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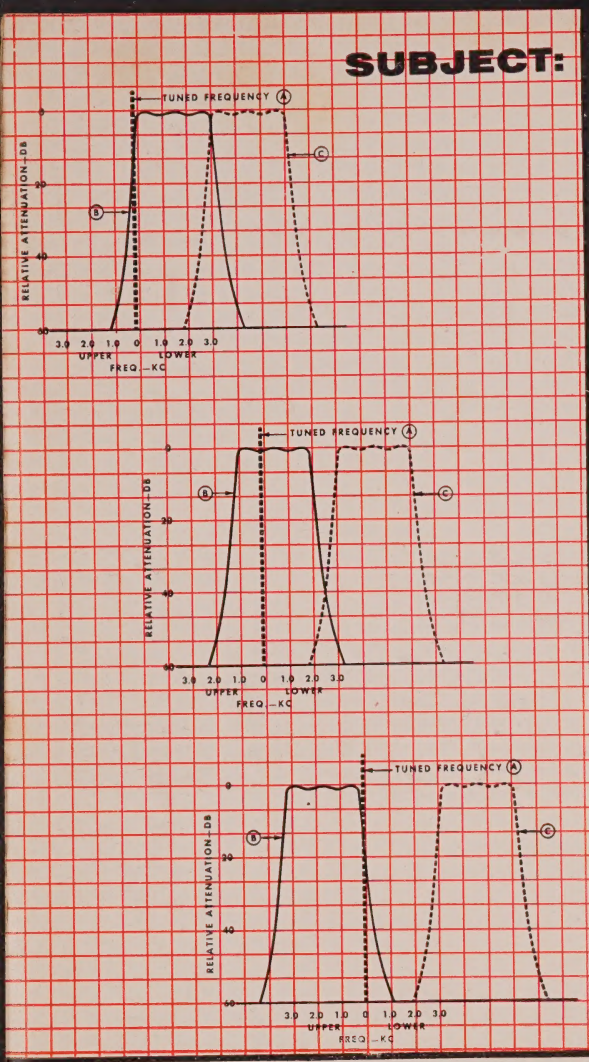
MARCH
1957
50¢

CQ

RADIO AMATEURS' JOURNAL



SUBJECT: PASSBAND CONTROL AND COLLINS 75A-4

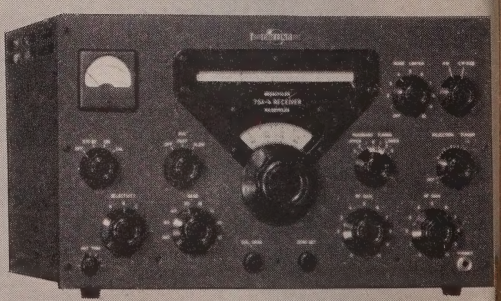


The scourge of Amateur reception is interference from neighboring signals. The most effective method of dodging this interference is passband tuning, and only Collins 75A-4 has it.

With passband tuning, the passband — which is continuously adjustable — is actually *moved around* the dial frequency. As may be seen in the drawings at left, the tuned frequency (A) remains constant while the IF passband (B) may be moved in either direction to drop interfering signals (C) "off the cliff." This same action is also useful for dropping out either high or low audio frequencies.

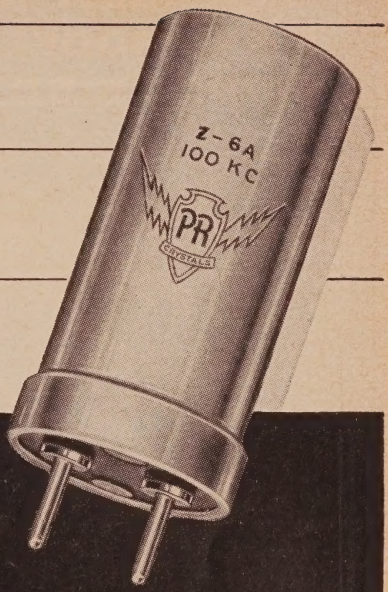
Passband tuning also provides an effective method of selecting sidebands by merely moving the passband right or left as in the top and bottom drawings.

