Amateur Radio Club Inc.
SPARC-GAP	St. Petersburg Amateur Radio Club
Sparks	Brandon Amateur Radio Club (Man.)
Splatter	Yellowstone Radio Club
Statie	Sioux City Amateur Radio Club
Statie	Starved Rock Radio Club
Swani News	So. Wisc. and No. Ill. Amateur Radio Club
The Atlanta Ham	Atlanta Radio Club
The Big Yak	Central Illinois Radio Club Incorporated
The Blurb	Phil-Mont Mobile Radio Club
The DDD DXer	Blackstone Valley Amateur Radio Club Inc.
The Gizmo	Iowa Illinois Amateur Radio Club
The Log	Flint Hills Amateur Radio Club
The Monitor	Riverside County Amateur Radio Assoc.
The Northwest Scanner	Eugene, Oregon
The Prairie Dog'sss Barks	Prairie Dog Amateur Radio Club
The Scope	Garden State Amateur Radio Association
The Short Wave Generator	Bristol, R.I. (club name unknown)
The Siouxland Ham	Radio Amateurs of Sioux City, Iowa
Tri State Sparks	Tri State Amateur Radio Society
W4CA Log	Blue Ridge Amateur Radio Society Inc.
West Coast Ham Ads	West Coast Radio Amateurs
Wheat Belt Radio Club Newsgram	Wheat Belt Radio Club Incorporated
WIN News	Wisconsin C.W. Net
Zerobeat	Harmonic Hill Radio League
Zero Beat	Victoria Short Wave Club (British Colum.)

by GEORGE JACOBS, W3ASK
607 Beacon Road, Silver Spring, Md.

PROPAGATION

May's Highlights

As a result of normal seasonal variations in the intensity of ionization of the earth's upper atmosphere, maximum usable frequencies during May will be considerably *lower* during the daylight hours, and somewhat *higher* during the hours of darkness, than were observed during the winter and early spring months. Very little *6-meter* DX is forecast, although an occasional opening may be possible to Latin America, and from the West Coast to Australasia. *Ten-meters,* while opening far less frequently then during the winter months, is expected to provide fairly good world-wide DX on many days during the month, especially during the late afternoon and early evening hours. Good world-wide DX conditions are forecast for *15-meters* from early morning until well past sunset, and around-the-clock to some areas of the world. Good DX propagation conditions are also expected for *20-meters* during the late afternoon, evening, and early morning hours. With fewer hours of darkness, *40, 80 and 160-meter* DX openings are expected to be less frequent than during the winter months. From shortly before sunset, until shortly after sunrise, fair DX propagation conditions are expected to some areas of the world on *40-meters,* while DX conditions on *80 and 160-meters* are expected to be generally poor until next fall.

Static levels are expected to continue to increase during May as thunderstorms become more numerous in the northern hemisphere.

A major meteor shower (*Aquarids*) will take place between May 1 and 6, and two minor showers are expected to occur during May 11-24 and on the 30th of the month. There is an increased likelihood of meteor-type short-skip openings on *10, 6, and possibly 2-meters* during these showers.

During May, and continuing through the summer months, there is a considerable increase in the occurrence of *sporadic-E* ionization. This generally intense ionization occurs in cloud-like formations about 60 miles above the earth's surface, permitting short-skip openings between distances of approximately 400 and 1400 miles. Sporadic-E openings are most noticeable on *10 and 15-meters,* and also occurs occasionally on *6 and 2-meters.* Reference should be made to this column for *June, 1957* for a more complete description of sporadic-E propagation, and to this column for *January, 1957* for a rule of thumb method for predicting sporadic-E openings.

Sunspot Data

The Zurich Solar Observatory reports a monthly mean sunspot number of 152 for February, 1958. This results in a 12-month smoothed sunspot number of 194 centered on August, 1957. As of that date, therefore, the present sunspot cycle was still rising at an unprecedented rate. A smoothed sunspot number of 170 is forecast by *CQ* for May, 1958.

Short-Skip Chart

Many letters have been received from readers of this column commenting favorably on the new presentation of the *CQ Short-Skip Propagation Chart.* The use of two digits for indicating the number of days that a particular band is forecast to open appears to have proven successful in making this *Chart* more useful to novice and other operators interested in short-skip, rather than DX, propagation conditions. The first digit shown next to the time

Last minute forecast: Moderately disturbed ionospheric conditions are forecast for May 5-8 with the period of May 12-13 also below normal. Exceptionally good short-wave propagation conditions are forecast for May 18-24.

ALL TIMES IN E. S. T.

EASTERN USA TO:	*6/10 Meters	15 Meters	20 Meters	40/80** Meters
Western Europe	9 A - 11 A (2) 11 A - 4 P (3) 4 P - 6 P (2)	5 A - 12 N (2) 12 N - 7 P (4) 7 P - 9 P (3) 9 P - 5 A (2)	8 A - 2 P (1) 2 P - 5 P (2) 5 P - 12 M (4) 12 M - 5 A (3) 5 A - 8 A (2)	7 P - 1 A (3) 10 P - 12 M (2)**
Central Europe	9 A - 11 A (1) 11 A - 4 P (2) 4 P - 6 P (1)	5 A - 7 A (2) 7 A - 1 P (1) 1 P - 3 P (2) 3 P - 7 P (3) 7 P - 12 M (2)	2 P - 4 P (1) 4 P - 6 P (2) 6 P - 9 P (4) 9 P - 12 M (3) 12 M - 6 A (2)	8 P - 11 P (2) 9 P - 11 P (1)**
Eastern Mediterranean	9 A - 11 A (1) 11 A - 4 P (2) 4 P - 7 P (1)	11 A - 3 P (1) 3 P - 7 P (3) 7 P - 10 P (2) 10 P - 12 M (1)	1 P - 3 P (1) 3 P - 5 P (2) 5 P - 9 P (3) 9 P - 3 A (2)	8 P - 10 P (2) 8 P - 10 P (1)**
North & Central Africa	8 A - 11 A (2) 11 A - 5 P (3) 5 P - 7 P (2)	5 A - 9 A (2) 9 A - 1 P (1) 1 P - 6 P (4) 6 P - 9 P (3) 9 P - 5 A (2)	1 P - 3 P (1) 3 P - 5 P (2) 5 P - 12 M (4) 12 M - 5 A (3)	8 P - 12 M (2) 9 P - 11 P (1)**
South Africa	9 A - 11 A (1) 11 A - 3 P (2) 3 P - 6 P (3) 6 P - 8 P (2)	12 N - 2 P (1) 2 P - 5 P (2) 5 P - 8 P (3) 8 P - 1 A (2) 1 A - 3 A (1)	3 P - 5 P (1) 5 P - 7 P (2) 7 P - 11 P (3) 11 P - 2 A (2)	8 P - 11 P (1)
South America	12 N - 6 P (1)* 6 A - 8 A (2) 8 A - 1 P (3) 1 P - 7 P (4) 7 P - 10 P (3) 10 P - 1 A (2)	2 A - 10 A (3) 10 A - 2 P (2) 2 P - 5 P (3) 5 P - 10 P (4) 10 P - 2 A (3)	7 A - 3 P (1) 3 P - 6 P (2) 6 P - 3 A (4) 3 A - 5 A (3) 5 A - 7 A (2)	7 P - 1 A (2) 1 A - 5 A (3) 5 A - 7 A (2) 1 A - 5 A (1)**
Central & South Asia	5 P - 8 P (1)	1 P - 4 P (1) 4 P - 9 P (2) 9 P - 11 P (1)	7 P - 12 M (2) 12 M - 6 A (1) 6 A - 9 A (2)	NIL
Australasia	7 A - 11 A (1) 6 P - 10 P (2)	7 A - 11 A (2) 11 A - 5 P (1) 5 P - 7 P (2) 7 P - 12 M (3) 12 M - 2 A (1)	8 A - 10 A (2) 10 A - 10 P (1) 10 P - 3 A (3) 3 A - 6 A (2) 6 A - 8 A (3)	2 A - 7 A (2) 3 A - 6 A (1)**
Guam & Pacific	5 P - 9 P (2)	1 P - 5 P (1) 5 P - 10 P (2) 10 P - 12 M (1)	7 P - 9 P (1) 9 P - 1 A (2) 1 A - 6 A (1) 6 A - 9 A (2)	NIL
Japan & Far East	5 P - 9 P (2)	8 A - 2 P (1) 2 P - 5 P (2) 5 P - 10 P (3) 10 P - 2 A (1)	5 P - 9 P (1) 9 P - 3 A (2) 3 A - 6 A (1) 6 A - 9 A (2)	NIL

ALL TIMES IN C. S. T.

CENTRAL USA TO:	*6/10 Meters	15 Meters	20 Meters	40/80** Meters
Western & Central Europe	9 A - 12 N (1) 12 N - 4 P (2) 4 P - 6 P (1)	5 A - 12 N (2) 12 N - 6 P (3) 6 P - 9 P (2) 9 P - 5 A (1)	12 N - 2 P (1) 2 P - 5 P (2) 5 P - 8 P (4) 8 P - 11 P (3) 11 P - 5 A (1)	8 P - 12 M (2) 9 P - 11 P (1)**
Southern Europe & North Africa	7 A - 11 A (2) 11 A - 4 P (3) 4 P - 6 P (1)	4 A - 12 N (2) 12 N - 7 P (3) 7 P - 10 P (2) 10 P - 4 A (1)	1 P - 3 P (1) 3 P - 5 P (2) 5 P - 10 P (4) 10 P - 4 A (3)	8 P - 12 M (2) 9 P - 11 P (1)**
Central & South Africa	8 A - 11 A (1) 11 A - 5 P (3) 5 P - 7 P (2) 7 P - 9 P (1)	11 A - 1 P (1) 1 P - 4 P (2) 4 P - 7 P (3) 7 P - 1 A (2) 1 A - 4 A (1)	2 P - 4 P (1) 4 P - 10 P (3) 10 P - 2 A (2)	8 P - 11 P (1)
South America	12 N - 6 P (1)* 5 A - 7 A (2) 7 A - 12 N (3) 12 N - 6 P (4) 6 P - 2 A (3)	2 A - 6 A (2) 6 A - 10 A (3) 10 A - 2 P (2) 2 P - 4 P (3) 4 P - 2 A (4)	8 A - 3 P (1) 3 P - 6 P (2) 6 P - 2 A (4) 2 A - 8 A (3)	7 P - 12 M (2) 12 M - 3 A (3) 3 A - 7 A (2) 12 M - 4 A (1)**
Hawaii	9 A - 12 N (1) 12 N - 3 P (2) 3 P - 8 P (3) 8 P - 10 P (2)	9 A - 4 P (3) 4 P - 10 P (4) 10 P - 1 A (3) 1 A - 3 A (2)	4 P - 6 P (3) 6 P - 2 A (4) 2 A - 6 A (2) 6 A - 9 A (3) 9 A - 4 P (1)	10 P - 7 A (3) 12 M - 6 A (2)**
Japan & Far East	4 P - 9 P (2)	7 A - 2 P (1) 2 P - 9 P (3) 9 P - 12 M (2)	5 A - 8 A (3) 8 A - 5 P (1) 5 P - 8 P (2) 8 P - 2 A (3) 2 A - 5 A (2)	NIL
Central & South Asia	5 P - 10 P (1)	10 A - 2 P (1) 2 P - 9 P (2) 9 P - 11 P (1)	4 A - 8 A (2) 6 P - 10 P (1)	4 A - 7 A (1)
Australasia	7 A - 9 A (1) 1 P - 4 P (1) 4 P - 10 P (2)	7 A - 9 A (3) 9 A - 4 P (1) 4 P - 8 P (2) 8 P - 12 M (3) 12 M - 3 A (2)	6 P - 8 P (1) 8 P - 10 P (2) 10 P - 3 A (4) 3 A - 9 A (3) 9 A - 6 P (1)	1 A - 7 A (2) 2 A - 6 A (1)**
Antarctica	12 N - 3 P (1) 3 P - 6 P (2) 6 P - 9 P (1)	11 A - 3 P (1) 3 P - 5 P (2) 5 P - 8 P (3) 8 P - 11 P (2)	5 P - 7 P (2) 7 P - 1 A (3) 1 A - 8 A (2) 8 A - 5 P (1)	9 P - 4 A (2) 12 M - 3 A (1)**

ALL TIMES IN P. S. T.

WESTERN USA TO:	*6/10 Meters	15 Meters	20 Meters	40/80** Meters
Europe & North Africa	2 P - 6 P (2)	7 A - 9 A (1) 9 A - 12 N (2) 12 N - 8 P (3) 8 P - 10 P (2) 10 P - 12 M (1)	12 N - 2 P (1) 2 P - 5 P (2) 5 P - 11 P (3) 11 P - 3 A (2)	7 P - 11 P (2) 8 P - 10 P (1)**
Central & South Africa	11 A - 3 P (1) 3 P - 8 P (2)	6 A - 12 N (1) 12 N - 2 P (2) 2 P - 6 P (3) 6 P - 12 M (2)	2 P - 4 P (1) 4 P - 6 P (2) 6 P - 10 P (3) 10 P - 2 A (2)	6 P - 10 P (2) 7 P - 9 P (1)**
South America	12 N - 6 P (1)* 6 A - 12 N (3) 12 N - 5 P (4) 5 P - 7 P (3) 7 P - 2 A (2)	1 P - 3 P (3) 3 P - 12 M (4) 12 M - 4 A (3) 4 A - 1 P (2)	7 A - 3 P (2) 3 P - 5 P (3) 5 P - 11 P (5) 11 P - 3 A (4) 3 A - 7 A (3)	9 P - 12 M (2) 12 M - 4 A (1) 10 P - 2 A (1)**
Guam & Pacific Is.	8 A - 5 P (2) 5 P - 8 P (3) 8 P - 10 P (2) 10 P - 4 A (1)	10 P - 3 A (3) 3 A - 8 A (2) 8 A - 10 A (3) 10 A - 12 N (2) 12 N - 10 P (1)	8 P - 10 P (1) 10 P - 12 M (2) 12 M - 4 A (4) 4 A - 8 A (3) 8 A - 11 A (1)	1 A - 5 A (1) 2 A - 4 A (1)**
Australasia	3 P - 7 P (1)* 10 A - 1 P (2) 1 P - 6 P (3) 6 P - 10 P (4) 10 P - 4 A (2)	10 A - 12 N (2) 12 N - 7 P (1) 7 P - 4 A (4) 4 A - 8 A (2)	10 P - 12 M (2) 12 M - 4 A (3) 4 A - 10 A (2)	12 M - 6 A (1) 1 A - 5 A (1)**
Japan, Okinawa & Far East	12 N - 2 P (2) 2 P - 8 P (3) 8 P - 10 P (2)	8 A - 12 N (3) 12 N - 8 P (2) 8 P - 1 A (3) 1 A - 8 A (2)	9 P - 11 P (1) 11 P - 2 A (2) 2 A - 4 A (4) 4 A - 7 A (3)	1 A - 6 A (2) 2 A - 4 A (1)**
Philippine Islands & East Indies	8 A - 11 A (2) 11 A - 4 P (3) 4 P - 10 P (2)	12 M - 2 A (2) 2 A - 7 A (3) 7 A - 10 A (2) 10 A - 12 N (1)	11 P - 3 A (1) 3 A - 8 A (2) 8 A - 11 A (1)	3 A - 5 A (1)
Malaya & South East Asia	10 A - 2 P (3) 2 P - 10 P (2)	12 M - 3 A (1) 3 A - 6 A (2) 6 A - 8 A (3) 8 A - 11 A (2) 11 A - 4 P (1)	2 A - 6 A (1) 6 A - 8 A (2) 8 A - 1 P (1)	NIL
Hong Kong, Macao, & Formosa	12 N - 2 P (2) 2 P - 8 P (3) 8 P - 10 P (2)	7 A - 1 P (3) 1 P - 10 P (2) 10 P - 2 A (3) 2 A - 7 A (2)	11 P - 2 A (1) 2 A - 7 A (3) 7 A - 10 A (1)	2 A - 6 A (1)

CQ PROPAGATION CHART (SHORT-SKIP)

BAND (METERS)	DISTANCE (MILES)			
	50-250	250-750	750-1300	1300-2400
10	NIL	NIL	8 A - 2 P (2-3) 2 P - 7 P (1-3) 7 P - 12 M (1-2) 12 M - 8 A (1)	8 A - 3 P (3-1) 3 P - 9 P (3) 9 P - 8 A (1-0)
15	NIL	8 A - 12 N (0-3) 12 N - 4 P (0-2)	7 A - 4 P (3) 4 P - 7 P (2-4) 7 P - 12 M (2) 12 M - 7 A (1)	7 A - 4 P (3-4) 4 P - 8 P (4) 8 P - 12 M (2-3) 12 M - 7 A (1-2)
20	MIL	6 A - 9 A (1-3) 9 A - 2 P (1-4) 2 P - 8 P (1-3) 8 P - 6 A (0-2)	6 A - 10 A (3-4) 10 A - 3 P (4) 3 P - 10 P (3-5) 10 P - 6 A (2-3)	6 A - 10 A (4) 10 A - 4 P (4-3) 4 P - 11 P (5) 11 P - 6 A (3-4)
40	7 A - 10 P (5) 10 P - 7 A (4)	6 A - 10 A (5-3) 10 A - 5 P (4-2) 5 P - 12 M (5) 12 M - 6 A (2-4)	5 A - 9 A (3-2) 9A - 7 P (2-1) 7 P - 1 A (5) 1 A - 5 A (4)	5 A - 7 A (2) 7 A - 5 P (1-0) 5 P - 8 P (3-1) 8 P - 5 A (5-4)
80	8 A - 10 A (5-3) 10 A - 7 P (4-2) 7 P - 8 A (5)	8 A - 6 P (2-1) 6 P - 8 P (3-2) 8 P - 4 A (5) 4 A - 8 A (4-3)	7 P - 9 P (2-1) 9 P - 3 A (4) 3 A - 6 A (4-2) 6 A - 8 A (3-1)	8 P - 10 P (1) 10 P - 3 A (4-3) 3 A - 5 A (2-1)
160	6 P - 8 P (3-2) 8 P - 7 A (5) 7 A - 9 A (3-2)	7 P - 9 P (2-1) 9 P - 3 A (5-3) 3 A - 7 A (4-2) 7 A - 9 A (2-0)	8 P - 10 P (2-1) 10 P - 3 A (3-2) 3 A - 5 A (2-1)	9 P - 4 A (2-1)

SYMBOLS FOR THE NUMBER OF DAYS CIRCUIT FORECAST TO OPEN

(1) 1-4 days (2) 5-11 days (3) 12-18 days (4) 19-26 days (5) over 26 days

* Indicates time of possible six-meter openings
** Indicates time of possible eighty-meter openings

The CQ DX Propagation Charts are based upon a CW radiated power of 150 watts at radiation angles less than thirty degrees and are centered on the Eastern, Central and Western areas of the USA. The DX forecasts are valid through June 15, 1958. The CQ Short-Skip Propagation Chart is based upon a radiated CW power of 75 watts, using a dipole antenna a half-wave length above ground. This Chart is valid through June 30, 1958. All CQ forecasts are based upon ionospheric data published by the Central Radio Propagation Laboratory of the National Bureau of Standards, Boulder, Colorado.

of opening on this *Chart* applies to the shorter distance range for which the forecast is made, while the second digit applies to the longer distance. By interpolation, this takes into account the variation of MUF with distance with greater accuracy than did previous forecasts of this type.

Daylight Savings Time

During late April many communities in the United States went on *daylight savings time*. All times mentioned in the CQ forecasts are given in *local standard time*. If your community is now on daylight savings time, remember to *add one hour* to all times shown in the *Propagation Charts*.

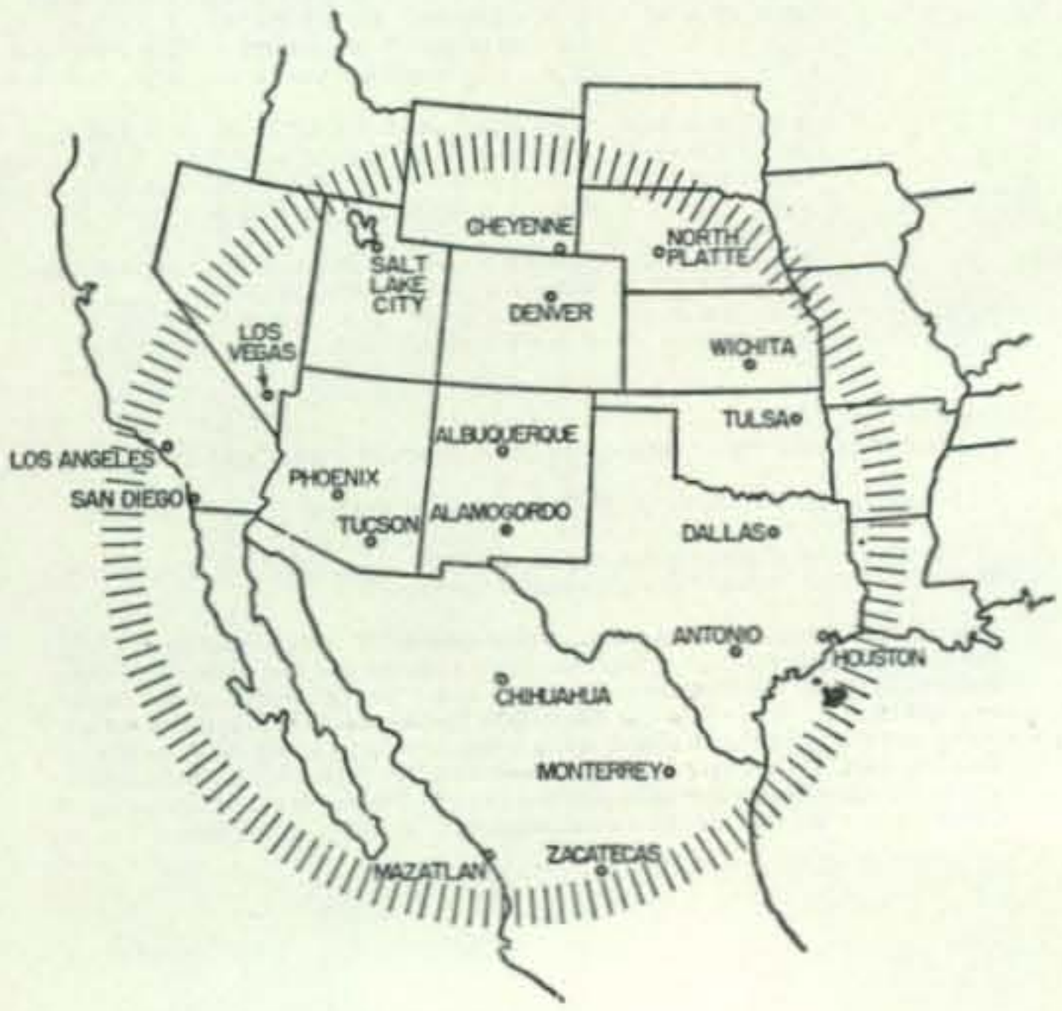
Operation Smokepuff

Last July this column contained an invitation to radio amateurs and short wave listeners in the Southwestern area of the United States to participate in *Operation Smokepuff*—a bold attempt by the U.S. Air Force to form a man-made ionized region high above the surface of the earth by chemical "seeding" from an Aerobee rocket.

Although more than 100 radio amateurs, within a radius of 700 miles of the rocket firing point at Alamogordo, New Mexico, stood by on the HF and VHF amateur bands ready to communicate by means of this artificial ionosphere, two attempts to form it failed during 1957.

The Air Force, in conjunction with scientists at Stanford University, are now ready to begin a new series of "shots" for Operation Smokepuff, 1958. A better chemical has been developed for seeding the atmosphere, and the weather is now at its best for rocket firings. There is every reason to hope that sometime during this year the experiment will be successful.

Fig. 1—Circle shows area within which communications by reflection from artificial ion cloud should be possible. (Originally shown on page 75, July, '57 CQ and again on page 77, May, '57 CQ.)



The Air Force is again inviting radio amateurs within 700 miles of Alamogordo, New Mexico (*See Fig. 1*) to participate in this challenging experiment either as a communicator (via the artificial ionosphere) or as a monitor (monitoring reception on the HF and VHF amateur bands during the rocket firings).

If you live within this area, and would like to participate in Operation Smokepuff, 1958, further information may be obtained from:

Operation Smokepuff
Radio Propagation Laboratory
Stanford University
Stanford, California

Control of the radio-reflecting properties of the upper atmosphere by chemical "seeding" appears to be possible. If Operation Smokepuff is successful, it will represent an impressive scientific achievement. Skilled radio amateurs are in a position to make a unique contribution in this undertaking.

I.G.Y. News

As a result of the excellent scientific observations made from the radio signals of the first three earth satellites by hundreds of radio amateurs throughout the world, an *official* working group has now been formed within IGY circles to utilize observations of radio amateurs during future satellite projects.

This special group, officially called the *Working Group on Satellite Ionospheric Measurements*, under the chairmanship of Dr. Allan H. Shapley of the Central Radio Propagation Laboratory, has been formed in the Technical Panel on Earth Satellites of the IGY Committee. The working group will utilize observations made by radio amateurs in connection with several ionospheric propagation studies. Amateurs participating in this project will be asked to accurately measure the times satellite signals fade in, and fade out, together with an estimate of the relative signal strength, variation and other signal characteristics. Precise measurements of total frequency change during a satellite passage, accurate to a cycle or better, are also desired. (See *CQ* December, 1957, page 66, for an example of this).

A simple log form has been devised for recording observations for submission to the working group. Log forms, along with more detailed instructions, can be obtained directly from Dr. A. H. Shapley, c/o CRPL, National Bureau of Standards, Boulder, Colorado, or from *ARRL Headquarters*.

Here's another excellent opportunity for radio amateurs to contribute towards the advancement of science, and to participate directly in the IGY effort.

The Moon

Much has been said in this column about the sun, and the very important part it plays in shortwave radio propagation. Next month we plan to discuss the moon, and its influence upon radio propagation.

73, George, W3ASK

by **DON CHESSER, W4KVX**
R.F.D. 1, Burlington, Ky.

DX DX DX DX DX DX DX DX

The following top DXers of the world contributed to the delinquency of this department this month by successfully hurdling all the obstacles of WAZ (Congratulations, fellows!):

#487	WØQVZ	Robert M. Kelley	(18th WØ)
#488	OEIBH	Herbert Bauer	(2nd OE)
#489	W7GXA	Joe Naemura	(28th W7)
#490	VK4FJ	Sidney Roy Baxter	(3rd VK4)
#491	OH2YV	V. J. Velamo	(1st OH2)
#492	OH2XK	Niilo Richard Kuusisto	(2nd OH2)
#493	W3JTK	Jack Lannin	(24th W3)
#494	VE3JZ	P. H. Foley	(2nd VE3)
#495	VE6MN	Merlin Oliver Noss	(5th VE6)
#496	W4LVV	Charles J. Bolvin	(13th W4)
#497	VE3DIF	Dr. R. E. Robinson	(3rd VE3)
#498	W8CED	Lee Melvin	(27th W8)
#499	W2JT	Earl F. Lucas	(20th W2)
#500	W6OME	Andrew Kirinich	(142nd W6)
#501	W4OM	P. B. White	(14th W4)
#502	4X4RE	Egon Ron	(1st 4X4 CW)
#503	W6TXL	Harold E. Bennett	(143rd W6)
#504	W9QIY	J. P. Kenney	(21st W9)
#505	VEIEP	A. S. G. Grant	(1st VE1)
#506	W6FOZ	Ken Day	(144th W6)
#507	W4MR	Al Parham	(15th W4)
#508	W6YMH	Robert R. Phelps	(145th W6)
#509	W2NUT	Howard Geberth	(21st W2)
#510	W5CEW	Allen P. Wingate	(19th W5)
#511	W6EFR	Omer N. Wright	(146th W6)
#512	W4KFC	Victor C. Clark	(16th W4)
#513	W6LTX	Gordon Provance	(147th W6)
#514	W6CYV	Joseph E. Bush	(148th W6)
#515	W5GNG	Clay C. Fry, Jr.	(20th W5)
#516	WØSYK	Bill Brown	(19th WØ)
#517	OH5OP	Oke I. Kaarela	(2nd OH5)
#518	OHIST	John Sundblom	(1st OHI)
#519	G8FW	K. E. Walters	(29th G)
#520	G6XL	Francis W. Garnett	(30th G)
#521	SM3BIZ	Curt Westling	(1st SM3)
#522	JA2BL	Naoji Hasegawa	(2nd JA2)
#523	JA8AA	Takeo Hama	(1st JA8)
#524	W5OLG	Robert J. Stark	(21st W5)
#525	W3SWV	D. L. (Don) Robinson	(25th W3)
#526	W6CHV	Ralph H. Culbertson	(149th W6)
#527	WIICP	Lewis McCoy	(9th WI)
#528	5A5TH	Robert E. McAllister	(1st 5A)

All the above indefatigable night owls deserve individual attention, had we the space. Even so, we must point out the entry of arch-competitor Vic Clark, W4KFC, who added a twist by including cards from 16 of his 40 zones from stations which had regular (local area) Potomac Valley RC members at the controls: W3PZW at KL7BPG; W4KVM at VO6H and KG1JB; W4RAI at W7PJS; W3MCG at W3MCG/VE4; W3KDP at W3KDP; W4NNN at FO8AJ and VP7NG; W3EIV at YV4AW, HC1AW, and ZP3AW; W4LAP at DL4JN; W4LIU at TA3FAS; W4YKO at WØMCF/C1; W4VE at KA9AA; and W4RQR at KH6DD. We wonder if any

Group picture taken at the Fernando de Noronha Hamfest last December. Left to right: Sgt. Camilo; PY7LR; Sgt. Gameleira, PY7AFN; Jose Victor, PY7AN; Major Mafra, PY7BAD; Phil Hendricks, WØYFE; Major Ebecken, PY7AGA; sitting, left to right: Capt. Macedo, PY7SC; Dr. Odacy, PY7ACY; Major Chaves.

Jimmy Taylor, GM2DBX, of Methilhill, Scotland, frequent winner of CQ phone DX contests in his country.

other clubs' members get around as much!

DXpeditions

The Ohio Valley DXpedition members would like to get around, but, at this writing, are experiencing rebuffs in every direction. At practically the last minute the Mexican Navy Department denied permission for our landing on Socorro Island, or any other islands of the Revillagigedo Group, declaring that area off-limits for everybody, including Mexican nationals. Reasons for the declaration were not disclosed, but it is believed this action will end any further XE4 amateur radio possibilities for some time to come.

The Mexican government, however, graciously offered us permission to operate from another Mexican island, Guadelupe, about 200 miles off the coast of Lower California, which would have been a fine substitution had the DXCC committee of ARRL blessed it with separate country status. Our tongues hung out with anticipation while the committee deliberated, but for naught, for they refused the request.

With not a chance of obtaining landing and operating permission on Clipperton Island, our sole remaining alternate destination, we were left with the very uncomfortable feeling of being all dressed up with no place to go. We found ourselves cliff-hanging with a fine crew of willing and enthusiastic operators, loads of equipment ready to work, a caravan gassed up and rarin' to go, and a good boat, chartered, provisioned, loaded with suitable camping equipment, and standing-by, to all intents and purposes, on an empty ocean. What a revoltin' development!

As it appears at the moment of this writing our boat is not only on an empty ocean—it's on the wrong ocean! As a last gasp of desperation we have swiftly swung target from the Pacific to the Caribbean—to Navassa Island, specifically. Amidst a frantic flurry of big "IF's"—if we can get FCC licensing in time, if we can obtain Coast Guard permission to land on Navassa, if we can quickly collect adequate camping equipment to make life bearable on the island, and the biggest "if" of them all—if we can find a suitable boat in the Miami area that our demolished expedition fund can afford—we might still salvage a satisfying DXpedition from the chaos about us. Tempus fugit. By the time you read this it will all be over, and you'll know if we were successful or not.

Wayne, W2NSD, and Dick, K2OPJ, are flying to Miami to begin the search for a boat, and the auto caravan, containing the remainder of the crew plus all the equipment, will follow them Cincinnati to Miami immediately after this column is deposited in the mail. Whatever the outcome of our efforts it can't be said we didn't try!

We're not the only ones with expeditionitis (a dreadful disease!), however. Mac, W9EVI, planned a three week ham's paradise on Clipperton Island with a big station and 1200 gallons of gasoline, starting about March first. Everything was set—except the license and permission to land on the island. They waited until the last possible minute for "the word", but none came and the ship departed Panama for Hawaii, still carrying the ham gear and gasoline, but minus Mac. He trudged back to Illinois, a sadder and perhaps wiser man, but cerainly not discouraged. True to the bull-dog characteristics of a dyed-in-the-wool DXpeditioneer, Mac is now exploring the possibilities of landing a PBY or similar flying boat in the land-locked lagoon of Clipperton.

Other expeditions seem more fortunate. VQ4EO's SSB/CW trek across Africa is going well, with OQ5, FQ8, and FE8 visited, and ZD2, FF8, ZD1, and ZD3 possibly next. Paul is trying for FD8 authority at this writing.

From John, W6YY, comes word of another promising DXpedition during the latter part of March and most of April by Al, VR2AP. Using 20 watts of AM and 40 watts of SSB on 14340 kc (batteries permitting), his itinerary is as follows: Singapore. Labuan, British North Borneo (ZC5); Tawao, British North Borneo (ZC5); Dili, Portuguese Timor (CR1Ø); Darwin; Thursday Island; Port Moresby, New Guinea; Honiara, Solomon Islands (VR4); Port Vila, New Hebrides (FU8); and Suva, Fiji (VR2). The places shown with the prefixes in parenthesis are countries for which the OK for operation has been given. Maritime mobile from on board the governor's yacht between countries will be under the call VR2AP/MM.

Another DXpedition to Fernando de Noronha, this time by one man, Flavio, PY1CK,

resulted in 674 contacts with 85 countries, mostly on phone, of which 162 were W's, during the week of January 23 to February 2. First W in each call area: W1ME, W2BRV, W3HPO, K4AIM, W5MMK, W6GPB, W7SGN, W8KML (first USA station worked), W9JJF, and WØNWS. Operation was from the same St. Anna schoolhouse, using the same antennas still erected plus additional ones, as the previous PY7AN/Ø expedition. Equipment consisted of a DX-100 and commercial converter feeding an all-band receiver belonging to local PY7SC.

Flavio is planning to return to PYØ the first week in April with possibly other mainland operators (PY2CK, PY1AQT, PY2AK and PY7AN), although the need for expeditions to the island seems to be disappearing. Major Mafra, Governor of Fernando de Noronha, has received his license, PY7BAD, and PY7SC and PY7AFN also live on the island, all of whom plan to be active. PY7SC, recently worked by W8FGX on 7 mc CW, plans mostly 14 mc phone operation with some CW, using a 32V transmitter, and PY7AFN plans mostly 14 mc work. All the territory calls may be changed to PYØ the middle of this year.

Joe, PY1CV, has postponed his trip to Trinidade Island, also PYØ, indefinitely, but promises to give plenty of advance notice when he does go.

DX Notes

From the noble pen of John, W6YY: Joe, VS9AC, says there's not much chance of him or other VS9s going next door to 4W1 because of the general political situation. LA2JE/P is still handing out CW QSOs from Svalbard (Spitzbergen). OX3ET is active in Greenland. Ray, VR3A, is now going great guns from Fanning Island with his new antenna tuner and Vee beams. VR3N is also now active. XW8AI, a phone newcomer in Laos, lays a potent signal on 14167 kc at 1600 GMT almost daily.

Charles, VKØAB, has now departed for VK after 13 months of operation. VQ4AQ and VQ4KRL are cooking up a DXpedition to VQ1 and VQ9. ZD2CKH is now active in Nigeria on 14093 kc CW, but at 10 WPM. DL8AZ, representing the new call prefix for the Saar, 9S4, is heard quite often.

VKØTC, now on phone on Macquarie Island, says Heard Island has been abandoned as a weather station and there's no chance of radio activity from there in the foreseeable future. ZK1AK has been quite active on Cook Islands on 14041 kc CW. HS1WR is going on phone, HS1C on 14020 kc CW, and HS1E will be on the air shortly. John, CR9AH, is considering a trip to Portuguese Timor, CR1Ø, if he can locate a small, battery-operated, transmitter-receiver set.

KR6HP is located on Myako Island, 175 miles south of Okinawa. It's not a new country, states W9WKU, but at least it's different.

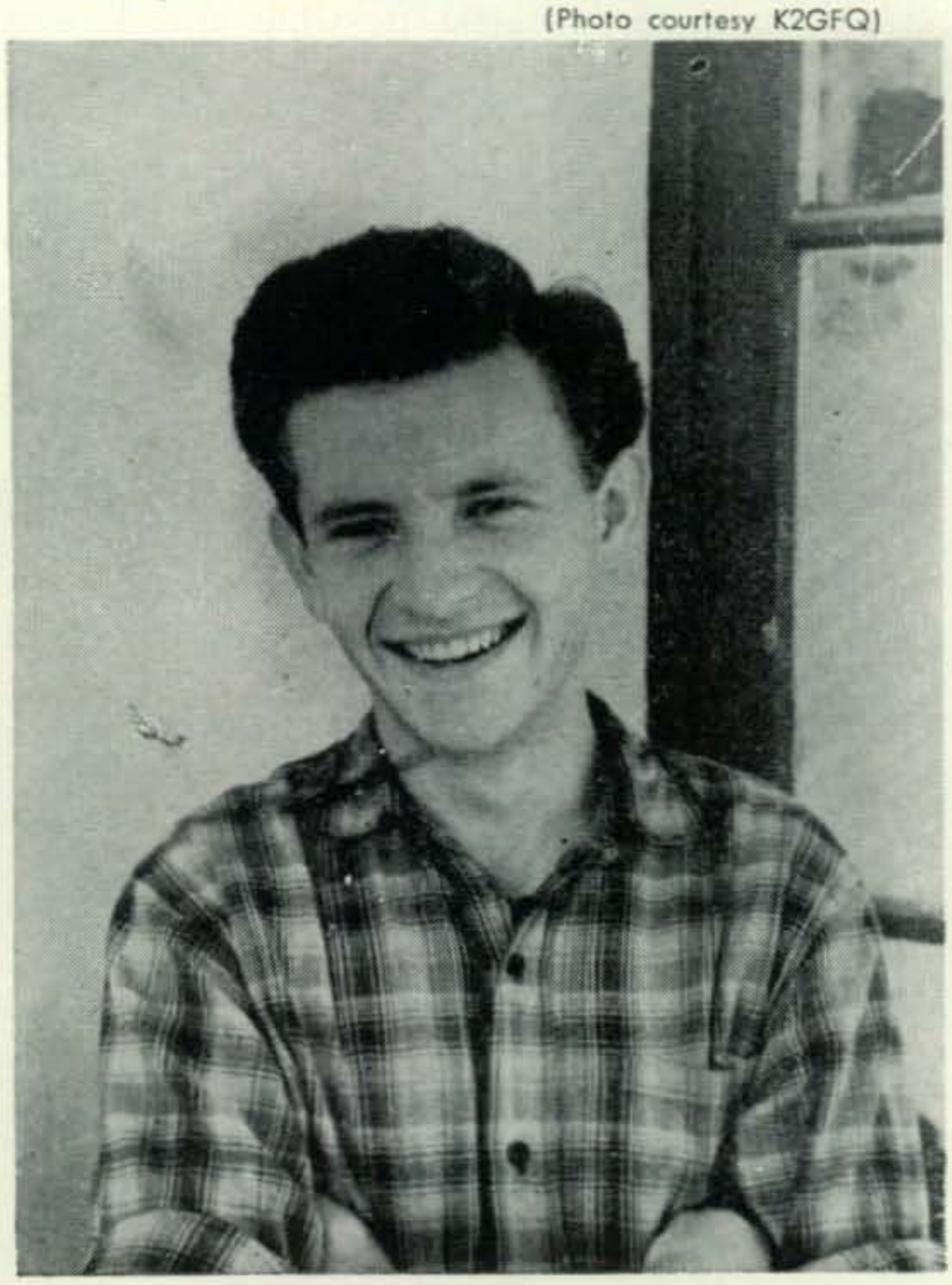
The character who stirred up a commotion on the 14 mc band by signing FKØAD, Chesterfield Islands, is a phony, writes FK8AS via W6ZEN. "This station cannot be something else than a pirate. FKØ calls do not exist," states FK8AS. "I am sure that he is a Frenchman as he speaks French. This man plays like that. Sometimes he gives FK8AD call. FK8AD died in 1951. Then sometimes he gives FW8AD call. I must say that FW8AD call has never been given as now. Now he gives FKØAD in Chesterfields Islands—islands in the northwest of New Caledonia with nothing on just seven coconut trees, 1 mile long, 150 feet wide, and 15 feet high. By the way, possibly I shall go to this island to install an automatic weather reporting station in about one year. If yes, will bring DX-100. But always FK8 with absolutely nothing better for award!"

ZK2AB's call was pirated during the DX contest, also, writes W6ZEN. He thinks it's the same pirate who signed FKØAD, ZM7AC, etc.

Bill Scarborough, ZK1BS, will tour the U. S. and Canada for 120 days in about 15 months, says Jim, W8JIN. He plans to cover New York, Texas, Tennessee, Arizona, Las Vegas, California, Canada, and other points of interest, with a stop-over of several days with W8VDJ and W8JIN. He would doubtless be delighted to speak before your club if the connections could be arranged. Write to ZK1BS with your invitations.

Word of a trip to Aldabra Islands by VQ9HAY comes to us from Jim Hart, saying VQ9HAY worked VQ4AQ from Aldabra and had the ship captain certify this fact on the

"Shotgun" Slawa, UF6KAC, active on 14 mc CW.
(Photo courtesy K2GFQ)



Here's an oddity in antennas, a tetra-band (6-10-15-20 meters) quad, with its owner, Bud Bitler, W8DSZ, precariously perched within it, 60-feet high. Youngster Bud, only 18 years old, shown here with his neat station, has already racked up 109 countries.

QSL. It's too bad VQ9HAY remains so restricted in his operations.