Passband tuning is augmented by such other features as the Mechanical Filter and Rejection Tuning. The Filter's steep selectivity will sharply cut interfering signals on the passband's edge, and the rejection tuning notch will eliminate any single carrier heterodyne in the passband. These are typical of the features that make the 75A-4 easily the *best* receiver buy on the market.



Collins CREATIVE LEADER IN COMMUNICATION

Calibration on the nose...



thanks to PR's
100 K.C. FREQUENCY STANDARD

A dependable secondary frequency standard is a MUST for today's amateur station . . . to determine band-edge . . . to keep the VFO and receiver properly calibrated. Now you can buy a really dependable, commercial-quality PR 100 Kc. Crystal at reasonable cost. The Type Z-6A is hermetically sealed, razor-accurate, unconditionally guaranteed. Get it at your jobber.

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$6.95 net

PR Crystals

Since 1934

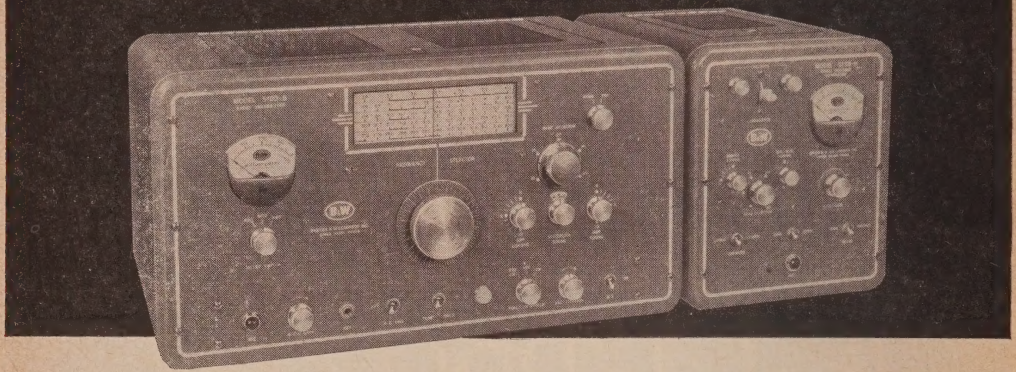
USE PR AND KNOW WHERE YOU ARE

PETERSEN RADIO COMPANY, INC.
2800 W. BROADWAY • COUNCIL BLUFFS, IOWA

EXPORT SALES: Royal National Company, Inc., 250 W. 57th Street, New York 19, N. Y., U. S. A.
For further information, check number 83 on page 126.

←For further information on Collins, check number 60 on page 126.

Superlative AM-CW and SSB with the B&W MODEL 5100-B TRANSMITTER, MODEL 51SB-B SSB GENERATOR



Here's unsurpassed performance on all three . . . AM-CW and SSB! The Model 5100-B gives you:

- *high level push-to-talk AM telephony*
- *clean CW keying—break-in on all bands*
- *sparkling SSB combined with the 51SB-B companion sideband generator*

Check *all* the features built into this fine transmitter: input power of 180 watts CW-SSB, 140 watts AM phone; bandswitched throughout with integral VFO or crystal frequency control; coverage of 80 through 10 meter amateur bands; *plus* unitized construction, pi-network final, and integral low-pass filter. Skillful layout and imaginative circuitry assure effective transmission of signal with minimum harmonic content. Functional design within the r-f section, careful shielding, filtering, and by-passing are your assurance of the most dependable TVI suppression.

Trouble-free operation, ease of control and tuning, coupled with excellent quality of signal output with the Model 5100-B are sure to meet the exacting requirements of the most discriminating operator.

FOR OUTSTANDING SSB PERFORMANCE on the same amateur bands, combine the 5100-B with the completely bandswitched 51SB-B companion sideband generator. Powered by the transmitter, the 51SB-B can easily be hooked up to the 5100-B in less than a half hour. Tuning and operation are a breeze, with no test equipment required for installation or operation. And you'll begin immediately to enjoy such features as: voice operated control, push-to-talk, speaker deactivating circuit, true unitized construction, and TVI suppression.

*Net Price { Model 5100-B Transmitter.....$475.00
Model 51SB-B SSB Generator.....$265.00

FOR SPARKLING SSB WITH YOUR PRESENT TRANSMITTER . . . THE B&W MODEL 51SB SIDEBAND GENERATOR

Enjoy superb single sideband transmission just by adding the Model 51SB generator to your present B&W, Collins, Johnson, or other commercial or composite home built transmitter. Using factory engineered modification kits and step-by-step instructions, you'll find it easy to achieve outstanding SSB operation on all the amateur phone frequencies 80 through 10 meters provided by your present transmitter. And the self-powered Model 51SB gives you all the advanced features of the Model 51SB-B generator.

*Net Price: Model 51SB SSB Generator $279.50

*All prices subject to change without notice



B&W

BARKER & WILLIAMSON, INC.
Bristol, Pennsylvania

For further information, check number 54 on page 126.

CQ, The Radio Amateurs' Journal

March, 1957
Vol. 13, No. 3

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Foreign Subscriptions
England: RSGB, New Ruskin House, Little Russell St., London WC 1.
Australia: Technical Book Co., 297 Swanston St., Melbourne C1, Victoria, Australia.

CQ—(title Reg. U.S. Post Office)—is published monthly by Cowan Publishing Corp. Executive and Editorial offices, 300 West 43rd Street, New York 36, N. Y. Phone JUdson 2-4460. 2nd Class Mail privileges authorized at New York, N. Y. Subscription rates in U.S.A., Possessions, APO FPO, Canada & Mexico, 1 year $4.00; 2 years $7.00; 3 years $10.00. Pan-American and Foreign, 1 year $6.00; 2 years $11.00; 3 years $16.00. Single copies 50 cents.

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HEATHKIT
DX-100
TRANSMITTER KIT

PHONE AND CW



- *Phone or CW—160 through 10 meters.*
- *100 watts RF on phone—120 watts CW —parallel 6146 final.*
- *Built-in VFO—pi network output circuit.*
- *Easy to build—TVI suppressed*

MODEL DX-100

$189.50

$18.95 dwn., $15.92 mo.
Shpg. Wt. 107 Lbs.

Shipped motor freight unless otherwise specified. $50.00 deposit required on c.o.d. orders.

The Heathkit DX-100 phone-CW transmitter offers features far beyond those normally received at this price level. It has a built-in VFO, built-in modulator, and built-in power supplies. It is TVI suppressed, and uses pi network interstage coupling and output coupling. Matches antenna impedances from approximately 50 to 600 ohms. Provides a clean strong signal on either phone or CW, with RF output in excess of 100 watts on phone, and 120 watts on CW. Completely bandswitching from 160 through 10 meters. A pair of 1625 tubes are used in push-pull for the modulator, and the final consists of a pair of 6146 tubes in parallel. VFO dial and meter face are illuminated. High-quality components throughout! The DX-100 is very easy to build, even for a beginner, and is a proven, trouble-free rig that will insure many hours of enjoyment in your ham shack.

HEATH COMPANY BENTON HARBOR 12, MICHIGAN

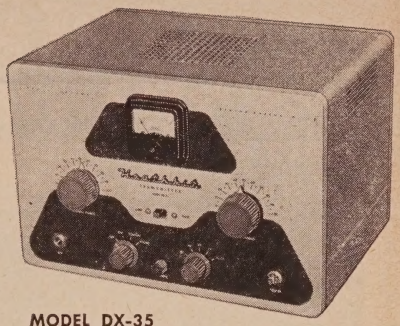
A Subsidiary of Daystrom, Inc.