FB8CD departed Comoro Islands February 27th, thus stopping all DX activities from that point. However, it is possible he may return in about six months.

VS4BA is looking for W/K contacts Saturdays and Sundays from 1300 to 1500 GMT on 14090 kc, advises K2GFQ. He listens 10 kc lower than his own frequency. He now runs 90 watts to a good beam, and promises to QSL promptly.

If you still need the Appenzell (AR) canton of Switzerland for the Helvetia-22 award (a strikingly beautiful certificate) HB1PL/AR is your target. He's crystal-controlled on 14064 kc CW, 14132 kc phone, 21299 kc and 28691 kc phone and CW, and operates daily from 1800 to 2300 GMT.

ZD7A is returning to St. Helena, advises G6QB, and HA5AM/ZA plans more weekends of ZA operations this spring. Ludvik, JT1AA, is using the audio amplifier from his office 16 mm movie camera to suppressor-grid modulate his CW rig on phone, we hear. No rag chews, please—just signal report exchanges.

VQ8 authorities are in the process of reassigning calls to Mauritius, Chagos, and Rodriguez stations. Mauritius will continue two letter suffixes, Chagos will have three letter suffixes with the letter "C" immediately following the numeral, and Rodriguez the same with the letter "R".

"I just got home from my monthly trip to Saudi Arabia," writes Vic, W1TYQ, "and enjoyed another personal chat with HV1CN while at the airport in Rome. I1AMU came along and helped with the translating. I understand they have an OK to stay on the air from the Vatican for a long time. In fact, Dominico is interested in getting a tri-band beam." Vic is helping the HV1CN QSL problem, both directions. If you are expecting an HV1CN QSL drop W1TYQ a stamped and addressed envelope.

New officers of the SCDXC: Pres. Warren Davis, W6IBD; Vice-Pres. Gordon Marshall, W6ITA; Secy. Gary Stilwell, W6NJU; Treas. Dennis Dinga, W6UED; Directors Sam Roley, W6VUP, Chuck Bailey, W6BXL, and Norm Wasson, W6NNV.

Thanks to the Ohio Valley DX Bulletins, West Gulf DX Bulletins, SCDXC BULLetin, NCDXC DXer, for much of this material.

See you next month.

73, Don, W4KVX

The Ohio Valley DX Bulletins

If you would like much faster and more comprehensive DX news and articles than space in this column can permit, we suggest you try the Ohio Valley DX Bulletins, edited and published by W4KVX. Its 40 or more issues a year are distributed only via first class or air mail, for greatest possible speed, and costs but $5 a year for first class service, or $6.50 air mail. Two month trial subscriptions are available for $1 first class, $1.25 air mail. Sample copies may be had for the asking. Write W4KVX (address at the head of the DX column) for further details or for your membership to this excellent service.

Addresses

CEØAG—QSL via K6GKU, Robert B. Rose, 6128 Temple City Blvd., Temple City, Calif.
CO2YZ—Juan Granados, Radio Center 716, Havana, Cuba.
CR4AH—Nuno Pinhiero, SAL Airport, Cape Verde Islands.
FA3DU—Pierre Pelloux, 5 Rue Bizot, Orleansville, French Algeria.
FL8AC—Box 121, Djibouti, French Somaliland.
HB1PL/AR—P. Langenegger, c/o VHF and TV Station, Saentis, Switzerland.
HK7AB—Hector McCormick, P.O. Box 216, Bucaramanga, Colombia.
JZØHA—QSL to PAØKOP via VERON, or direct to Hugh Koppes, Box 420, Sorong, Netherlands New Guinea.
KAØIJ—QSL via W2FVG.

[*Continued on page 109*]

VW NOISE [*from page 37*]

FRAME. But this bonding is the last resort because it is so hard to do.

Noise elimination is not an easy task if it is to be effective. Recognizing the various noises helps. Electro-mechanical noise is better found on real rough wash-board type roads where there is lots of vibration. Generator noise can be identified by slipping off the fan belt for a few seconds; this noise will not be present if the generator is not turning and usually is a fairly high pitched whine like that of a sewing machine; wheel or tire static can be identified by turning off the engine and coasting, it will usually have a peculiar "impulse" type sound and will vary in frequency as the car is slowed down or speeded up.

When the ignition switch is turned on (without motor running) and there is noise, you can safely bet that you have a loose or arcing connection or a connection thermally or galvanically affected.

In cars with rear-mounted engines, make certain that the door or hood which covers the engine is making good electrical contact at all times. To check this, use some aluminum foil (such as is used in the kitchen) and make a few wedges out of this material which are inserted between the hood (cover) and the car proper. If this stops the noise, shield braid may be soldered to the cover and the inside of engine compartment and left long enough so that the cover can be opened and closed easily.

Those cars having ammeters, tach gauges, etc. present more trouble. All electrically operated gauges must be bypassed with at least .5 mfd condensers; this being especially true of gas gauges.

Speaker leads should be shielded (when the speaker is not an integral part of the set—if you are using a converter). Leads to antenna switching relays, electrically operated loading coils, etc., should be shielded.

If you are an "unbeliever" in resistor plugs, shield each plug cable as well as those to the high tension coil—aircraft fashion. This is a lot of work, however, and requires careful grounding.

For those operating on 2 and 6 who still have noise after the measures above have been tried; bypass all large condensers with ceramic condensers having nominal capacities from .002 to .02 mfd. Make sure these condensers are mounted so that the shortest possible connecting leads are used.

In the MG and Porsche, make certain that tailpipes are bonded properly and not floating (in part). Because a mechanical (or electrical) member is grounded at one end does not mean that it is always *effectively* bonded. In the 300 SL (Mercedes), check for proper engine bonding before you do anything else.

[*continued on page 96*]

PUT AMERICA BACK TO WORK!

10% PRICE SLASH DURING MAY AND JUNE!

"I am now using the Gotham V80 vertical antenna with only 55 watts, and I am getting fantastic reports from all over the world". VP1SD

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V40 vertical for 40, 20, 15, 10, 6 meters	$14.95	☐
V80 vertical for 80, 75, 40, 20, 15, 10, 6 meters	$16.95	☐
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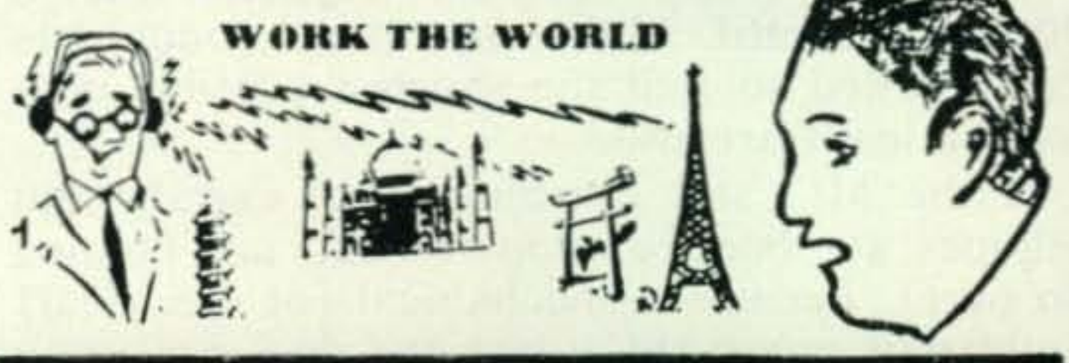
HOW TO ORDER. Send check or money order directly to *Gotham*. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.



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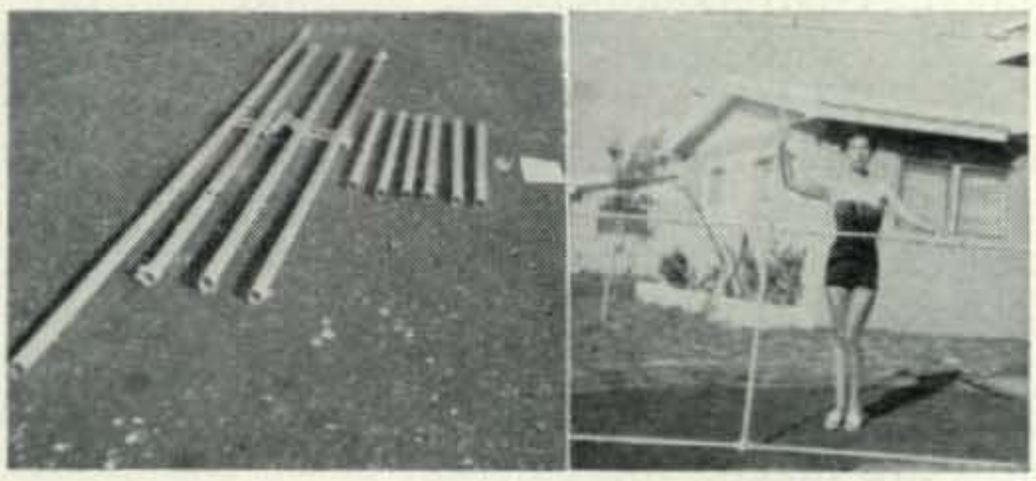

Study these specifications — compare them — and you too will agree, along with thousands of hams, that GOTHAM beams are best!

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GAIN. Gotham beams give the maximum gain obtainable. Our 2-element beams give a power gain of four (equivalent to 6 db.); our 3-element beams give a power gain of seven (8.1 db.); and our 4-element beams give a power gain of nine (6.6 db.).

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S.W.R. On Each Band	1:1
Diameter of Elements	7/8" & 1"
Number of Booms	2
Diameter of Booms	1"
Boom Length	12'

6-10-15 Tribander

GAIN	F/B RATIO
6.5db on 6 mtrs	23db on 6 mtrs
7.8db on 10 mtrs	27db on 10 mtrs
6.5db on 15 mtrs	23db on 15 mtrs

10-15-20 Tribander

GAIN	F/B RATIO
6.5db on 10 mtrs	23db on 10 mtrs
7.8db on 15 mtrs	27db on 15 mtrs
6.5db on 20 mtrs	23db on 20 mtrs

All Two-Bander Beams Have A Forward Gain Of 5.8db On Each Band, And A F/G Ratio of 17db.

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☐	T match		19.95
☐	Deluxe 4-El Gamma match	25.95	
☐	T match		28.95

10 METER BEAMS

☐	Std. 2-El Gamma match	11.95	
☐	T match		14.95
☐	Deluxe 2-El Gamma match	18.95	
☐	T match		21.95
☐	Std. 3-El Gamma match	16.95	
☐	T match		18.95
☐	Deluxe 3-El Gamma match	22.95	
☐	T match		25.95
☐	Std. 4-El Gamma match	21.95	
☐	T match		24.95
☐	Deluxe 4-El Gamma match	27.95	
☐	T match		30.95

15 METER BEAMS

☐	Std. 2-El Gamma match	19.95	
☐	T match		22.95
☐	Deluxe 2-El Gamma match	29.95	
☐	T match		32.95
☐	Std. 3-El Gamma match	26.95	
☐	T match		29.95
☐	Deluxe 3-El Gamma match	36.95	
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20 METER BEAMS

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☐	Deluxe 2-El Gamma match	31.95	
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VW NOISE [*from page 93*]

One piece of aluminum foil wrapped around the middle of the high tension (center) lead of a distributor on a Porsche, and grounded with a piece of wire cut the ignition noise to a listenable level. The foil was taped to the lead and gave no trouble.

Wheel, tire and brake static are easily eliminated. High conductance graphite powder is squirted into tires; this usually eliminates tire noise. Wheel and brake noises are usually eliminated by utilizing pressure springs inside of hub caps. American made pressure springs can be cut with a pair of good tin shears to fit into foreign hub caps (wheel bearing caps).

There are few easy approaches to complete noise elimination. However, if the above measures are taken, you can sail down the highway only hearing the other fellow's noise and the interference from commercial power supply systems. ■

OOPS—Good Grief Dept.

Corrections to Bandhopper "6"—

CQ Magazine February 1958

1. Remove the connection between R102 and C105.
2. In the cathode circuit of the 2E26 change "I-101, 6 ma." to "I-101, 60 ma.".
3. The RF filter choke on cathode of V208A should be identified as L204, 25 uhy rfc.
4. Change the T-R switch "S-2" to read "S-101".
5. Identify the netting switch as S-102.
6. Change the 300K 2W resistor connecting to the netting switch to 33K 2 watt.
7. Change identification V204 from 6BH6 to 6BJ6.
8. It appears necessary to clarify the power supply connections for the three modes of operation. An eight pin connector is used strictly as a switching device while the eleven pin connector brings in power and also performs switching operations. The diagram shows the unit connected for 115 volt operation in which the octal jumper plug is not used. This is evident on the diagram by the lack of mating pins adjacent to numbers 4, 1, 7, 8, 2, 5, 3, 6 in sequence.
9. Identify DPST switch in power supply as "S-301".
10. Coil Chart:

L101—32T	#26	½" dia. close wound
L102—15½T	#24	½" dia. ⅞" long
L103— 4½T	#24	½" dia. ½" long
L104— 5T	#12	¾" dia. 1" long
L105— 2T	#14	¾" dia. link
L201— 7T	#26	½" dia. ¾" long tapped 1¼" T above ground
L202— 7T	#26	½" dia. ¾" long
L203— 4T	#26	½" dia. ¾" long tapped 1½" T above ground

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For further information, check number 34 on page 134.

NOVICE [*from page 81*]

Joe Foughner (18) 2222 E. 40th St., **Savannah, Georgia** is very interested in becoming a ham. He would appreciate hearing from someone in his area.

Thomas Dornback, 2711 S. Karlov Avenue, **Chicago 23, Illinois** would like help in learning the theory in order to obtain a General class license.

Walter J. A. Misback, 1436 W.W. 1st Street, **Oklahoma City, Oklahoma** would like to become a ham.

Max McCray, 1055 E. Monte Vista, **Phoenix, Arizona** needs help with the code and theory to become a ham.

David T. Marsink, 3806 S. Washtenaw Avenue, **Chicago 32, Illinois** is very interested in obtaining an amateur radio license. What say Chicago?

Gary Paster, 7168 Cambridge, **St. Louis 5, Mo.** (14) would like help with the code and would like to have a ham penpal. His phone number is PA 7-2942.

Arthur Breault, 697 Pine St., **Central Falls, R. I.** needs help with the code.

Questions

Bob Vreugdenhil, WN6WDZ, Box 113, Daggett, California wonders what's DX for a Novice? And he wonders where it is. "He ain't never heerd one!" as he says.

Durel Brigman, KN4RZM has 24 states confirmed on 40 meters. He has some TVI trouble which holds him down a little. Durell uses a DX-40 and a HQ-110 receiver.

George S. MacLauchlan, Addison, Maine would like a circuit for a 6CL6 buffer to go between a 6AG7 and a 6146.

Paul Boulon, KN1DDQ, Box 13, Greens Farms, Conn. has racked up 25 states, nine call zones and a VE3, on 80 meters. His transmitter is a homebrew running 65 watts input feeding a 105 ft. long wire about 35 feet from the ground. The receiver was constructed from the ARRL Handbook and uses 8 tubes. Paul extends his thanks to W1WAV and W1BE who had the patience to help him with the license.

Tex Birnhold, K2VAB, 634 High St., Newark 2, N. J. would like skeds with Ky., N.M., Idaho, S. Dak., Wyo., Nev., Ariz. and Utah for WAS.

Ray Linnville, KN4??? is nervously awaiting his Novice ticket. He will arrange a sked with anyone and plans to QSL 100% (don't we all, Ray?)

Dave Still, K2VTX/VE2, 4378 Papineau Avenue, Montreal, Quebec, Canada wrote a nice letter to say that he is looking for Novice stateside contact on 15 meters and is glad to give them a new province. So be sure to look for him fellows. Say hello to your dad for me Dave.

Charles C. Kilgus, 448 Market St., South

[*continued on page 100*]

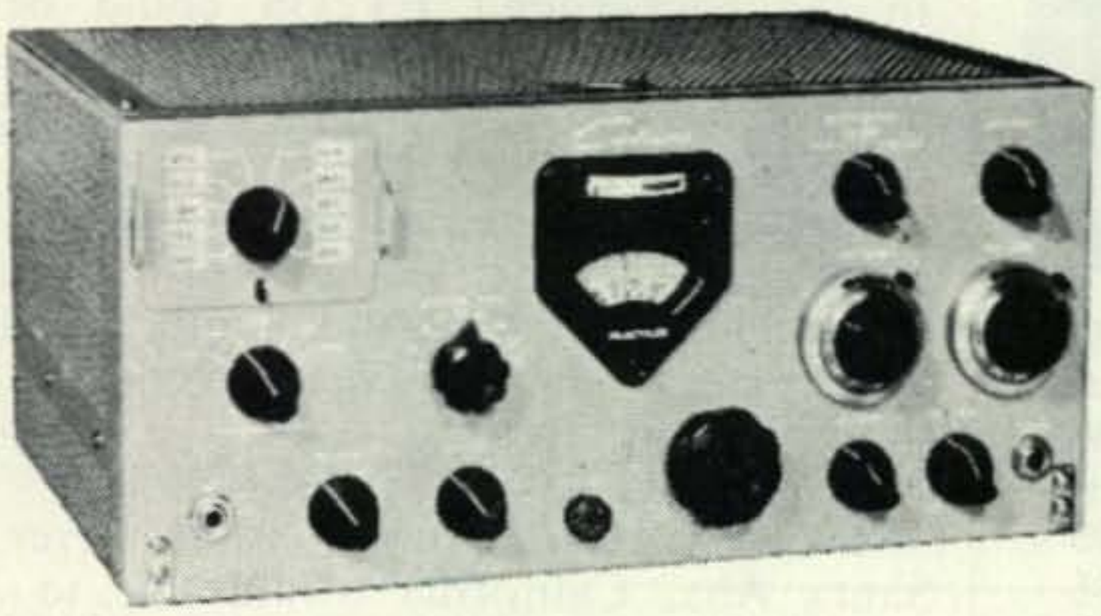
Get our price on Collins Equipment.

You'll be glad you did.

Write or phone for our price on any equipment.

Collins

KWM-1 Mobile Transceiver



First SSB Mobile Transceiver ever offered. 14-30 mc. 175 watt PEP input. Use for mobile or fixed station without modification. Frequency stability comparable to KWS-1 and 75A-4. Break-in- CW using VOX circuits — side tone CW monitor. Self adjusting ALC. Mechanical Filter sideband generation. Complete TVI filtering. Pi-L output network. 6¼" H x 14" W x 10" D. Available in limited quantity.

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Ted Henry, WØUOU Los Angeles

"World's Largest Distributors of Short Wave Receivers."

For further information, check number 26 on page 134.

NOVICE [*from page 98*]

Williamsport, Pa. would like information on converting the DX-35 to six meters using the 10 meter position, if possible.

Don Gorney, KN6EBL and Larry Gorney, KN6EBX share a Globe Scout 680 and a Nc-109 operating on 15 meters into a multiband vertical. Dx includes HK4, WL7, and VE's. They will be glad to make sked with any station for any reason.

Tony Estep, KNØLTB writes about sloppy operating practices by some of the Novices. "ET2US came on calling CQ DX. A two-by-two call landed him and after a very short QSO we signed. The instant we signed a KN1ZZZ started calling CQ DX on the frequency. ET2US did not call him so I did and explained the deal to him three times. He said OK, thanks for the tip, I'll listen for him—and immediately launched into another CQ DX. In the background ET2US could be heard vainly trying to raise someone else". Take heed fellows . . . listen before you put out that CQ DX call.

Morris G. Heins, III, 442 Grandview St., Memphis 11, Tenn. would like to work Wyo., Mont., Ida., W. Va., and South Carolina for WAS. He is glad to sked anyone on any of the following freqs: 21.102, 105, 114, 117, 129, 141 and 240.

Ted Glick, KN6LJA, 1009 River Land, Santa Ana, California would like to see the names of the newly licensed hams in the Novice column. Unfortunately, Ted, we are cramped for space already. Until more advertisers allow CQ to run more pages there simply isn't enough room. Remember, when you buy something, say you saw it in CQ.

Dennis (The TVI Menace) Bird, K2UER, 2186 Atlantic Avenue, Brooklyn 33, N. Y. still reads the Novice column even though he is a general now. Dennis works 10 cw using a NC-98 and a Globe Scout 680 pushing about 55 watts. Look for me on 28.150 with 100 milliwatt transistor rig Dennis.

Tom McRaw, K4PRO, 8913 Norwich Rd., Richmond 26, Va. is also a General who reads the Novice column. He did not make his WAS as a Novice but did work about 36 states and the DX includes G3, GM3, KP4, LU1, and Ve3. Tom would like to see more information on two meters in this column. Its coming Tom.

Bob Harrell, K4OLQ, 128 Northern Avenue, Decatur, Ga. has worked 31 states on 15 meters, plus KZ5, HR2, W and KP4, VE1 and VE3. Bob uses a homebrew rig (75 watts to a 1625) into a 40 meter dipole. He recently passed his General and is planning a VFO and Modulator.

And that brings us down to the bottom of the stack again this month. Say, are there any of my readers who are interested in model airplanes? Your conductor of the Novice column is getting the radio control airplane bug.