For further information, check number 73 on page 126.

HEATHKIT DX-35
TRANSMITTER KIT

PHONE AND CW

This transmitter features a 6146 final amplifier to provide 65 watt plate power input on CW, with controlled-carrier modulation peaks up to 50 watts on phone. Modulater and power supplies are built in, and the rig covers 80, 40, 20, 15, 11 and 10 meters with a single band-change switch. Pi network output coupling provides for matching various antenna impedances. Employs 12BY7 oscillator, 12BY7 buffer and 6146 final. Speech amplifier is a 12AX7, and a 12AU7 is employed as modulater. Panel control provides switch selection of three different crystals, reached through access door at rear. Panel meter indicates final grid current or final plate current. A perfect low-power transmitter both for the novice or the more experienced amateur. A remarkable power package for the price. The price includes tubes, and all other parts necessary for construction. Comprehensive instruction manual insures successful assembly.



MODEL DX-35

$56.95

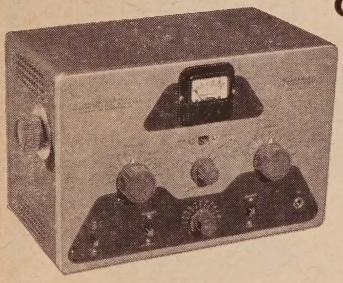
Shpg. Wt. 24 Lbs.

$5.70 dwn., $4.78 mo.

- *Phone or CW—80 through 10 meters.*
- *65 watts CW—50 watts peak on phone—6146 final amplifier.*
- *Pi network output to match various antenna impedances.*
- *Tremendous dollar value—easy to build.*

BRAND NEW

HEATHKIT DX-20
CW TRANSMITTER KIT



MODEL DX-20

$35.95

$3.60 dwn., $3.02 mo.

Shpg. Wt. 18 Lbs.

- *Designed exclusively for CW work.*
- *50 watts plate power input—80 through 10 meters.*
- *Pi network output circuit to match various antenna impedances.*
- *Attractive and functional styling—easy to build.*

Here is a straight-CW transmitter that is one of the most efficient rigs available today. It is ideal for the novice, and even for the advanced-class CW operator. This 50 watt transmitter employs a 6DQ6A final amplifier, a 6CL6 oscillator, a 5U4GB rectifier and features one-knob bandswitching to cover 80, 40, 20, 15, 11 and 10 meters. It is designed for crystal excitation, but may be excited by an external VFO. A pi network output circuit is employed to match antenna impedances between 50 and 1000 ohms. Employs top-quality parts throughout, including "potted" transformers, etc. If you appreciate a good signal on the CW bands, this is the transmitter for you!

HEATH COMPANY BENTON HARBOR 12, MICHIGAN

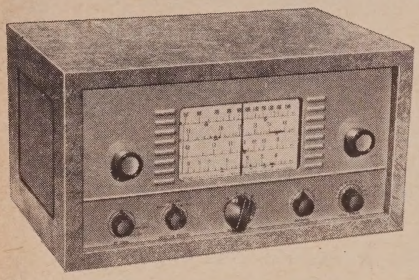
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For further information, check number 73A on page 126.

HEATHKIT

COMMUNICATIONS-TYPE, ALL BAND

RECEIVER KIT



This receiver covers 550 kc to 30 mc in four bands, and is ideal for the short wave listener or beginning amateur. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer-type power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—headphone jack—and AGC. Has built-in BFO for CW reception. Shpg. Wt. 12 Lbs.

MODEL AR-3

$29.95

incl. excise tax
(less cabinet)

$3.00 dwn., $2.52 mo.

CABINET: Fabric covered cabinet with aluminum panel as shown. Part 91-15A. Shipping Wt. 5 Lbs. $.50 dwn., $.42 mo. $4.95

Ⓐ HEATHKIT VFO KIT MODEL VF-1

Covers 160, 80, 40, 20, 15, 11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 VDC at 15 to 20 ma, and 6.3 VAC at 0.45A. Incorporates regulator tube for stability and illuminated frequency dial. Shpg. wt. 7 lbs. $1.95 dwn., $1.64 mo. **$19.50**

Ⓑ HEATHKIT GRID DIP METER KIT MODEL GD-1B

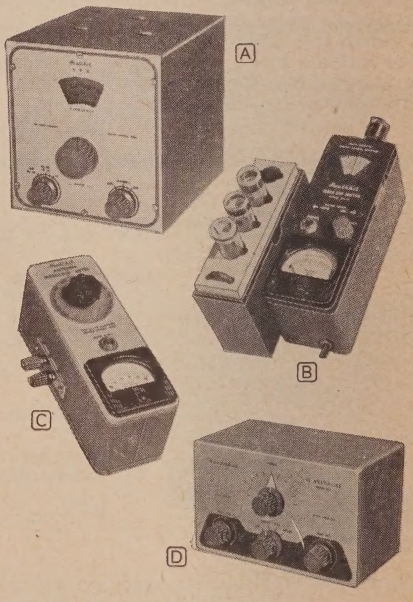
Continuous coverage from 2 mc to 250 mc with prewound coils. 500 ua panel meter for indication. Use to locate parasitics, for neutralizing, determining resonant frequencies, etc. Will double as absorption-type wavemeter. Shpg. wt. 4 lbs. $2.00 dwn., $1.68 mo. **$19.95**

Ⓒ HEATHKIT ANTENNA IMPEDANCE METER KIT MODEL AM-1

The AM-1 covers 0 to 600 ohms for RF tests. Functions up to 150 mc. Used in conjunction with a signal source, will determine antenna resistance and resonance, match transmission lines for minimum SWR, determine input impedance, etc. Shpg. wt. 2 lbs. $1.45 dwn., $1.22 mo. **$14.50**

Ⓓ HEATHKIT "Q" MULTIPLIER KIT MODEL QF-1

Functions with any receiver having IF frequency between 450 and 460 kc that is not AC DC type. Operates from receiver power supply, requiring only 6.3 volts AC at 300 ma (or 12.6 vac at 150 ma), and 150 to 250 vdc at 2 ma. Simple to connect with cable and plugs supplied. Provides extra selectivity for separating signals, or will reject one signal to eliminate heterodyne. Effective Q of approximately 4000. Shpg. wt. 3 lbs. $1.00 dwn., $.84 mo. **$9.95**



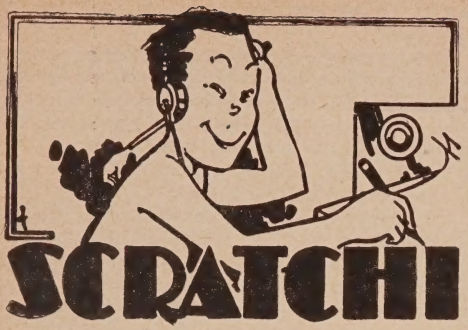
HOW TO ORDER...

It's simple—just identify the kit you desire by its model number and send your order to the address listed below. Or, if you would rather budget your purchase, send for details of the Heath Time Payment Plan for orders totaling $90.00 or more.

HEATH COMPANY BENTON HARBOR 12, MICHIGAN

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For further information, check number 73B on page 126.



Feenix, Ariz.

Deer Hon. Ed:

If you can't licking them, then joining them—that are Scratchi's new motto. Yessir, by gollies, are more than one way to skinning Hon. Cat. And, if I saying so myself, Scratchi are finding reel slicky way to joining them.

If you not heering Scratchi's good old rock-buster xmitter on the air resently, it are not on acct. of not wanting to getting on. No indeedy, it are on acct. of this new FCC rule on Conelrad.