73, Don, W6TNS

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Personal Service from Experienced Hams.
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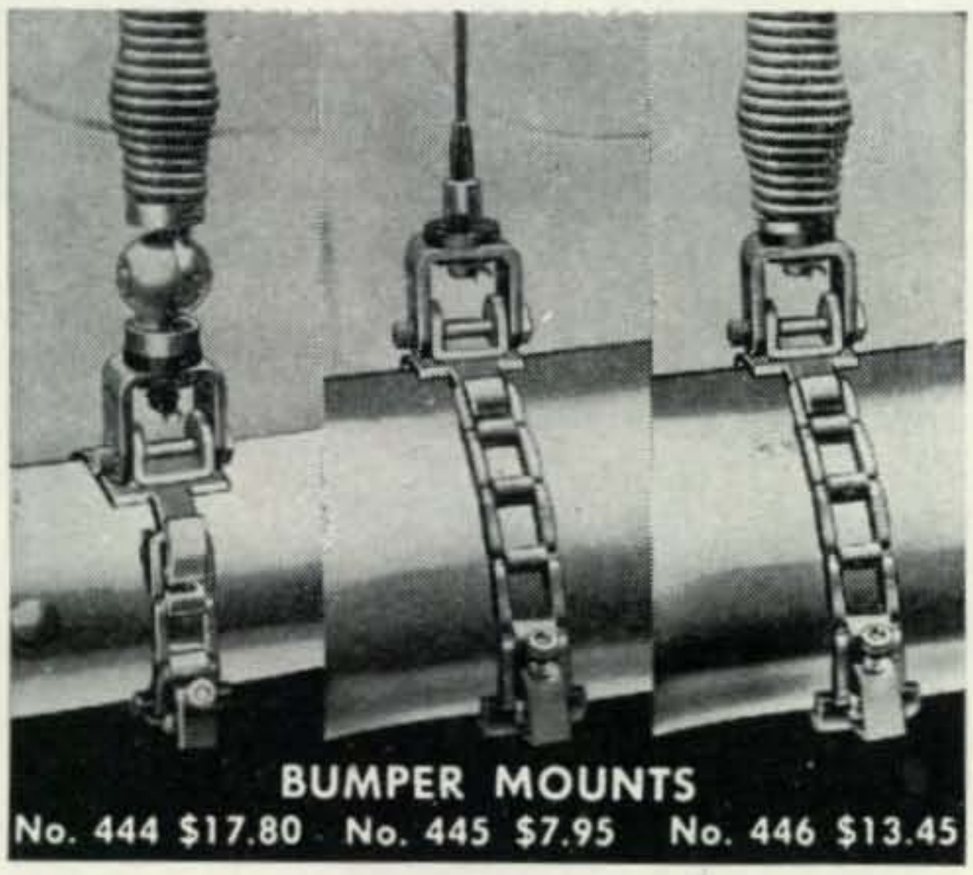
WØCRP—Russ, KØABO—Rog } ***Cedar Rapids***



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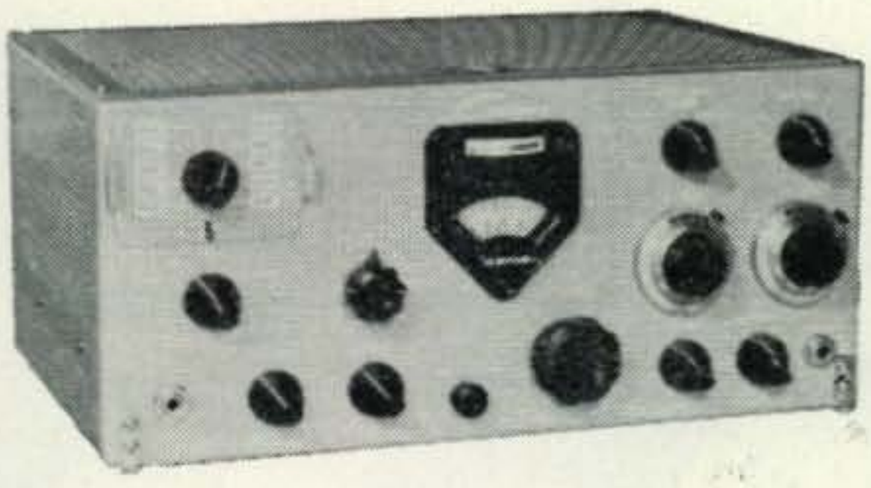
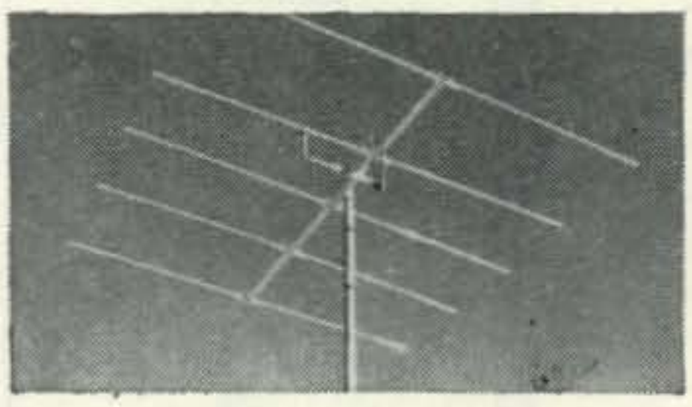
No. 444 $17.80 No. 445 $7.95 No. 446 $13.45

We stock a complete line of MASTER MOBILE antennas and mounts.



KWM-1 Combines PTO 175 Watt SSB/CW transmitter and extremely accurate and sensitive receiver in a compact case only 6¼" x 14" x 10"! Designed for convenient mobile and/or fixed station. Packs for 12 VDC, 28 VDC, and 115 VAC. Available frequency ranges 14 thru 30 MC. For Amateur and commercial service. **$820.00**

A Complete Line of **hy-gain**



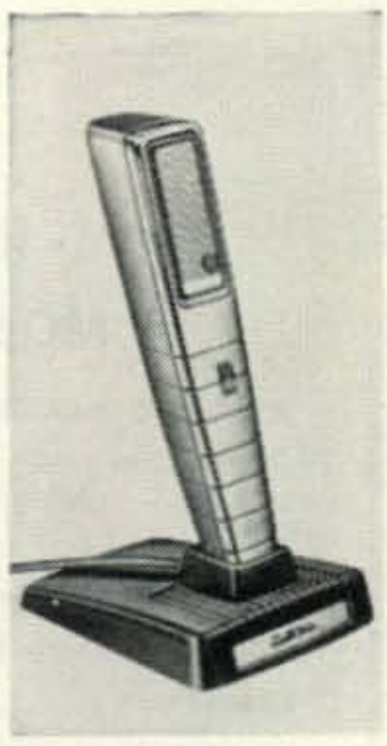
6 METER
5 ELEMENT
$12.95

6 METER, 8 ELEMENT BEAM: $24.95

The hy-gain 6-meter beams are adjustable for max. gain over the entire band, from our instructions. No further tuning necessary. Calibration Chart supplied with each instruction manual. Factory preassembled, these beams feature heavy wall ½" aluminum elements of 6061T6 alloy and 1¼" diameter aluminum booms. May be stacked for additional gain. Stacking Bars available at $3.95 extra.

BRAND NEW ELECTROVOICE PUSH-TO-TALK
Model 927LS

Slim Crystal Microphone. A new design crystal microphone for radio amateur, recording and general use. Response 60-8000 cycles. Output—50 db. High impedance only. 5 foot cable. Microphone muting and relay operating switch push-to-talk or push and lock. Metalustre gray front, medium gray back. 7⅞" x 1½" x 1¼". Supplied with attractive stand. Net weight less cable and stand 9 oz. **$17.95**



SPECIAL!! TENNA COMMUNICATIONS ANTENNAS

SWIVEL BASE: Has adjustable split-ball locking feature. **Model MB-1** **$2.87**

SWIVEL BASE AND SPRING: Spring tempered heavy spring steel.
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STAINLESS STEEL MASTS: Exceptional strength. Fit either MB-1 or MB-2 or a base.
Model MM-40F—(Motorcycle) **$3.46**

Model MM-60 —	60"	.....	**$3.46**
Model MM-72 —	72"	.....	**3.46**
Model MM-84 —	84"	.....	**3.64**
Model MM-96 —	96"	.....	**4.11**

BASE SPRINGS: Flexible cable thru center maintains constant electrical impedance.
Model MBS-1—Standard **$1.48**
Model MBS-2—Heavy Duty **2.11**

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For further information, check number 28 on page 134.

SB [*from page 76*]

Ed, FP8AR

W1ZZE/4 and No. 1 son John, KN1BYK/4

Fred, W4CF and Dan, W2GG/4

F7AF has passed the 100 mark. He has been very cooperative with news around the world, and has faithfully advised me of each new one which he has contacted. Well done Charlie! Les, F7EM will return Stateside in July and will probably be assigned to Rome, New York. We are also looking for Norb, F7BN who will be transferred from Paris to the Pentagon. Luke, W5VGE/4 will be leaving Washington in July for Fort Worth, Texas. Roy W4IFW is being transferred to Hawaii. Lucky guy!

We have just received a call from W4IYC in Richmond to expect the first picture of Paul Stein, VQ4EO while enroute thru Africa with his mobile station. We will hold the presses for this scope.

73, Bob, W3SW

EDITOR NOTE: We held the presses — *see our cover.*

For further information, check number 30 on page 134. ➤

HAM PARADISE (Mobile Section)—

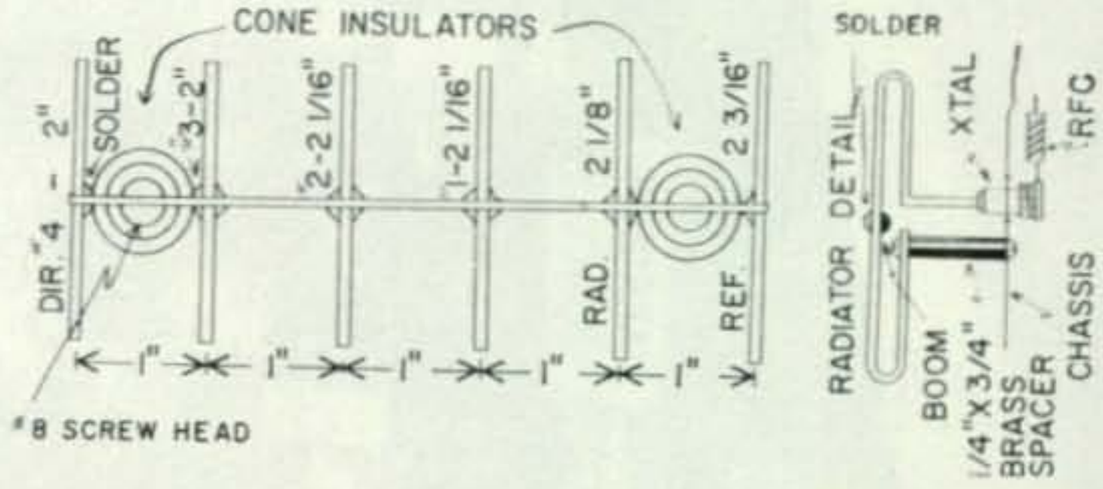
It's not really a drive-in, but it is just about the biggest and the best place for you to get everything mobile!

Advice, complete stock of the newest equipment, terms, trades, low prices, traded-in bargains,—everything to make you happy!

Come on in to Ham Headquarters, U.S.A. Just 12 blocks straight downtown from Holland Tunnel. Easy parking (outside!)

73, Bil Harrison, W2AVA, 225 Greenwich St., New York City

ADDITIONAL INFORMATION ON THE CQ MAGAZINE RADAR SPEEMETER RECEIVER ARTICLE



ANTENNA Let's be practical. E. L. Klien and I have a lot of materials for etching printed circuit board, but most of you readers do not. A much more practical, and equally efficient antenna can be made out of number 14 tinned wire. The crystal loads the antenna and it will be found to be quite broad. You might try trimming the dimensions for greater sensitivity, but this is usually not necessary.

Don't forget that you can't test the unit by placing the receiver in the radar beam. You *must* be moving toward it to provide the doppler frequency shift (hence the audio note). Below is a scale drawing of the antenna. Solder the joints.

The antenna "boom" should be supported at each end with one inch ceramic insulators.

CHOKE The choke consists of 6 turns of #22 tinned wire wound on a ½ watt, 1 meg resistor. This prevents rf from biasing the first transistor. Also, add another 1 meg resistor across the 100 mmfd rf filter capacitor.

OUTPUT TRANSFORMER The T-44X is a Triad part no. and is available from Triad Transformer corporation, 4055 Redwood Avenue, Venice, Calif. Actually, it is nothing more than an audio choke. The primary of any small transformer with a 2,000 ohm impedance should be a satisfactory replacement.

RANGE You should be able to get a 1,000 foot range out of your unit. You have the advantage in that you are receiving the direct signal where-as the radar receiver depends on the radar echo.

THE TA-11 AMPLIFIER Honest fellows, even I don't know the values inside the printed circuit amplifier! You could duplicate the performance by using four RCA 2N105's or other low noise transistors. The volume control is 10,000 ohms.

IGNITION NOISE Yes, the unit will pick up ignition noise so experiment with placement.

COMPLETE UNIT Some readers expressed a desire for a unit separate from the car radio. I would recommend that you get a Sams "Photo-fact" for a Chevy car radio audio output stage and use that. Transistorized, of course.

[*Continued on page 106*]

ASB-5 'SCOPE INDICATOR

BRAND NEW, including all tubes, together with 5BP1 'Scope Tube. Originally used in Navy Aircraft RADAR equipment. Easily converted for AC operation.

VALUE $250.00!

OUR LOW PRICE $15.95

SCR-274 COMMAND EQUIPMENT

ALL COMPLETE WITH TUBES

Type	Description	Excellent Used	Brand NEW
BC-453	Receiver 190-550 KC	$14.95	$18.95
BC-454	Receiver 3-6 Mc	9.95	12.95
BC-455	Receiver 6-9 MC	9.95	13.50

BC-457 TRANSMITTER—4-5.3 Mc. complete with all tubes and crystal. BRAND NEW **$7.88**

BC-458 TRANSMITTER—5.3 to 7 Mc. complete with all tubes and crystal. BRAND NEW **$7.88**

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ARC-5/T-19 TRANSMITTER—3 to 4 Mc. BRAND NEW complete with all tubes & crystal **$8.88**

110 VOLT AC POWER SUPPLY KIT

For All 274-N and ARC-5 Receivers **$7.95**

Complete kit of parts with metal case, instructions .....

Factory wired, tested, ready to operate $11.50

SPLINED TUNING KNOB for 274-N and ARC-5 RECEIVERS. Fits BC-453, BC-454 and others. Only ..... **49¢**

DYNAMIC HANDMIKE with "Press-to-talk" Switch, cord and plug—BRAND NEW, only $2.95

DYNAMIC HEADPHONES, 600-ohm impedance, with large earphone cushions, cord, phone plug. BRAND NEW, special $3.95

ARC-5/28 RECEIVER

2-meter Superhet, 100 to 156 Mc in 4 crystal channels. Complete with 10 tubes. **BRAND NEW** **$22.45**

110 V AC Power Supply Kit for above $9.75

ARC-5/T-23 TRANSMITTER

100-156 Mc Includes 2-832A, 2-1625 Tubes, all crystals. BRAND NEW **$19.95**

SPECIAL OFFER! Limited quantity ARC-5/T23 xmitters.
BRAND NEW, less tubes $7.95
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ARC-5 MARINE RECEIVER-TRANSMITTER

Navy Type Comm. Receiver 1.5 to 3 Mc BRAND NEW with 6 tubes **$16.95**

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Modulator for above. New, with tubes $4.95

LORAN APN/4 OSCILLOSCOPE

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Completely Assembled

BRAND NEW! Supplied with 5" Scope, type 5CP1 only. **$19.95**

Excellent. Used $10.95

SPECIAL PURPOSE & RECEIVING TUBES

Type	Each	Type	Each	Type	Each
RK34	$ .39	826	.44	6AC7	.44
2C46	3.50	829B	7.50	6BA6	.42
2J724B	.35	832A	5.95	6AG5	.33
VR105	.79	837	1.15	6J6	.33
VR150	.79	1625	.29	6SN7	.44
717A	.29	1626	$ .21	12AT7	.44
CRP-730A	$4.50	1629	.27	12AX7	.44
813	6.95	2X2	.39	12SA7	.34
815	2.99	6A7	.35	12SQ7	.33

NEW! Cathode Ray Tubes NEW!

3CP1	$1.18	5CP1	$2.45
3FP7	1.18	5FP7	1.44
5BP4	2.22	9LP7	1.86

BC-906 FREQ. METER—SPECIAL!

Cavity type, 145 to 235 Mc. BRAND NEW, complete with antenna. Manual incl.

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BC-605 INTERPHONE AMPLIFIER

Easily converted to general purpose intercommunication set. A fabulous BUY at this LOW PRICE! BRAND NEW, with original schematic **$4.95**

AC Conversion Instructions for above 65c

INTERPHONE AMPLIFIER

Type BC-347C. Fully wired, ready to operate! Uses 6F8G tube. Housed in metal container 5¾"x3¾"x2⅜" high. A SPECIAL VALUE at our low price **$3.45**

SCR-522 2-METER RIG!

Terrific buy! VHF Transmitter-receiver, 100-156 Mc. 4 channels. Xtal-controlled. Amplitude modulated voice. They're going fast! Excellent condition.

SCR-522 Transmitter-Receiver, complete with all 18 tubes, top rack and metal case.

COMBINATION ..... Special $33.33

Receiver only, with all tubes $19.50
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Shock mount for above ..... $ 2.45
Accessories for above available.

BC-929 3" SCOPE INDICATOR COMPLETE

Originally used for IFF and Radar Navigation. Can be easily converted for general bench service work. Tubes included: 2-6SN7, 2-6H6, 1-6X5, 1-6G6, 1-2X2 and 3BP1 Cathode Ray Tube. A TERRIFIC BUY at our low price! Excellent used **$12.95**

As Above, BRAND NEW $14.95

Conversion instructions for AC operation ..... .65

BC-659 TRANSMITTER & RECEIVER

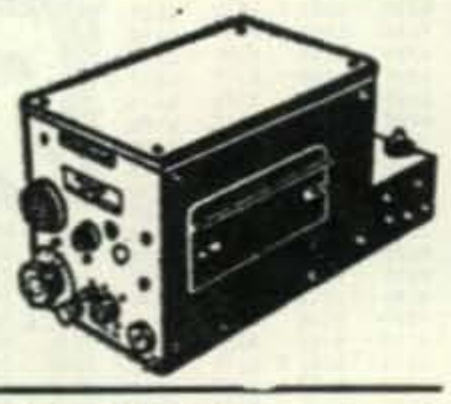
27 to 38.9 Mc F.M. Two preselected channels crystal controlled. 5 to 10 watts. Complete with speaker, tubes. Excellent Used **$11.95**

POWER SUPPLY for above, 117 V 60 cy AC $16.95

VIBRATOR POWER SUPPLY for above, works on 6-12-24 V DC ..... $ 9.95

234-258 MC RECEIVER

AN/ARR-2



BRAND NEW 11-tube UHF Tunable Receiver with schematic. Only a few at this low price! Complete with tubes **$9.99**

With 28V 1.6A Dynamotor, complete $12.98

110 VOLT AC POWER SUPPLY KIT for above $9.75

DIRECTIONAL ANTENNA, 3-6 Mc.

Collapsible type, folds down to minimum size. **NEW** **$1.49**

GOLD PLATED SPECIAL! TS-1/ARR-1 TEST OSCILLATOR

Portable, complete with two 955 tubes cavity and antenna. BRAND NEW, in metal housing 9¾"x6¾"x7" high. OUR LOW PRICE, each **$3.95**

FL-5 FILTER 79c

BC-442 ANTENNA RELAY

Wonderful Value! Consists of ¾ amp 2" RF Ammeter (antenna current indicator). 0-10 scale. Transmitter-Receiver Switching relay, in aluminum case with associated components. BRAND NEW **$2.49**

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53 Vesey St., New York 7, N. Y.

For further information, check number 24 on page 134.

SPEED METER [*from page 104*]

Yep, they muffed this one too. On page 59, the parts list belongs to the two transistor transmitter designed by Monty Hart and not with the Unijunction transistor frequency divider as it would appear. Also, I observe that a ground connection was omitted at the bottom end of coil L1.

Now, regarding the transistorized handie talkie. The gimmic is two 1 inch pieces of #22 plastic covered wire twisted together for five or six turns. C1 is the Johnson #9M11. C2 is an Erie Style 532 piston trimmer .5- 5 mmfd. The transmitt receive switch is a 4 pole, 2 position, with a spring return, Centralab #1458. The radio frequency choke (rfc) is 50 turns #36 cotton covered wire scramble wound on a 1 meg ½ watt resistor. This choke should be self resonant at approximately 26 mc. Switches S1a and S1b are on the back of the regeneration control R1. Coil L1 is 26 turns of #26 wire wound on a Miller ⅜ inch slug tunned form. The coil should "dip" with a grid dipper at 29.68 with either C1 or C2 at half capacity.

The crystal was obtained from International Crystals, 19 North Lee Street, Oklahoma City, Oklahoma. It is a 3rd overtone type. If you specify the application you should obtain an exact duplicate of mine.

The audio interstage transformer is a Triad TZ-15 20K ohms to 1.2k ohm impedance. Any transistor interstage transformer will be satisfactory. For the Triad unit, write Triad Transformer Corporation, 4055 Redwood Avenue, Venice, Calif.

The dynamic phone unit is the same type as used in a telephone hand set.

If you want to use the rig on six meters, use an SB-103 (Philco) or an RCA 2N384, change the coil to resonate on six, and possibly take a few turns off of the RFC.

Sorry for the goof fellows. . . .

73, Don, W6TNS

hamfest

Concord, N. H.

The Concord Brasspounders Inc. is sponsoring the 19th Annual New Hampshire Hamfest and ARRL Convention to be held in Concord, N. H. on Sunday, May 25, 1958. It will be the only regularly scheduled convention in the New England area. For further information write to The Concord Brasspounders Inc., Box 339, Concord, N. H.

Philadelphia, Pa.

The Spring Assembly Meeting of the Radio Technical Commission for Marine Services will be held at the Benjamin Franklin Hotel, Philadelphia, Penn. on May 13, 14, and 15, 1958.

AWARD HUNTING?

Polar Regions Award

The Short Wave Magazine, 55 Victoria St., London SW 1, offers The Polar Regions Award for contacts with at least six stations of the Arctic and at least six of the Antarctic. Only contacts made after January 1, 1955 will be considered.

The countries in the Arctic are: Jan Mayen, Svalbard (Spitzbergen including Bear Island and Hope Island) and Alaska, Canada, Greenland, Norway, Finland and U.S.S.R. if the QTHs in these countries are above the Arctic Circle.

The Antarctic region consists of the Falkland Islands, South Georgia Island, South Orkney Islands, South Sandwich Islands, South Shetland Islands, Heard Islands, Macquarie Island and Antarctica.

2000th Anniversary Award

The 2000th anniversary of the City of Lyon, France is the occasion for a special award, Diplome Bimillenaire de Lyon, open on all bands for contacts with stations in Lyon and the Department de Rhone between March 1, 1958 and October 1, 1958. This award may also be earned by SWLs by reporting stations actually in contact.

European stations qualify by working eight, those outside Europe by working four stations in the above area. Only one contact with each station may be claimed for D.B.L. credit. Contacts may be on CW, phone or both. Below is a list of stations in the area as of December 1, 1957.

F2—AR, BY
F3—GY, KF, VO, WE, MY, MK, YU, FF, HX, VP, FD, EB, EY, FP, IP
F8—EE, EF, EW, KU, SJ, LB, HR, VR, XD, QN, DO, NX, LP, PM, SL
F9—DU, HX, LS, SQ, TH, UG, YX, ZO, OM, OA, LN

QSLs, accompanied by four International Reply Coupons, should be sent to: Section 1 du R.E.F., B.P. 200, Lyon R.P., Rhone, France, enclosing the statement, "Pour obtention du Diplome D.B.L."

For further information, check number 32 on page 134.

ALL BAND MOBILE

[*From page 35*]

energized. The other set of contacts grounds one end of the coil of the relay which controls the primary power to the HV supply when the coil is energized and grounds the cathode circuit of the converter oscillator when it is not energized. This DPDT relay is operated by the switch on the microphone and thus the microphone switch controls the "send-receive" switching.

The modulator is driven from a carbon microphone, the current for which is furnished from the car battery. The value of the current is set by the adjustment of a 250 ohm potentiometer which is connected across the 6 volt supply. The output level from the microphone is controlled by varying the dc current furnished to the microphone. Once the transmitter is set up and the modulation level is set the control of the audio output from the microphone in effect controls the amount of speech clipping effected.

The speech is clipped by driving the input speech amplifier beyond its dynamic capabilities. The resistor in series with the speech amplifier grid prevents any appreciable dc grid current from flowing and changing the bias on the tube. The maximum output level and consequently the maximum percentage modulation is controlled by the 100K potentiometer which sets the plate voltage on the input amplifier. The clipped speech from the input amplifier is passed through a filter to eliminate the unneeded high harmonics and is then applied to the grid of the phase inverter tube.

The 2.2 M and 100K resistors connected to the grid of the phase inverter are a feedback network which gives a few db. of inverse feedback. This inverse feedback greatly lowers the output impedance of the modulator system and improves the frequency and phase response which is important because it aids in maintaining the shape of the clipped waveform. If the harmonics of the clipped waveform which are passed through the filter are shifted in phase compared to the fundamental the flat top wave form with which we started is likely to become a peaked waveform which can result in overmodulation of the power amplifier. The 2.2M and 100K resistors in conjunction with the 560K resistor form a dc voltage divided which properly biases the inverter tube.

The out of phase signals coming from the phase inverter plate and cathode are fed to the modulator grids and the output from the modulator plates passes through the modulation transformer to vary the output of the power amplifier stage.

At the upper right of Fig. 8 may be seen the power and control system cabling which is external to the transmitter.

[*Continued on page 110*]

DX [*from page 92*]

OA4IGY—Minitrack Tracking Station, c/o U. S. Embassy, Lima, Peru.
ST2AR—QSL via RSGB.
UAØLA—A. D. Dumbrowsky, Box 29, Vladivostock, Asiatic SSR.
VKØTC (Macquarie Island)—QSL via 277 Hardey Rd., Cleverdale, West Australia.
VP5BE—U. S. Naval Facility, Navy #104, c/o Patrick AFB, Cocoa, Fla.
VQ3DQ—Jack Brackfield, P.O. Box 220, Dodoma, Tanganyika Territory.
VQ8AJ—QSL via Box 155, Port Louis, Mauritius.
VR30—QSL via G3EMY.
VU2RC—Ramendra Chandra Sen, P.O. Box 534, New Delhi, India.
W4WHP/KG6—M/Sgt. William Hodgson, Box 48, 27th Comm. SQ, APO #334, San Francisco, Calif.
XW8AI—QSL via REF.
XZ2OM—Flt. Lt. Aung Myint, BAF/1064, c/o Department of VCSDS (Air), Ministry of Defence, Rangoon, Union of Burma.
ZS6AQA—Saville Shapero, 12 Regent St., Yoville, Johannesburg, Union of South Africa.
ZS8R—Archie Parkhouse, G.P.O., Leribe, Basutoland.
ZS9G—Dave Baird, P.O. Box 196, Livingstone, Northern Rhodesia.
4X4DK—QSL via VE3MR, Martin Rosenthal, P.O. Box 304, Station "F", Toronto 5, Ont., Canada.
5A5TK—QSL via CN8FD.
9G1BL—QSL to P.O. Box 565, Kumasi, Ghana.

FIRST ARMY MARS SSB TECHNICAL NET

Wednesday evenings, 8-10 PM EDST, 4030 kc upper sideband

May 7 "A New Concept in SSB Receiver Design" by Milt Sullivan, Chief Engineer, R. L. Drake Company.

May 14 "Radio Facsimile Transmission" by Ken McConnell, Assistant Director of Engineering, Times Facsimile Corp.

May 21 "Linear Power Amplifiers for SSB" by Sol Gertzis, Chief Applications Engineer and Bert Green, Application Engineer, Amperex Electronics Corp.

May 28 "Good Design Practice for Single Sideband Linear Operation" by Ben Russ, A Technical Director, CBS Television.

ALL BAND MOBILE

[*From page 108*]

No standard cabinet of the desired dimensions (4"H x 14"L x 7"D) was available so one was bent of sheet aluminum. The rear cover was fastened in place with 6-32 machine screws; the front cover with the chassis attached is held in the cabinet entirely by friction. If the metal smith does not do such a precision job it may be necessary to use screws to fasten the front panel and chassis in place. Fig. 1 shows the front view of the transmitter. As in the case of the converter the unit had been in use for over a year before the pictures were taken so a few scars have resulted from the normal wear and tear.

Fig. 7 is a rear view of the transmitter. At the left are the power amplifier and its output network. Just to the right of the baffle are the oscillator and multiplier tubes. Proceeding to the right we have the modulation transformer and below it the HV filter capacitor. Next we have the 6V6 modulator tubes. The 12AU7 is directly between the 6V6's, hidden from view by the brace. At the right end of the chassis are the microphone transformer and the inductor for the speech filter. Mounted on the brace are the microphone current and the audio amplifier plate voltage controls. Holes in the bottom of the cabinet allow the adjustment of these controls with the unit in its case. On the rear of the baffle and the chassis end plate are jacks to take banana plugs which are mounted inside the rear of the cabinet.

Figs. 9 and 10 show the top and bottom views of the transmitter. These views show the placement of the band switch, the exciter coils and many of the other small components. With the exception of L3 the exciter coils are wound on ½" polystrene rod. L3 is self-supporting. The 40 and 80 meter sections of the pi output network are wound on ¾" polystrene coil forms. The other output coils are self supporting. The end of L11 which is farthest from the band switch is supported by a stand-off insulator to prevent physical motion of that end of the coil.

The chassis unit and the front panel were separately wired so far as possible before they were assembled. There were then a minimum of connections to be made to marry the two sections and complete the unit.

The original antenna on the right cowl of the car was replaced with an eight foot fiberglass whip. This was connected to the antenna jack of the transmitter with a piece of RG-8U which is about 18" long.

The whip antenna with no loading coil can load the transmitter on all bands but 80 meters. On this band a loading coil must be used.

The unit may be built for 12 volt operation

[*Continued on page 112*]

ASSEMBLE YOUR OWN

WALKIE-TALKIE RADIOPHONES

General specifications applying to all models:

Highest quality workmanship and materials, silver plated coils, ceramic capacitors and advanced design assures maximum performance with the longest battery life. Sensitive receivers can detect signals as small as one microvolt and feature automatic volume control and noise clipping. Transmitters use high level amplitude modulation, have a power input of one watt to the R.F. stage and will radiate a signal for 1 to 5 miles (depending on obstructions) using antennas supplied. Up to 40 miles have been reported by some of our customers when communicating with stations having directional beam antennas. Radiophones can be used singularly to communicate with fixed stations or two or more to communicate with each other providing they are for the same frequency band. Fully portable, no external connections needed. Uses standard radio and flashlight batteries available at your local store. Total weight of completed unit including all accessories is less than 5½ lbs.

for as little as **$6.98** plus accessories

NOW 4 MODELS to CHOOSE FROM IMPROVED CIRCUITS GREATER POWER TRANSISTORIZED

Model TC-144. Meets F C C requirements for general class amateur license. No minimum age requirement. Variable frequency transceiver circuit. Tunes from 144 to 148 mc. Wired, tested and guaranteed electronic chassis complete with two high frequency triodes (3A5)..**$6.98**

Model TR-144 Similar to above but with independently tuned receiver and transmitter circuits. Permits receiving frequency to be changed without affecting transmitting frequency.....**$9.98**

Model TRX-50. Crystal controlled transmitter and variable frequency receiver with R.F. stage. Tunable from 50 to 54 mc. Available also on neighboring frequencies at slight extra cost on special order. Meets F C C requirements for general and technician class amateur licenses as well as for civil defense and other special services. Wired, tested and guaranteed electronic chassis complete with six high frequency triodes. (3-3A5's).....**$14.98**

Model TRX-50-A. Similar to above but with transistorized audio booster stage for extra loud reception.....**$16.98**

The following accessories are required to complete the walkie-talkie as illustrated and are sold separately to meet the individual requirements of the user. Strong 16 gauge aluminum case (8" x 5" x 3") with all holes punched, battery holders, battery switch, telephone cradle plus all hardware and connectors including 18" or 24" antenna with loading coil (depending on frequency). Be sure to specify for which model.....$4.98

Above case finished in gray hammertone, (3 coats) if desired.. .75
Adjustable shoulder strap..... .50
Very active quartz transmitting crystal for models TRX-50 and TRX-50-A ground to .01% of your desired frequency and hermetically sealed.....$3.98
Western Electric telephone handset with push to talk switch and standard cord.....$6.98

Handset similar to above, but used surplus.....$3.98
Retractable coiled cord for above handsets if desired.....$1.00

Input transformer for above handsets..... .98
Output transformer for above handsets..... .98

How to Order Direct from Factory: Check each item desired and add 5% of total for postage and insurance. Orders not paid in full will be sent C.O.D. for the balance due. All C.O.D. orders must include $2.00 deposit.

Note: Our merchandise may soon be sold only through distributors. Order now and save while you can still buy direct. All orders immediately acknowledged.

SPRINGFIELD ENTERPRISES

Manufacturing division
Box 54-C5, Springfield Gardens 13, N. Y.

For further information, check number 38 on page 134.

The WORLD'S FINEST SURPLUS BARGAINS!

For Complete Details on Items Below — SEND For NEW CATALOG #M-58

PANORAMIC ADAPTER, Navy RDP—Used, w/tubes $34.95
RADAR OSCILLOSCOPE—25 Tubes—complete ..... New: 14.95
RD-7/APA-23 RECORDER—Automatic or manual..... New: 29.95
BC-191 TRANSMITTER, w/tubes—Used: **$24.95** ..... New: 34.95
T-121 Crystal Control TRANS.—3.5 to 4 MC. ..... New: 5.95
BC-1158 TRANSMITTER, w/tubes—Used: **$29.95**..... New: 39.95
BC-929 RADAR OSCILLOSCOPE—Used: **$9.95** ..... New: 14.95
U.S. SATELLITE REC.—U.w/tubes: **$9.95**—U.no tubes ... 4.95
Control Box, New: **$2.00**—Cross Point Indicators, Used: ... 2.00
Plugs—for Receiver, Indicator, or Control Box ..... Each: 1.00
HIGH FREQ. RECEIVER—53 to 88 MC., w/tubes ..... New: 6.95
OSCILLATOR TS-385, Crystal Cont.—Used: **$9.95** ..... New: 12.95

SCR-522 **REC.-TRANS. AM**—100—156 MC, complete with tubes—Used $29.95

REC. Only, Less Shifters:
With Tubes $14.95
Less Tubes ..... $ 7.95

TRANS. Only, Less Shifters:
With Tubes $18.95
Less Tubes ..... $ 7.95

FM RECEIVERS & TRANSMITTERS
20 TO 38.9 MC And 150 TO 172 MC

TRANS.-REC.—150—172 MC FM—Used, Checked $59.50
BC-603 FM RECEIVER—20-27.9 MC. Used: $14.95. New: $19.95
BC-683 FM RECEIVER—27-38.9 MC. Used: $24.95. New: $29.95
BC-604 TRANS.-FM—20 to 27.9 MC—Used: $14.95—New: $19.95
BC-924 TRANS.-FM—27 to 39.1 MC—Used: $14.95—New: $19.95
BC-620 TRANS.-RECEIVER FM—20 to 27.9 MC ..... Used: $14.95
BC-659 TRANS.-RECEIVER FM—27.9 to 30.1 MC Used: $19.95
6 or 12 VDC Power Supply for BC-620 or BC-659—U. $ 9.95
N. $12.95

BC-906D FREQUENCY METER: $7.95
Absorption Type—using the dip of a 2" 0-500 DC Microammeter for frequency indication. Battery operated, with Chart and Manual—Prices: Used ..... $7.95 — **New** $9.95

TRANSFORMERS And CHOKES:

1080 VCT/190 MA—6.3/1.2; 6.3/3.6; 5V/4..... $4.95
600 VCT/100 MA—6.3/5A; 5/3A 3.95
240 VCT/35 MA—24/.9A; 6.3/.6; 6.3/.3 ..... 1.75
1500 VCT/260 MA—6.3/3A; 6.3/5A; 5V/4.5A.. 7.95
700 VCT/150 MA—6.3/4.5A; 5V/3A..... 3.95
1890 VCT/12.6 MA Tapped 2.5V/2A..... 3.95
1100 VCT/80 MA—7.5 VCT/3.25A 3.95
560 VCT/70 MA—6.3V/2.1A; 5V/3A 2.95
16 Volt 35 Amp.... **$14.95** 9 Volt CT 35 Amp..... 5.95
5V/2 Amp. 3 windings; 5V/6A 2.95

TRANSFORMERS FOR SURPLUS EQUIPMENT:

1200 VCT/200 MA—12.5/2A; 12.5/2A; 5V/3A H-108: $8.95
500 VCT/50 MA—24V/1A; 6.3V/1A ... H-109: 4.95
500 VCT/80 MA—24V/2A; 5V/3A H-110: 4.95
12.6/2 Amp..... **$1.95** 24V/1 Amp..... 1.95
Dual Winding—12V/4 Amp. or 24V/2 Amp..... 5.95

CHOKE 12.5 HY/100 MA 1.95
CHOKE 10 HY/250 MA 4.95
CHOKE 8 HY/150 MA 200 ohm Open Frame..... 1.25
CHOKE 5 HY/150 MA 85 ohm 1.50

BC-367 AMP., 12 V. less case New: $1.95
BC-667 AMP., 24 V. w/case ... New: $2.95
REMOTE CONTROL UNIT RM-53, Used: $2.95 ..... New: $4.95
REMOTE CONTROL UNIT RM-52, Used: $1.95 ..... New: $2.95
TS-13 Handset for Above, U: $3.95

Phone Patch TRANS. No. C-161 ..... **$1.95**

RANGE BEAM FILTER
1020 cycle acceptance or rejection. W/PL-55 Plug & Cord for plugging into Rec. Two output jacks, New: **$1.95**
FL-8 Filter, Used **$1.50**
FL-5 Filter **$1.00**

DM-35 DYN. New: $14.95 Used: $11.95
DM-34 DYN. New: $ 4.95 Used: $ 2.95

12 VDC DYNAMOTORS:

	NEW:	USED:
625 VDC—225 MA—DM-35	$14.95	$11.95
540 VDC—450 MA—DA-12	14.95	11.95
425 VDC—163 MA—WE-377	12.95	9.95
225 VDC—100 MA—D-402	8.95	5.95
220 VDC— 80 MA—DM-34	5.95	2.95
230 VDC— 90 MA—PE-133	4.95	....
150 VDC—100 MA—DM-310X	....	2.95
250 VDC— 60 MA—DM-32-12V	4.95	....
250 VDC— 50 MA—DM-25	4.95	2.95
500 VDC— 50 MA—USA/0515	4.95	3.95
24 VDC—1.5 A—USA/0515	4.95	3.95
300 VDC—150 MA—CTR-124	5.95	4.95
230 VDC— 90 MA—DM-21	....	5.95
275 VDC—150 MA—DM-64	8.95	....

6 VDC DYNAMOTORS:

640 VDC—260 MA—Reconditioned by G.E..... $12.95
420 VDC—260 MA—Reconditioned by G.E..... 9.95
Write us your needs in other type Dynamotors, Inverters, etc.

ADDRESS DEPT. CQ • MINIMUM ORDER $5.00 • PRICES F.O.B. LIMA, OHIO • 25% ON C.O.D. ORDERS

FAIR RADIO SALES • • 132 SOUTH MAIN ST. LIMA, OHIO

For further information, check number 39 on page 134.

ALL BAND MOBILE

[*From page 110*]

by using a 1625 PA, 12V6's for modulators, 2 12AQ5 multiplier, a 12AU6 oscillator, and by rewiring the 12AU7 socket for series operation of the 12AU7 heaters.

For the ham who can spare the primary power the unit can be slightly redesigned for about 50 watts input. This calls for 6L6GB modulators, a 6146 PA, a larger modulation transformer and a power supply for the PA and modulator giving about 400 volts at 250 ma. The exciter voltage can be a separate supply or can be derived from the regular HV supply through a dropping resistor. The larger modulator tubes and modulation transformer will call for a moderate increase in the size of the cabinet but it still should be compact enough to fit conveniently under the dash of the car. ■

hamfests

Ohio Army MARS

The Spring meeting will be held at Fort Hayes, Columbus on May 11th. Registration is at 1100. All interested in Army MARS are welcome. Write Maj. R. B. Jeffrey (W8GDC), RFD 1, Nashport, Ohio or contact any Ohio Army MARS member for registration before May 1st.

Mt. Pleasant, Texas

The Cypress Amateur Radio Club is holding a hamfest at Dellwood Park on Memorial Day, May 30th. Registration for the grand prize and transmitter hunts is $1 by mail or $1.25 on the spot. Special events for the XYL's and Jr. Ops. Mail buck to Chuck Yingling, K5GFM, 1102 W. 12th St., Mt. Pleasant, Texas.

Indiana

The Madison Amateur Radio Club will hold a picnic at the Poplar Grove, Clifty Falls State Park, near Madison, Indiana on Sunday, May 25th from 1000 until 1600 CDST. Family affair with no registration fee. Contact Paul Needler, W9HMR, RR #5, North Madison Station, Madison, Indiana for info.

Alaska in July

The Anchorage Amateur Radio Club is holding the third annual All-Alaska ARRL Convention July 18-19-20. Registration before July 1 is $9 for adults, $4.50 for children. There will be lots of contests and activities for both YL's and OM's. Plus prizes. Write Pat Croff KL7CCP, 2510 Northrup Street, Anchorage, Alaska.

Washington

The annual Bremerton Hamfest will be held at the American Legion Hall Post #68, 2809 Spruce Street, May 24th. Tickets are $3.50 in advance from Ray Causland, W7UWT, 3236 Wright Avenue, Bremerton or $4 at the door.

CQ's Staff Goes Mobile

Seems CQ has a full house when it comes to sports cars, like the fellow here, our own wordy Don Stoner, W6TNS, of Novice and Semiconductor fame . . . (No, we haven't added a new column . . . we just changed the title from Transistors to Semiconductors). The car in the picture is a Porsche . . . we should have known.

The proud Porsche pusher pictured here is good ole Ken Grayson, W2HDM, CQ Surplus editor. He's also known as Lt. Grayson, USNR.

[*more on page 114*]

CQ STAFF [*from page 113*]

That pair of brogues sticking out of the MGA are attached to VHF-man Sam Harris, W1FZJ . . . We're not sure what he's installing in there . . . or then again he might just be emptying the ash tray.

We think this is Byron Kretzman, W2JTP . . . he's a little hard to recognize without his Model 26 . . . and then there's those dark glasses. Those Tennessee Valley Indians play rough sometimes.

Newest addition to the CQ staff is Tom Aalund, K2VBI (We didn't drop the type basket again . . . he does spell it with two "A"s.) whose taken on the new Overseas Echoes column. (See page 77). At last we have someone who can translate that stack of DX magazines—Tom can handle technical translations in no less than twelve languages, but being modest he only claims a fluent speaking knowledge of six of them.

[*still more—see page 117*]

QUARTZ CRYSTALS IN SEVEN MODELS

Close Tolerance for Commercial Application
Frequency Range 1000KC to 45mc.

CORRELATE FREQUENCY BY USE OF CHART ORDER BY MODEL NUMBER . . . Any monitored crystal frequency at series or known load or equivalent shunt capacity can be ordered by model number. Refer to chart. To estimate any nominal frequency from series or known load or equivalent shunt capacity add or subtract the percentage frequency difference. Then order by model number.

24 HOUR SERVICE

Quick replacement of all two way communication systems. No waiting for engineering samples. Order by model number. See correlation chart. Why stock crystals when one day delivery is available?

All crystals are metal plated, wire mounted in an Hc6 holder with .050" pin .486" centers. Adapters furnished on request for all sockets. State pin dia. and center spacing. Price 25c.

CORRELATION CHART

Mod.	Anti-Res.	%	Difference Frequency
SR1	Series		
AR50	50mmf	+.030%	
AR40	40mmf	+.008%	
AR32	32mmf	+.008%	
AR20	20mmf	+.018%	
AR12	12mmf	+.025%	
PAR3	Par-allel	Equiv. Shunt	To 30mc only—Pierce or Miller

.09 % difference — frequency

FUNDAMENTAL OPERATION

Frequency Range		Calibration Tolerance	Temp. Range Tol. -55°C to 90°C	Price	Temp. Range Tol. -40°C to 70°C	Price
1000KC		.0025%	.005%	$6.50	.01%	$5.50
2000KC	2500KC	.0025%	.005%	4.50	.01%	4.00
2501KC	9999KC	.0025%	.005%	3.50	.01%	3.00
10000KC	15000KC	.0025%	.005%	4.50	.01%	4.00
Third Mode Operation—at Parallel or Series						
15001KC	30mc	.0025%	.005%	$3.50	.01%	$3.00
At Series						
30.1mc	45mc	.0025%	.005%	$4.50	.01%	$4.00

NOTES: 1. Measurements were made at anti-resonance with capacity in series with crystal. To estimate frequency from 1000KC to 3000KC use ½ of percentage value in chart.

2. Recommended crystal drive level—10mw or less for fundamentals; 5mw or less for 3rd mode.

See correlation chart to order. Quickly correlate frequency to requirements of your equipment. Repeat order by same model number.

DO IT YOURSELF CRYSTAL KIT
40 meter band and up
3 crystals
2 holders FT243, CR1
4 prs. of electrodes
Abrasive and Instructions
$1.49

When check accompanies order, we will prepay air mail postage. All other orders under 10 crystals will be mailed C.O.D. Quantity discounts available on request.

AMERICAN CRYSTAL CO.

823 E. 5th St. **Kansas City, Mo.**

Phone VIctor 2-5571

For further information, check number 43 on page 134.

BALUNS AND RF TRANSFORMERS®

INCREASE EFFICIENCY
REDUCE TVI AND BCI
INCREASE Your RIG Versatility

Maximize effective radiated power, and stop sacrificing top performance to mismatch inefficiencies. Baluns are indispensable when matching coax to balanced lines. Minimizing standing waves increases efficiency and helps stop TVI, BCI and other spurious emissions. These baluns and transformers are true broad-band devices; cover full range with no switching or tuning from 1.5 to 30 mc. Standard line handles full kilowatt when SWR is 2 to 1 or better. See below for models available in economical Junior series for use up to 200 watts input—ideal for B & W 5100, Collins 32-V, Heath DX-100, and others. For SIX METER enthusiasts both series have similar models covering 14 to 60 mc range (same price—order by affixing "B" to catalog number). Weather. proof—conservatively rated.

ATTENTION: GOONEY BOX owners: TB-2C matches 75 ohm coax to twinlead, 10 w, 30 mc to 500 mc, UHF coax fitting, ¾" dia. x 3", $4.95

Standard 1 KW Series—3½" x 3" x 4½", Wt. Approx. 2½ lbs.

Baluns for 50 ohms coax:

TB-5 matches 50 ohms balanced	$ 22.50
TB-7 matches 75 ohms balanced	24.95
TB-3 matches 200 ohms balanced	19.75
TB-6 matches 300 ohms balance	24.50
TB-8 matches 470 ohms balanced*	150.00

Baluns for 75 ohms coax:

TB-4 matches 75 ohms balanced	19.75
TB-2 matches 300 ohms balanced	17.50
TB-1A matches 600 ohms balanced*	150.00

RF Transformers:

T-1: 50 ohms unbal. to 75 ohms unbal	19.75
T-2: 50 ohms unbal. to 200 ohms unbal	19.75

Junior Series—150 watt—2" x 2½" x 4½", weight approx. 1 lb.

Baluns for 75 ohms coax:

TB-4J matches to 75 ohms balanced	11.95
TB-2J matches to 300 ohms balanced	11.95

RF Transformers:

T-1J: 50 ohms unbal. to 75 ohms unbal	11.95
T-2J: 50 ohms unbal. to 200 ohms unbal	11.95

NOTE:—For 14 to 60 mc range, affix "B" to Cat. No. above.
*Case 6" wide, 13" long, 4" deep, wt. 10 lbs.

It's Here!

(TypeTRS-1)

AN ELECTRONIC T-R SWITCH THAT REALLY WORKS!

Frequency Range 1.5—60 MC

(TypeTRS-2)

FEATHERWEIGHT • MIDGET-SIZE • 1KW

Type TRS-1: Don't confuse this great, new electronic Transmit-Receive Switch with anything similar you have ever known. See article June, 1957, QST by S. Sabaroff. Designed for mounting in transmitter; does not add any TVI; no dead spots; makes most receivers work better giving up to 15 db increase in sensitivity. This TR Switch is a must for every Ham Transmitter.

Type TRS-2: Designed for those who find it impossible to mount a TR Switch in the transmitter. This TR Switch is of the customary type connected to transmission line by means of a T connector (Amph. 83-1T). The gain is approximately unity or more over the frequency range.

For those who wish to make their own — RF Output Transformer, only, type TRS-1T (with instructions) $3.45

Both types use negligible RF power for operation and take 6.3 volts filament and 100-150 volts for plate of type 6AH6 Tube, ordinarily delivered by the transmitter, receiver or simple, external supply.

Dimensions: 1½ x 1½ x 2¼
Weight: Approx. 4 oz.

PRICE each $11.95 (with tube)

LYNMAR ENGINEERS, Inc. Consultants and Manufacturers

1432 N. Carlisle Street • Philadelphia 21, Pa.

For further information, check number 44 on page 134.

Control Point operated by Tu-Boro members.

Shell Economy Run Goes Mobile

Hams and motoring enthusiasts joined forces on Long Island not long ago when members of the Tu-Boro Radio Club and Republic Motor Sport Club staged an Economy Run co-sponsored by the Shell Oil Company.

Sixty-eight competing cars, classed according to engine size, were required to drive a specified route and check into several Control Points where their elapsed time and milage readings were recorded. Control and finish points kept in constant touch during the run—via Mobileers of the Tu-Boro Radio Club. Forwarding of Control Point information was not the only job of the mobiles, the main purpose was safety. Had anything had happened to one of the competing cars, alerted emergency crews would have been on the scene in less time than if messages had to have gone via "Landline".

Ironically enough, the chairman of the technical committee, Tom, K2VBI, didn't know in advance where they would be set up as he himself was one of the competing drivers.

Operation was on ten meters which didn't work out as well as was expected due to distances involved. Chester, K2EAF who was just "listening around the band" lived up to his call letters, Every Amateur's Friend, took on the job of Net Control and kept things running smoothly. A fine time was had by all as the saying goes, and there is a rapidly growing interest in using more radio in many more Long Island sports car events.

Who won the Economy Run? It was a Swedish Volvo with an average of 70.35 miles per gallon. ■

CQ STAFF [*from page 114*]

Two gentlemen with a single pose . . . Holding up the trunk end of the Austin is the fellow who knows all about contests, Frank Anzalone, W1WY. The results of the CQ DX Contest are on pages 47, 48, 49, 50 and 51 just in case you're reading this like we do . . . from the back. Frank's easy to spot these days, just look for the fellow going around muttering ". . . 17 zones times 83 countries divided by the square root of the antenna height plus 43.07 carry 12 . . ."

Actually George Jacobs, W3ASK CQ's Propagation expert, doesn't really own that VW, he just happened to find it in a parking lot. Seems you aren't "dressed" without a foreign car these days. (What ever happened to the Ivy League look?) George delights in the experimental, when the skip is right, he works mobile using a six meter handi-talkie and roller skates . . . 11 states worked but unfortunately none confirmed.

RTTY [*from page 63*]

Sunday	1900	7140 kc
Sunday	2030	3620 kc

W6VPC in Oakland, California, transmits ARRL and NCARTS Bulletins as follows: (times PST)

Wednesday	2000	3620 kc & 147.29 Mc.
Friday	1700	14,330 kc & 147.29 Mc.

W6ASJ in Piedmont, California, transmits ARRL and NCARTS Bulletins as follows: (times PST)

Saturday	1400	7140 kc & 147.29 Mc.
Sunday	1400	7140 kc & 147.29 Mc.

K6KFF re-transmits simultaneously W6VPC on the Wednesday schedule and K6OUR is Alternate OBS for W6VPC and W6ASJ.

VE7KX in Vancouver, B.C., also sends ARRL bulletins on:

Friday	2015 PST	7144 kc.

Activity

W1WB is getting a DX-100 to fsk a la W6AEE (*RTTY Handbook*, page 80). W1WEW is moving to Burlington, Vermont. W1BIY is in the Polar Relay business!!

W2ATQ in Manhasset, Long Island, is now on 40-meter RTTY. W2GWL in Lake Ronkonkoma, Long Island, is working 40, 20 and 2 with a Model 12! (See—it *can* be done!)

W3ARY in Harrisburg, Pennsylvania, has a Model 26 and hopes to be on soon. W3CRO, Dick Urian, will visit W6CQK soon.

W4VP, active for the last 5 or 6 years from Louisville, Kentucky, has moved to New Jersey and will be on with the call K2GQ. W4TLA in Rocky Mount, North Carolina, is on 80 looking for a manual on the Model 26. W4GHX in Forest City, N. C., reports about 15 in his area interested. W4RRX in Morganton, N. C., the SCM, has a Model 15, with weather symbols, on 80-meters.

W5TYI in Alice, Texas, reports that some Air Force MARS members have received AN/FRR-3 diversity receivers. K5LQL in Boumont, Texas, just got his Model 26 and is scratching for toroids. (Try W6CQK, OM. $1 each for 88-mhy loading coils.) W5KQJ in Lubbock, Texas, wants to know if anyone near him is on RTTY. (What's *near* in Texas?)

W6AFX built the W2JTP transistorized tone standard. (*RTTY Handbook*, page 56) W6CQK started remote operation on 40 with low power: 400-watts. K6GZ, W6WIS, and W6HIF all put potent pulses into W2JTP on 20-meters.

W7AOI is at the FCC Monitoring Station in Portland, Oregon. They have special QSL's for transmissions over ten minutes long without signing in International Morse.

W8RGF, in the Navy, operated 2 months from W6ZSC and is now headed for KA-land, and will be looking for RTTY over there. W8KDW, Doylestown, Ohio, has a Model 12 ready for afsk on 2 and 6. W8RTZ, Inkster,

[*Continued on page 119*]

RTTY [*from preceding page*]

Michigan, is on 20-meters, up on the high end.

W9SZR reports that W9YT, the club station of the University of Wisconsin, is well equipped for RTTY with tape and is looking for DX on 20. Ex-9AYM, now K6DSR, is looking for a printer which will copy "hand-sent morse code."

WØYKZ reports the availability of paper for page printers from the Maxwell Paper Products Company in Dallas, Texas. KØDFR, ex-W5IJC, found a good used DX-100. WØQPP, la vallee des fleurs recouverte de neige; Florissant, Missouri, on 20 reports 9-inches of snow in the middle of March!

KL7MZ, KL7ALZ, KL7SX, KL7BK, and KL7OOT are all RTTYers in Alaska.

VE2UA in Abord Aplouffe, Quebec, is just getting started with RTTY. VE4LK in Winnipeg, Manitoba, may have some info on machines for Canadians. VE3ATC in Toronto checks into the East Coast RTTY Net on 80.

FRA Converter

Many letters have been received asking questions about the FRA, now appearing on the surplus market at various prices.

Walt Scott, W2TNN, of Clayton, New Jersey, very kindly has passed along the following information: ". . . This converter was originally designed to operate from the 400-kc i.f. of the RBB/RBC series of Navy receivers. As actually used, the receivers were modified with a coupling amplifier to give low impedance input (the small r-f type jack) on the rear of the unit. Output which will control the receive magnets of a Model 15 or 19 is then available at terminals A (Gnd) and E (High Side). In this same plug, B is another Gnd and C & D are output of the tone keyers.

"To feed this unit from an i.f. other than 400-kc an adaptor would be needed to convert to 400-kc and to low impedance.

"In operation the TT signal is tuned by watching the tuning meter. On RY and SG the meter should swing evenly each side of center. If you are on the wrong side of the signal the reversal switch will let the machine print correctly."

Comments

In the spring, a young man's fancy turns to thoughts of antennas. (I know there are other things, but leave them be for a minute.) I would like to recommend the Triplex beam for 20-meters that was described in the January 1947 issue of *CQ*. The article was reprinted as the "Triple Duplex Beam" in the January '58 issue on page 34. Whichever way you call it, it really performs at W2JTP. Pointed towards California it nicely keeps down the unwanted 'phone signals from South America and peaks up the whole west coast. Give it a try on 14,330 kc.

73, Byron, W2JTP

OVERSEAS ECHOES [*from page 77*]

Need more information on command transmitters? *The Short Wave Magazine,* February 1958, G, describes a conversion for ten, fifteen, and twenty meters, by G3ATL. The same issue, in their *SSB Topics* column, describes a SSB mixer unit by G3MY, which converts eighty-meter lower-sideband signals to 14, 21, or 28 mc upper-sideband output. American type tubes are used in the circuit, and from the description given it seems that construction should present no problems or complications. *OEM,* February, 1958, OE, has good news about I1CNS, who is employed by Radio Vatican. His name is Domenico, he is a Roman, but actually the thing that counts is the fact that he recently received permission to start operation as HV1CN, and rumor has it that the Vatican call is quite rare. While his operating time is seriously limited by his job, and his English is not the best, and he does not operate CW (he can't), he can be worked on twenty-meter phone. Usually he is on from 0610 to 0640 GMT, Wednesdays and Saturdays also from 1900 to 2200 GMT. Stamp collectors note that this is a source for nice Vatican stamps on the QSL-cards.

Several of the magazines we are covering list a lot of interesting awards. It is felt that such information, listing all (we hope) of the currently available awards, would be of interest to hams. Comments on this would be appreciated. For the time being, suffice it to say that those amateurs who already have 25 or more awards on their walls automatically qualify for an additional one offered by Finland, it is their "Award Hunters Club" certificate.

Good hunting and 73, Tom, K2VBI

hamfests

Scout On-The-Air Jamboree

Boy Scouts, past and present, are invited to participate in a world-wide On-The-Air Jamboree. This is not a contest and no prizes will be given, rather it is an opportunity for Scouts to get together and meet each other over the air. The Jamboree will run from 0000 May 10th (local time) until 2400 May 11th on all amateur bands. Get in the fun by calling "CQ Jamboree."

Pittsburgh

The fourth annual Breeze Shooters Hamfest will be held May 25th at "The Lodge" in North Park, Allegheny County, Pa. Sandwiches, soft drinks and coffee will be available plus prizes.

Oregon

The Oregon Amateur Radio Association Convention will be held May 3rd and 4th at the Marion Hotel in Salem, Oregon. Speakers, prizes, entertainment and fun for all. Preregistration $6 for hams, $3 for non-hams . . . write Box 142, Salem.

LETTERS [*from page 24*]

That Saturday finally came, and we piled our rig, with the rest of the troop 38's gear, into Jack's father's car, and we were off.

When we got to the camp we discovered that it had snowed and there was at least five inches of snow on the ground! We set up the antenna xmtr and receiver, and we were on the air. We made many contacts that Saturday night from our little cabin in eight different states. At 5:00 P.M. that evening it started to snow. During the night we got at least 2½ feet of more snow. We operated as KN2KSL/2 and KN2ZSQ/2 (I am novice/technician) on 3.7472 mc. most of the time. I contacted my dad, KN2ZSP, and K2PHR, Dick Ely of Iselin, N. J., while Jack worked what could be termed as "Novice DX", Rhode Island, Massachusetts, Connecticut, and Pennsylvania and received 58's to 599's!

By Sunday morning, though, things didn't look so good, not by a long shot. We were snowed in! The only communication we had was—you guessed it—our Ham station.

There we were, 125 boys, marooned! We thought maybe a plow would get through and clear the road out, but no. We contacted Dick again, K2PHR, and relayed some messages to worried parents back in Rahway through him. He telephoned the parents and told us their replies. He kept in steady contact with us as long as he could. Band conditions were very poor, but we survived.

Meanwhile the boys were moving their equipment out of their "lean-tos" into the cabin, and you cannot possibly imagine how crowded a small leader's cabin can get when the entire troop moves in! Bunks were stacked three high and the only way one could get from one side of the cabin to the other was over the bunks.

We radioed back to the parents (via K2PHR) and told them that we would have to remain another night. By that time everyone on the frequency had caught on to what was going on and wanted to help. You can have no idea how many breakers there were and how many stations calling us. I could make a list of about 30 hams who aided us, but for practical purposes I'll just say that we received quite a lot of help from K2QNI, K2DQU and W2QYW for handling messages.

By Monday morning it finally stopped snowing, but even walking outside was difficult. At 8:00 A.M. that morning I hooked up with my old friend, John, K2ZHK, in Cranford, N. J., who agreed to do everything he could to get us out. We also agreed to sked each other every hour on the hour. By 9:00 A.M. he had contacted Hank Garrity, scout director of Union Council, who told us that snow plows would arrive soon. John also contacted broadcast stations WINS and WOR in New York City, who immediately broadcasted all information about the situation. On one of WINS's broadcasts we heard them say that they would send a helicopter with a doctor aboard if the plow didn't get through soon.

In the cabin we were getting rather desperate. All food was strictly rationed; water gave out Sunday afternoon, and we were melting snow for water; fuel was low and we were cutting dead trees to burn.

However, finally the snow plow arrived at 2:00 P.M. Monday afternoon and promptly plowed all the snow off the road and onto the cars. Four hours of snow shoveling followed, but we realized that we couldn't all get out Monday. One small group did get out and made it back home.

Meanwhile John, K2ZHK, was getting all the latest info and relaying it on to the worried parents of the boys. We also had to tell him to tell them that we would have to stay another night.

So thanks to K2PHR and K2ZHK, we were all out of the practically buried Camp Winnebago in Marcella, N. J. by Tuesday afternoon.

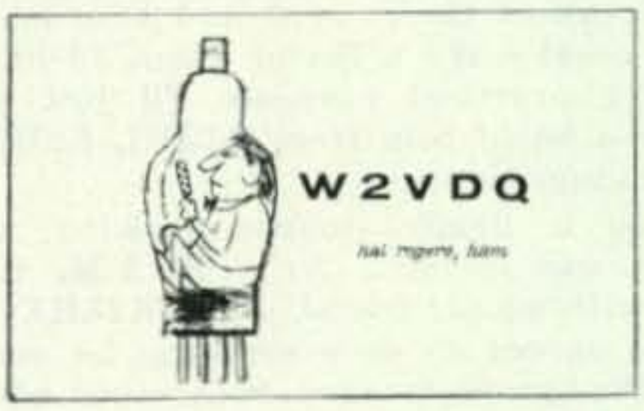
The scout officials were so impressed by the great service that Amateur Radio had done for that state of emergency, that they all agreed that Ham radio is here to stay. We are now planning on the possibilities of setting up a permanent station at camp where any licensed scout could operate any time needed.

73,

Jack Felver, KN2KSL and Bob Brown, K2ZSQ
Rahway, N. J.

QSL contest

winner



Winner of a year's subscription to CQ this month is Luis Moragrega, XE1SN, Guadalajara, Mexico. Runners-up are D. P. Wright, ZL1AQE, Auckland, N. Z.; Hal Rogers, W2VDQ, Vestal, N. Y. and Louis Kussman, ZS6TB, Johannesburg, South Africa.

If you haven't won CQ's QSL Contest yet, don't give up . . . each month is a new contest. Cards are judged on a basis of originality, legibility, and appropriateness of design.

SURPLUS [*from page 55*]

should still be good on two or six, and the mere addition of a variable oscillator is about all that is necessary for the conversion (another 110 volt 60 cps job). The trimmers across the coils should, according to the manual, allow the tuning on the two meter band and, with a coil change, could cover six just as well. As an added feature it also has squelch.

A lot of people have written in about the various IFF sets that were released such as the BN. These served their purpose (within reason) and modern designs do a lot better job, but since the BN does operate near the two meter band it would appear that this would make a good conversion. Actually this is not the case. Most of the BN's worked on 110 volts 60 cps but except for good components, the equipment will probably prove to be a headache. Of course we all know a guy who converted something, but since this was a pulse receiver and transmitter with wide bandwidths, poor noise figure and so forth we just can't go too deep into its conversion except to say that it is good for a cabinet, parts, etc.

While every letter gets answered, I must admit that it takes time to dig out the information needed. As a result, I'm going to ask for a little cooperation. First, my address *was* wrong, but the post office got the mail through anyway. The correct address is above. Second, due to the quantity of mail, please write on postcards and I'll answer likewise. I regret that letters take far too much time to write. Air mail is out of the question, since the time it takes to answer some questions may be as long as a week or more and air mail advantages are thereby lost.

I don't know who the ham was that sent it, but I have to thank him for passing on the word that the Federal Civil Defense Agency, Battle Creek, Michigan has a fine, free publication called "Surplus Communications Equipment and its use in CD Organizations". Its a breakdown of surplus gear and what it does . . . well written.

As was mentioned last month this column will help those needing conversion info and manuals by publishing names and calls of those needing such help. Please remember that we cannot act as a clearing house, but contact the ham in need directly. This month the following need manuals: TCS-Roy Berrington, 162 Park Ave., Amherst, Ohio; BC-604 Tom Clifford, Marianist Prep, 88 Sargent Ave., Beacon, N. Y.; BC-779B-K2JEV, BC-1066B-James Walters, RR-3, Bucrys, Ohio; Mark II-V. Coen, 1072 Third Avenue, N.Y.C. 21, N.Y.; RU receiver-K4RSJ; ATD Transmitter-K1A-TD; RAS-5—Joel Mark, 13 Sybil Ave., Branford, Conn.; RT-7/APN-1—V. Brungart, 111 Rosedale Ave., Covington, Va.

[*continued on following page*]

SURPLUS [*from preceding page*]

K5BNF needs TN-8/APN-1 and RT-24/APX-2 while C. M. Schentes at 1272 East 9th Street, Brooklyn 30, N. Y. is looking for an ART-13 handbook. KØLTH and W7ZFW want the BC-224H book. WØQLN is desperate for BC-654A data. W2SAD is without MAK (Navy) data. Lou Goetz of 4416N. American Street in Philadelphia needs an ASB-5 conversion. Don't forget W5YOU who wants the BC-319A transmitter schematic and I1TC via W3ROA is looking for a Super Pro handbook on a loan.

73, Ken, W2HDM

hamfests

Charleston, S. C.

The Charleston Amateur Radio Club; Charleston, South Carolina, is sponsoring a Ham Fest on the third and fourth of May. The price of the tickets are: $2.50 for Hams, $1.50 for XYLs and YLs, and $.50 for children. Reservations for tickets can be made with K4GRW, W4UOQ, K4CNG, K4QPJ, and KN4RJZ.

Stony Point, N. Y.

The Crystal Radio Club, W2DMC, will hold its 27th Annual Dinner at The Wayside Inn, Route 9W, Stony Point, N. Y. on Saturday, May 10, 1958 at 7:30 PM.

Tickets may be purchased by sending check or money order to Tony Maiorano, W2EHZ, 14 Peck St., West Haverstraw, N. Y. Tickets are $4.00 per person.

Prizes and a band will be on the agenda.

AF-MARS Eastern Technical Net

Sundays at 2-4 P.M. 7540 kc.

May 4—"ELECTRONIC CONTROL SYSTEMS"
George Stevenson, Ch. Eng. Central Instruments, Inc.

May 11—"ELECTRONIC INSTRUMENTS FOR THE BLIND"
Robert Gunderson, Editor, Braille Technical Press.

May 18—"ELECTRONICS IN AERIAL and RADARSCOPE PHOTOGRAPHY"
CDR Floyd Favreau, U.S. Navy, Bureau of Aeronautics.

May 25—"AVIONICS"
Grumman Aircraft & Engineering Corp.

For further information, check number 53 on page 134.

ARE YOU MOVING?

If you expect to move, and IF you know your new address now, and IF you don't want to miss any issue of CQ here are three things you can do right now!

1. Tear your name and address label off the wrapper of this issue and paste it in this box right over these words, or make a complete and accurate copy of your old address label.
2. Print your name and NEW post office address in the lines below:

(Name)

(Number and street—or Route)

(City) (Zone) (State)

3. Cut out this whole box and mail it to: CQ Magazine, 300 W. 43 St., New York 36, N. Y.

SEMICONDUCTORS

[*From page 60*]

New Literature

International Rectifier Corporation, El Segundo, California distributes their *International Rectifier News* on a bi-monthly basis. Each issue contains a lot of interesting information on applications, theory, and new products. The Dec.-Jan. issue has an interesting feature on characteristics and applications of Zener Regulator diodes. The Feb.-March issue has an equally interesting article on variable capacity silicon diodes.

The *Newsletter,* published by General Electric, Semiconductor Products Dept., Electronics Park, Syracuse, N. Y., has a fresh and informal approach to new product publicity and application notes. Makes good reading.

A new four page illustrated brochure on germanium alloy junction transistors, type 2N43 and 2N44 has been published by GE. Copies of the brochure, publication number ECG-292, may be obtained by writing to General Electric Company, Semiconductor Products Department, Syracuse, N. Y.

RCA has published *Batteries for Transistor Applications.* It contains technical data on 13 LeClanché type alkaline dry cell type, and mercury type dry batteries. Complete life cycle curves are included. Available at your local distributor.

Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J. is making available a complete roundup of current transistor types that have been announced up to Jan. 58. Write to them for a copy.

New Products

Motorola, 5005 East McDowell, Phoenix, Arizona has introduced two new high voltage power transistors designated 2N375 and 2N618. They are germanium PNP units intended for operation from 28 volt supplies in switching and amplifier applications.

Complete germanium and silicon rectifier circuits potted in epoxy resin in octal socket tube bases are now being produced by the Semiconductor Products Dept. of the General Electric Co.

RCA's drift series is being expanded to include the 2N544, a junction transistor of the germanium pnp type. It is designed for rf amplifier service in entertainment type battery operated receivers operating in the standard AM broadcast band.

Also of interest from RCA is the 2N356, 2N357, and 2N358. These devices are npn germanium alloy transistors designed for switching service. The collector to emitter voltage is 18, 15, and 12 volts respectively for the above units.

Interesting to note is the announcement by Fretco, Inc., 406 N. Craig St., Pittsburgh 13, Pa. of two new diodes. The 1N1549 employs

[*Continued on page 127*]

[*from preceding page*]

an internal crystal of aluminum antimonide. The 1N1550 employs indium antimonide as the crystal material. It is said that this is the first company to use such material in diodes and they have the ability to withstand high temperatures.

Morhan Exporting Company, 458 Broadway, New York 13, N. Y. has announced a new line of transistor power supply trans- 100 types of germanium pnp junction transistors for rf, audio, and switching applications. For further information, including rating, characteristics, and prices write to the above address.

Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y. has introduced four computer transistors designated the 2N312, 2N356, 2N357, and 2N358. They feature rapid switching high constant beta and excellent leakage stability.

Triad Transformer Corporation, 4055 Redwood Avenue, Venice, Calif. are marketing a new line o ftransistor power supply transformers. They range from the TY-68S (250 volts, 65 ma.) to the TY-74S (600 volts, 200 ma.) For additional electrical information plus typical circuits, write directly to Triad.

A fully transistorized, battery operated power megaphone that has an effective range of up to three quarters of a mile has been announced by Motorola, Inc. Six flashlight cells drive the six transistor amplifier to 15 watts of audio. For more information, write Motorola, Inc., 4545 Augusta Blvd., Chicago 51, Ill.

International Rectifier Corp., 1521 E. Grand Avenue, El Segundo, California have brought out several new rectifiers, two of which are quite usable in amateur applications. The 1N1410, 1N1411, 1N1412, and the 1N1413 carry peak inverse ratings of 1500, 1800, 2000, and 2400 volts respectively. Look for this diode in a future single sideband power supply.

The 1N536-1N540 series of high current silicon pigtail diodes feature excellent forward and reverse characteristics, which results in high rectification efficiency. The maximum full load voltage drop of these units is .5 volts! The current rating of the series is 750 ma and they carry a peak inverse rating of 50, 100, 200, 300 and 400 volts respectively.

Although not a semiconductor, the Amperex 6977 is worthy of mention. This tube is a subminature indicator triode with a fluorescence anode. It gives a bright green blue indication when its control grid is at zero potential. The grid is connected to a transistor collector through a series isolation resistor. When any signal causes the transistor to conduct, the collector voltage goes to zero, causing the 6977 to light up. This device should have many interesting amateur applications, only limited by your ingenuity.

73, Don, W6TNS

YL [*from page 83*]

now *they are* DX.

Hilda Andrew, ex-K2IWO, is operating from Japan using her OM's call, KA2JA. Look for her around 28,375, plus or minus 20 kc, from about 1830 to 2000 EST on Fridays and Saturdays. Lois, ex-K4CXJ, also in Japan, hopes to have authorization to operate by about the time this is in print.

The New England YL club, WRONE, has a new Executive Committee. The chairman is W1ZEN, Leonice, and these YLs are members: W1RLQ, Grace, sec.-treas.; W1SCS, Ruthe; W1YPT, Louise; W1YPG, Chris. In addition to their spring luncheon and fall business meeting, the club is trying a monthly meeting at the Abner Wheeler House on Rt. 9 in Framingham, Mass. Held the first Sat. of the month, it is dutch treat and anyone in the vicinity is welcome.

W4TVT

One of the YLs working hard on the YL program for the National Convention in Washington is Claire Bardon, W4TVT, currently vice president of WAYLARC, and last year the club's president. She also is 4th District Chairman for YLRL. Claire got her Novice license in 1951 while helping son Michael, W4TVU, now 15, learn the code and theory. Her General came along a year later.

In 1954-55 Claire had the fun of operating as DX as the only licensed YL in Trinidad, VP4BC. Her OM Jack, W4RHC, an electronic engineer with the Navy, was VP4BN, but because of British regulations Michael could not operate in the B.W.I. Besides their hamming, the Bardons spent much time exploring the Island and enjoying the exotic flowers, plants, foods, etc.

Having covered all 48 States, Canada, Mexico and Panama as well as Trinidad, when they returned to the States the Bardons settled in Virginia. Retired from the Navy, Jack works for the Navy Dept. as a civilian. Using a Globe King 500, W4TVT is active on 75 and 10 phone, checks in on the Blue Ridge YL net, and is a member of RACES. Claire also enjoys writing, sewing and gardening.

"CQ YL"

April CQ carried complete details about "CQ YL"—the first and only book recording the important part the YLs have played in amateur radio, plus a full history of their international club, YLRL. It contains 18 chapters and over 500 photographs. First copies should be coming off the presses about the time you read this. Order yours today and help pay the printer! "CQ YL" is $3.50 a copy. Send your request with check (or money order) to your column editor: Louisa Sando, W5RZJ, 212 Sombrio Dr., Santa Fe, N. Mex. *Please state* whether or not you want the book to be *autographed.*

33, Louisa, W5RZJ

THE HAM SHOP

GLOBE

Here it's Wednesday already . . . what better time to give the XYL this globe for your shack . . . and *you're getting a FREE year of CQ to boot.* Costs $25.00 in the stores . . . only $19.95 on this CQ deal.

HI-FI BOOK

Complete, down-to-earth, non-mathematical explanations on Hi-Fi Amplifiers, Preamps and Associated Circuits that help the Hi-Fi enthusiast and technician get the full value from Hi-Fi, as well as its essential components.

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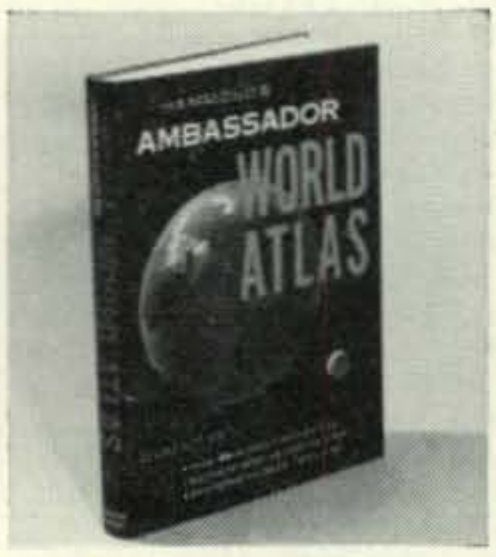


ATLAS

Come on, get with it. Don't pull a blank when some one asks you for the capital of Honduras. For only $12.50 you can own 7 lbs. of full-color maps and a complete gazeteer. Send for this Hammond Atlas. PLUS a one year subscription to CQ.

only $12.50

MOBILE HANDBOOK

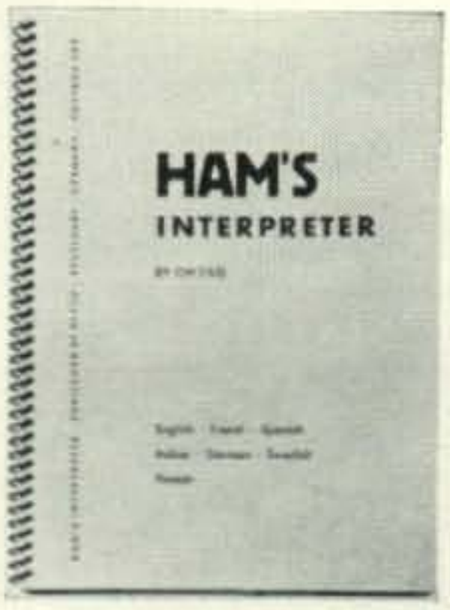
This new Mobile Handbook by Bill Orr, W6SAI, has been getting raves from all of the experienced mobile operators. There is all sorts of information in here that cannot be found anywhere else. This is NOT a collection of reprints. $2.95 postpaid.

COMMAND SETS

This IS a collection of reprints, containing all of the available information on the conversion of the popular "Command" transmitters and receivers into good ham transmitters and receivers. Invaluable for Novice, Technician, General, Advanced and Extra class operators. 136 fabulous amazing terrific pages for only $1.50 PPD.

HAM'S INTERPRETER

Now you can talk in broken French, Spanish, Italian, German, Swedish and Finnish. This handy little book gives all the popular ham conversation in seven languages, including letters and numbers. Only $1.50 postpaid.



CODE RECORD

Learning code is a snap with this record. Speeds from 3 to 16 WPM, depending upon turntable speed. This 12" LP record has on it all you need to learn the code for both the Novice and General license. $3.50 each.

CQ Magazine
300 West 43rd St.
New York 36, N.Y.

C-5

SIRS: My check (money order) for $..... is enclosed. Please send the following items to: ☐ Globe ☐ Atlas ☐ Binder—Year Wanted ☐ Hi-Fi Book ☐ Mobile Handbook ☐ Command Sets ☐ Ham's Interpreter ☐ Code Record

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- **Ideal Xfmr for dream KW Rig**—Primary: 220 VAC—60 cycles—single phase. Secondary: 3200 VDC @ 350 ma. Has tapped secondary for numerous combinations of voltages. Shielded—very conservative ratings. Write for more complete info. Price $27.50, prepaid free anywhere in U.S.A. Shipping weight 80 lbs.
- **Little Gem Xfmr**—Brand new compact. 19000 Ohms to 600 Ohms Plate to Line Xmfr, approx. 2" round x 2¼" high. Pri. rated at 10 mils. Can also be used as line to grid xmfr. Individually boxed, 69¢ each (10 for $4.00). Postpaid U.S.A.
- **6 Volt Vibrapack**—New Unused. Delivers 300 Volts D.C. @ 100 ma. approx. (regular net over $30.00). Special $9.95; 2 for $18.00.
- **Prop-Pitch Motor**—55 lbs. uncrated. New or like new, with brake removed and drive bar added. A real buy! Only $34.50 F.O.B. New York or Atlanta.
- **28 volt—10 amp Xmfr**—Pri: 115 vac/60—$4.50. (3 for $12.00).
- **Heavy-Duty Variable Inductor, $5.**
- **Blower—Motor**—Squirrel Cage Type—2½" Outside Rotor Diameter—Operates From 28 Volts A.C. or D.C.—Includes Hash Filter & Mtg. Bracket Removed From Equipment—Lab Tested O.K. Prior to Shipment. Easily Converted to Operate From 115 Volts A.C. with Dropping Resistor or Small Xmfr.—Only $2.85.

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DELTA-TENNA GROUND PLANES, commercial quality 2 mtr. $19.95, 6 mtr. $24.95, 10 mtr. $29.95. Also cut to any commercial frequency 450—20 MC. Western Gear, Dept. C, 132 W. Colorado, Pasadena, California.

KWickPatch now available in sideband models as well as AM. Write for literature and name of nearest distributor. KWickPatch. Box 612, Redwood City, Calif.

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SAVE! BUY surplus direct from Government at tremendous savings, radio, electronic equipment, parts, power tools, machinery, hundreds others. Gov't. surplus bulletin, $1.00. Box 169CAF, East Hartford 8, Conn.

REPAIR PARTS for BC-348, BC-342, BC-312, BC-224. Write for list. Electronicraft, Box 269, Bronxville, N. Y.

GONSET 2-meter converter $20. ARC-5 schematics 25¢. S. Consalvo W3IHD 4905 Roanne Dr., Wash. 21, D. C.

FOR SALE: Panadapter and Scope ID-60/APA-10 converted to operate on 115v, 60 cycles, complete with handbooks of instructions for operating and maintenance. $95 FOB in original cartons. Robert B. Hupper,—K2PLD; 47 Willits Road, Glen Cove, New York.

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CRYSTALS: FT-243's—3500 to 8700 KC ±2 KC, $1.00 each. .01% setting, $2.00 each. Hundley Crystal Co., 2951 North 36th, Kansas City 4, Kansas.

TWO-WAY COMMUNICATIONS: Mobile, Industrial, Aviation. Free catalog. RCE, 520 S. Virginia, Reno, Nevada.

DXer's:—When other methods fail, send International Reply-Paid QSL's. 25, $1; 100, $3. Sample free. Hart, 467 Park, Birmingham, Mich.

BARGAINS WITH NEW GUARANTEE: S-53A $69.95; NC-125 $139.50; S-72 $49.50; NC-98 $119.; NC-300 $319.; Lysco 600 $69.; Elidco TR-75TV $25.; Viking Mobile $79.; B&W 51SB $195.; Lysco 382 VFO $12.50.; Johnson Pacemaker $395.; Sonar MR-3 receiver $35.; Gonset 2 meter Linear $99.; Morrow MAH-B $475 (DEMO); Globe Trotter $29.50; Globe King 500A $475.; Globe King 500 $449.; Globe Scout 65 $59.; Scout 65A $69.; Scout 680 $89.95; NEW Gonset Communicator II #3077B or #3025B $199.; NEW LYSCO 382 VFO $19.95. Free trial, terms, write Leo, WØGFQ for best deals. World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

FOR SALE: AXT-2 television camera complete with Iconiscope; FOB Long Island City—$75, Spera Electronics, 37-10 33rd Street, Long Island City 1, New York.

MUST SELL EVERYTHING: Have to raise money for college. Send for complete list of terrific bargains. Brand new and slightly used Xmtrs., Heathkits, brand-name test equipment and parts. Quantity very limited. Send today. Wayne Steagall, 127 East Cocoa St., Compton, Calif.

NATIONAL VARIABLE CONDENSERS: New transmitting, receiving, duals, cheap! Stamped envelope for list. Joe Reidel, K6SKT, 917 S. Ogden, Los Angeles, Calif.

HEATH DX-100: Almost new, $175. Hammarlund HQ-129X, excellent shape, $125. Both FOB. Jim Perkins, W5DRG, 401 Jackson, Brookhaven, Mississippi.

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SELL DX-35: Good condition, need college money, let's haggle. Mike Turner, Box 616, Lufkin, Texas.

FOR SALE: Techcraft 6 meter xmtr and power supply, $60. Hank Steckler, 75-80 179th St., Flushing 66, N.Y. JA 6-8110.

SONAR SRT 120 with power supply, VFO mike, $85. Photo for stamp, Slingerland, W4AK, Hagerman, New Mexico.

TUBES: Brand new 813's $8; 810's $8; 100TH's $6; 250TH's $17.50; 832A's $6; 3E29 (829B) $6; Eimac 4-65A's $12; 4-125A's $17.50; 4-250A's $25; 2E26 $2; 4E27 $6; 811's $2; 807 $1; 815 $2; 6AKS 50¢; ART-13 modulation transformer $8.50, Collins 2000 VCT—500 ma plate transformer $28; Collins 50w modulation transformer, $8; TBY-8 transceiver, 28 through 80 mc, cw or phone, $30; BC-224 receiver $65; SCR-522 power supply $12.; Bendix PAT-50 two meter transmitter $45; BC-221 frequency meter $60. All guaranteed, can ship COD. Bill Slep, W4FHY, Box 178, Ellenton, Fla.

LEAVING FOR SERVICE—MUST SELL: Mosley Model S-109 10 meter beam (3 element) $20.; Telrex model 20M-168 20 meter beam (3 element) $100 NC with speaker $310; Viking Valiant factory wired $325. B. Levey, K2-TGS, Englewood, N. J. LO 8-4293.

FOR SALE: 4 element 6 meter beam Telerex $15; CDR rotator $25 (or both for $35.); techcraft deluxe model 6 meter converter $30; SX-99 excellent condition, best offer over $90. P. Mullins, K2YQI, 166 Beach 113th St., Rockaway Park 94, New York.

FOR SALE: Lettine 240 xmitter, 6146 final, 6AG7 clamp tube, metered circuits, 40 & 80 meter coils, excellent condition, $65. PE-101-C conv. dynamotor, like new, $12.50. I. E. Shiflet, Box 837 Clute, Texas.

MONIMATCH SWR BRIDGE, cabinet, and meter $14. postpaid. Neal, W4OLO, 1003 Glenwood, Manchester, Tenn.

FOR SALE: Complete mobile rig. Gonset G-66B receiver $180. Johnson mobile transmitter 60 watts with 12 volt power supply $120. Perfect condition. Don Metz, Buffalo Lake, Minnesota.

SUNDAY MAY 4th: 1:00 pm—Ham Auction, bargains galore, bring your surplus gear for sale or trade, McPherson National Guard Armory. Sponsored by McPherson Amateur Radio Club, McPherson, Kansas.

FOR SALE: Like new 75A4 speaker, filter. $640. I pay express and insurance. E. A. Koster, K6SDM/4, Rt. 2, Box 242, Manassas, Va.

MOBILE ELMAC PMR 6A RECEIVER: AF 67 transmitter. Relay control and cables PE 103 dynamotor included, master mobile match coil with field strength meter and master mobile all bander antennae, $300 f.o.b. Excellent condition, Fred Kaffer, W2PPS, 175 Maplehurst Ave., Syracuse, N. Y.

FOR SALE: Viking 500 and 75A-4 $1200. or $1000. and your receiver. Johnston, W9MWQ, 523 So. 6th St., La Crosse, Wisc.

HEATH AR-3: Less cabinet and QF-1 $30. Grant Brooks, 19 Shady Avenue, Greenville, Pa.

FOR SALE: DX 100, has grid block keying, asking $180. make offer. R. Corbett, 46 Prospect, Torrington, Conn.

FOR SALE: 75A-4, AF-67, DB-23, Valient, 6N2, KW-tuner, tape recorder, meters, condensers, chokes, power and filament transformers. Self address stamped envelope for lists. Want UTC-S-37, and S-38. Bill Tully, W6VPO, 10815 Rose Ave., Ontario, Calif., LY 8-2292.

FOR SALE: Collins 32V2/32V3, National NC-173 receiver $490. J. Taylor, Stanwood Road, Mt. Kisco, N. Y.

FOR SALE: RTTY Model 26 with table $75 FOB waiver Gonset Triband $30 NEW B&W 504 $70, interested in BC 610 at reasonable price. R. F. Coady, W4BNI, 4316 South Coolidge Ave., Tampa 11, Florida.

FOR SALE: One TBY set transceiver with tubes, antenna, headset and mike. And 6 volt power supply, $30. Ron Jones, 518 Polk, Topeka, Kansas.

CRYSTALS AIRMAILED: Novice, general, FT-243. Any kilocycle, 3500 to 8600, $1. Gonset thin FT-243 35¢ extra. 1700 to 3499 $1.95. 8601 to 21,500 $1.95, .01%. Frequency standard crystal 1000 kilocycles in octal tube $3.85. FT-241A 455, 500 kilocycles $1. Crystals since 1933. Free Marine Crystal Brochure. C-W Crystals, Box 2065, El Monte, Calif.

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SELLING OUT: No reasonable offer refused. 1 kw all-band SSB transmitter consisting of 20A exciter—GG813's, final. GG807's driver—B&W all-band tank, electric driven variac—Modified 458 VFO—built in 6 ft. steel rack with rollers, power supplies and complete metering. Collins 75A4 receiver—Elmac A-54 transmitter—new Elmac AF-67 trans-citer, new Gonset super-six converter, Morrow 3BR-5 converter, Weco 6v dynamotor 425v @ 375 ma.—R28/ARC-5 2 meter receiver, industrial instruments RN-1 Wheatstone Bridge. Write for particulars, make offer, equipment guaranteed 1/c, Scott, W5UBN, 901 Cessna Drive, El Paso, Texas.

PARTS, METERS, crystals, novice and general. Command, ARC-5, receivers, racks, transmitter. Transformers. Dynamotors. Equipment of all kinds. Write for list. R. E. Woods, W6KEG, 2164 Parkway, El Monte, Calif.

PHONE PATCHES TO SELL: Guaranteed, write for full details, Mike Coulter, 24 Prince Street, Newton, Mass.

FOR SALE: Johnson Viking II with VFO, $195. National HR07 with power supply and 4 sets bandspread coils, $110. William Albert, W2TMX, 57 Cragmore Road, Newton 64, Mass.

FIVE CHANNEL VFO-TUNED 12V/24V DC Coast Artillery 27 to 39 mc. 25W transmitter, $50 and two 17-tube receivers with built-in xtal calibrator, $40 each. Dev. model SCR-828. See page 58 March CQ for conversion to AM. Will not ship. R. V. Crawford, W2JLH, 10 Manor Pl., Dobbs Ferry, N.Y. DObbs Ferry 3-2014.

FOR SALE: HW 140XA receiver and matching speaker, less than one month old, $200. John Priante, 2813 Ave. "D", Brooklyn 26, N.Y.

WANTED

WANTED: Collins 51-J, 32V, 75A, Teletype equipment, Converters URA-8 or similar. BC-348, BC-342, ART-13, BC-610, BC-221, URM-81, etc. CASH OR TRADE for NEW Ranger, Valiant, Thunderbolt, HT-32, SX-101, NC-300, HQ-110, 20-A, Gonset, B&W, Elmac Telrex, Hi-Fi Fisher, Bell, etc. All types used electronic equipment taken in trade. Write, Tom, W1AFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. (Richmond 2-0048) Stores: 278 Friend St., Boston (near North Station). 60 Spring, Newport, R. I.

WANTED: BC-610E and up, BC-939, BC-614E and up, RA-63, BC-312 and BC-342 material. We buy all types of Electronic Surplus. RADALAB INC., 87-17 124th St., Richmond Hill 18, N. Y.

WANTED: Used receivers and transmitters. Will pay cash or trade. 10% down with up to 24 months to pay. In stock new 75 A4s, KWS1's, KWM-1 SSB mobile transceiver, Johnson, B & W, National, WRL Products, Hallicrafters, Elmac, Hammarlund, Gonset, Central Electronics, Mosley Hy-Gain and Gotham Beams. Write for list of bargains in reconditioned receivers and transmitters with new guarantee. Shipped on approval. Write Ken, WØZCN or Glen, WØZKD for your best deal. KEN-ELS RADIO SUPPLY CO., 428 Central Ave., Ft. Dodge, Iowa.

CASH PAID FOR TG-7 and Model 15 teletype and parts. Also BC-312, BC-342, BC-610E, BC-614, BC-939, BC-221, RA-63, JB-70, JB-60 and APR-4, APR-9, ARN-6, 7 and 14, ARC-3, 21, 27 and TEST EQPT. We pay freight. AMBER INDUSTRIAL CORP., 75 Varick St., New York 13, N. Y. CAnal 6-7455.

WANTED: Aircra t, ground, airline, military electronic equipment, Collins, Narco, ARC, BC348, ART13, ARN6, ARC1, BC221, 51R3, ARN14, BC610, all test equipment, others, advise condition, price we pay COD, RITCO, Box 156 Annandale, Va. Phone JEfferson 2-5895.

HAVE $200: Want xmitter, 150 to 300 watts, complete with power and VFO. Prefer Collins, AN/ART13, Viking, Globeking or DX100. Quote price my QTH. (No home brew rigs) Col. E. W. Sears, 4725 Bridle Trail, Santa Rosa, Calif.

NEED THE FOLLOWING BACK ISSUES OF CQ: November 1955, July 1956, February 1957. Will swap a brand new first MOBILE HANDBOOK, or copy of COMMAND SETS, or $1 in cash for the above three issues. Must be in good condition. Offer limited to first 100 copies. Send to CQ Magazine, 300 W. 43rd St., N. Y. 36, N. Y.

WANTED: Manuals BC-638, 639, 640, RC-153-B. Wilson, 61 Warwick, Portland, Maine.

CODE TAPE WANTED: Will buy or rent code tapes for TG-34-A Code Keyer. Paul Hoffman, WN3JSN, 1733 Kalmia Road N.W., Washington, D. C.

QSL

QUALITY QSL's. Samples, 10¢. Lee, W5CZA, Box 7171, Oklahoma City, Oklahoma.

FREE FLYER. DX QSL, Radio Coop., Box 5938, Kansas City 11, Mo.

QSL SAMPLES. Dime, refundable. Roy Gale, Waterford, Conn.

QSL's—"Brownie" W3CJI, 3110 Lehigh, Allentown, Pa. Samples. 10¢ with catalogue, 25¢.

QSL's: We've printed a million. Samples 10¢. VYS QSLs, 1704 Hale, Ft. Wayne, Indiana.

QSL's-SWL's. 100—$2.50. Samples, 10¢. QSO file cards, $1.00 per 100. Rusprint, Box 7507, Kansas City 16, Mo.

DELUXE QSLS: Wm. Petty, W2HAZ, Box 27, Trenton, N. J. Samples, 10¢.

QSL's: Samples, dime. Print Shop, Corwith, Iowa.

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QSL SPECIAL: Free sample. Nat Stinnette, W4AYV, Umatilla, Fla.

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COMPLETE MOBILE: Elmac A53H, Super 6, 600DL mike, PE103, antennas and relays. Excellent. Best offer over $125. SX25 fair, QF1, $50. Kesler, K9BTU, Olney, Illinois.

RADIO MAGAZINES. Buy, sell, trade. Bob Farmer, Plainview, Texas.

35MM CONTAFLEX 2: with built-in light meter. Camera, case, acces., & Bi-lens viewer in excellent condition. Trade for clean DX-100, 20A SSB. J. W. Crispe, 16 Evergreen, Elk Grove Village, Illinois.

PENTRON TAPE RECORDER 93TC: or cash for two meter gear. Kampe, W90KM, 1207 Oneida St., Joliet, Illinois.

MISC.

HAMS! In central Illinois it's Knox Electronic Supply, 67 North Cherry, Galesburg, Illinois.

THE SIXTH ANNUAL HAMFEST of the Northfork Amateur Radio Club will be held on May 3 & 4, at Quartz Mountain State Park, in Southwestern Okla. Lots of prizes, lots of fun, bring the family. For details write, Pauline Cooksey, Sec., Box 321, Carter, Okla.

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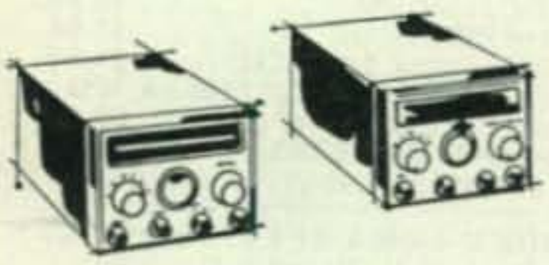

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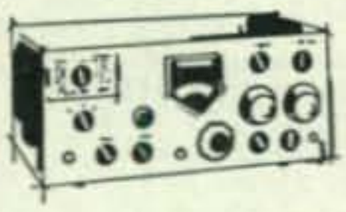

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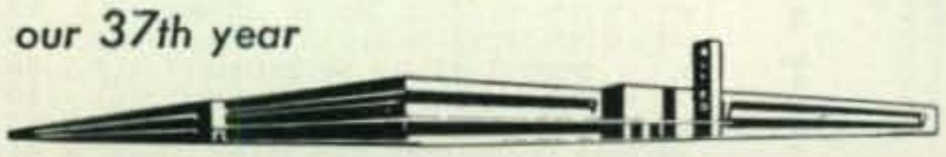

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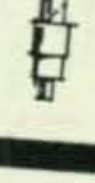

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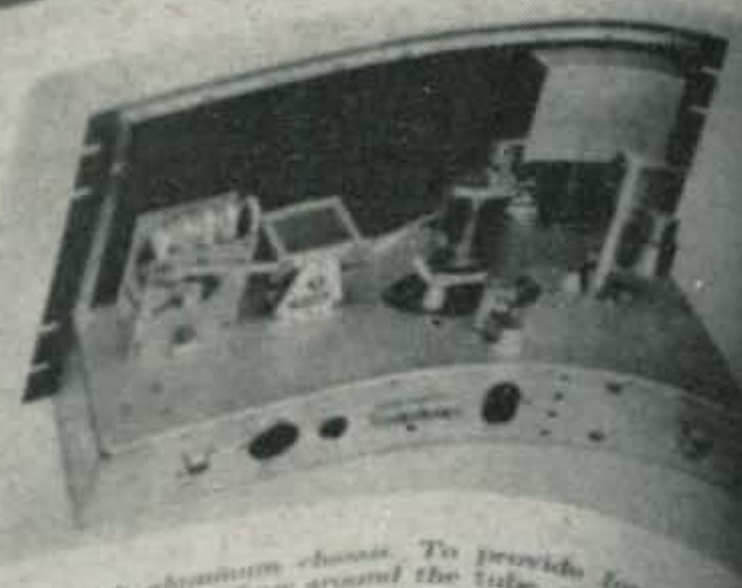
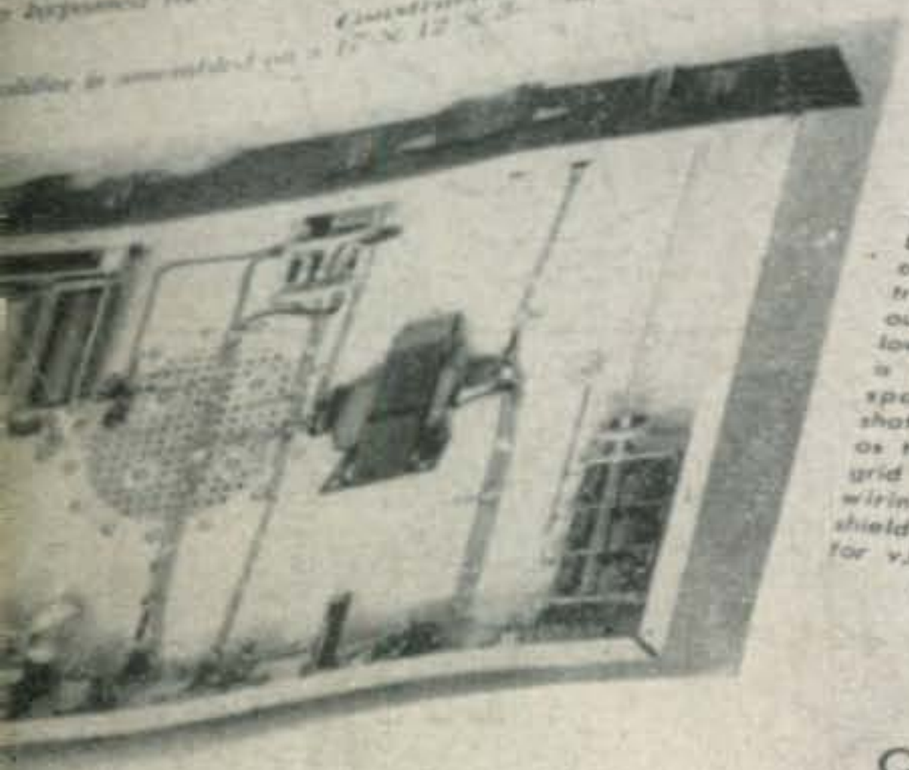


Rear view of the amplifier. The 8.5-uh r-f choke is at the left side of the tube socket. Connection to the screen and suppressor grids is made by the two coaxial cables. Along the rear wall of the chassis, from left to right, are the meter, output capacitor, screen and bias resistors, fuse, ground terminal, filament transformer, high-voltage terminal (hidden) and the three input connectors.



Bottom view of the 7094 amplifier. The filament transformer is mounted on a bracket made of aluminum sheet. The fan motor is bolted to the rear wall of the chassis. The triple-gang pi-section output capacitor in the lower right-hand corner is mounted on metal spacers to bring its shaft to the same level as the controls of the grid tank. All power wiring is done with shielded wire bypassed for v.h.f. at the input terminals.

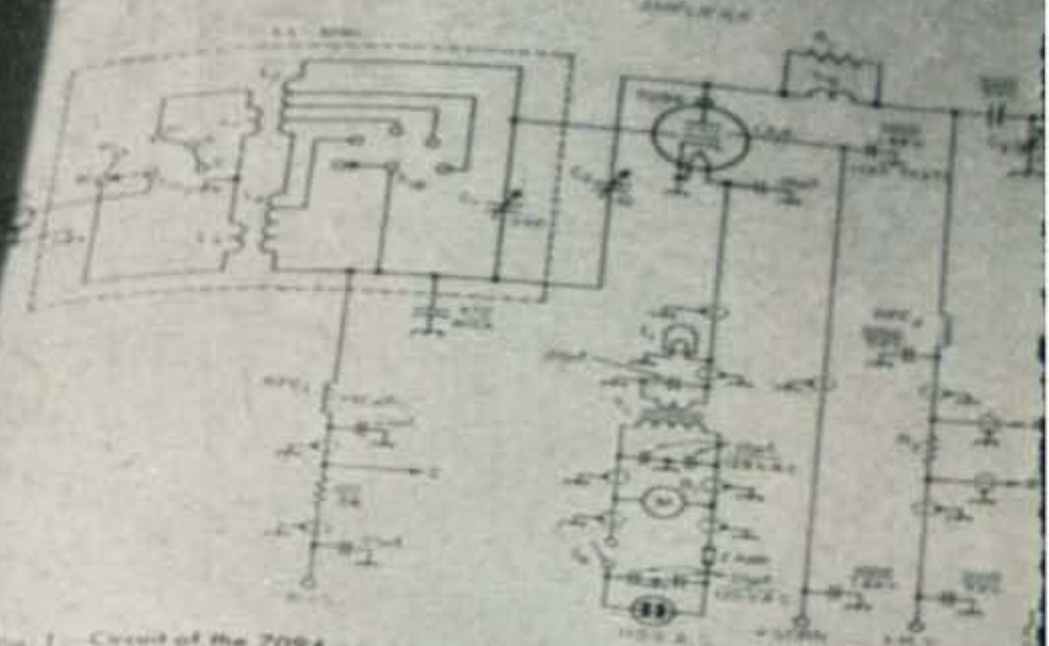


Fig. 1—Circuit of the 7094 amplifier. Unless specified otherwise, capacitances are in μμf, resistances in ohms, and capacitors less than 5 kv are disk ceramic. Fixed-value capacitors are TV-type ceramics (Centralab DD-50 or equivalent). Enclosure consists of the S & W 851 pi-network unit, modified as follows:

B—Blower (Allied Radio 70 G 1000 or equivalent).
C1—250-μμf. midget variable (Hammarlund MAPC-250 or equivalent).
C2—Neutralizing capacitor (Hammarlund MAPC-35 or equivalent).
C3—250-μμf. midget variable (Hammarlund MAPC-250 or equivalent).
C4—1100-μμf. midget variable (Hammarlund MAPC-1100 or equivalent).
L1—4½ turns No. 8, ... topped at 3 ...
L2—... turns No. 12, ... topped at 6 ...
... L1 and L2 are ...
... L3 is mounted at ...
... D.c. milliammeter ...
... tangular (Triplett ...
... Three 150-ohm 1- ...
... Approx. 32 turns ...
... measurements ...
... method of adjustment ...
... 750-μh. r.f. choke ...
... 5-mh. r.f. choke ...
... wafer 5-position ...
... of heavy-duty ...
... & W inductor ...
... at transformer ...

... insulating ...
... the left of ...
... by-pass ...
... locking capacitor ...
... capacitor stator ...
... 2b insulator at ...
... on the high-voltage ...
... put terminal at the ...
... insulators are used ...
... tween the output end ...
... and the output capacitor ...
... tion between the neutralizing ...
... grid tank.

On the underside of the ... unit is spaced from the ... on 1-inch ceramic-pillar ...

... (6.w.) portion ... te transformer ... for the ...