As you knowing if you reeding your own Hon. Magazine, all amchoors after first of yeer having to being able to telling when local BC stayshun are going off air. Of course, if stayshun off air before you going on, amchoor staying off air until he knowing whether or not is okey.

Howsumever, if BC stayshun going off air when amchoor are on air, amchoor are supposing to going off air, even though rite in middle 1/c dee-x contack. It are that last part are making Scratchi sore.

Scratchi are standing on constitushunal rites to not being inturupted when working joocy dee-x. Are even thinking that maybes should riting Hon. Congressmans about such invayshuns of rites of peeple.

But now, Hon. Ed., no needing to doing that. Scratchi are coming up with reel 1/c red-hots slicky idea that fixing up everything. It are how-comes I are back on the air again.

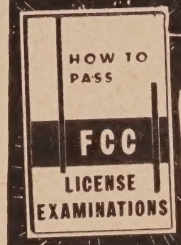
Also, to showing how goods Scratchi are feeling, I are offering it to the Hon. Wurld. For free, that is. No strings. Telling all your reeders, Hon. Ed. Telling them about Scratchi's Failproof Foolproof Failsafe Conelrad Monitor.

Scratchi's FFFCM costing practikally nothing; it showing you when local BC stayshun are on air or off air before starting QSO, and (here are reel feetchure) it are positively never inturupting you when you having QSO. Ahaa, I thought that making you taking feets off your desk and sitting up, Hon. Ed!!

Reddy to heering hole story? Here goes. First you getting old BC radio set what can at leest picking up local BC stayshun. After making sure it working okey, putting it on operating table.

Next, getting neon bulb and connecking it across primary of speaker xformer. If wanting to living long enuf to enjoying FFFCM better put-

How To Pass FCC COMMERCIAL RADIO OPERATOR License Exams

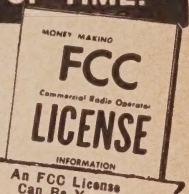


Free . . .

Tells where to apply and take FCC examinations, location of examining office, scope of knowledge required, approved way to prepare for FCC examinations, positive method of checking your knowledge before taking the examination.

GET YOUR FCC TICKET IN A MINIMUM OF TIME!

Get this Amazing Booklet FREE



An FCC License Can Be Your Guarantee of Success in Electronics

—TELLS HOW . . .

1. Tells how thousands of brand-new, better paying radio-TV-electronics jobs are now open to FCC License Holders.
2. Tells how we guarantee to train and coach you until you get your FCC License.
3. Tells how our amazing Job-Finding Service helps you get the better paying job our training prepares you to hold.



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(Address to Desk No. to avoid delay)

I want to know how I can get my FCC ticket in a minimum of time. Send me your FREE booklet, "How to Pass FCC License Examinations" (does not cover exams for Amateur License), as well as a Sample FCC-type lesson and the amazing new booklet, "Money-Making FCC License Information." Be sure to tell me about your Television Engineering Course.

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City .....Zone.....State.....

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Electronic Training also available to Canadian Residents

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Designed for



Application



FLEXIBLE COUPLING

No. 39016

Incorporating features which have long been desired in a flexible coupling. No Back Lash—Higher Flexibility—Higher Breakdown Voltage—Smaller Diameter—Shorter Length—Higher Alignment Accuracy—Higher Resistance to Mechanical Shock—Solid Insulating Barrier Diaphragm—Molded as a Single Unit.

JAMES MILLEN MFG. CO., INC.

MAIN OFFICE AND FACTORY

MALDEN

MASSACHUSETTS

ting in cupple condensers, one in each leed to neon bulb.

Then, on acct. you not wanting heering speeker blatting at you when on the air, replacing speeker coil with 2-what resistor same resistance as speeker voice coil. How's that, Hon. Ed!! You saying this sounding like old hat stuff to you. Yes indeedy, so far it is. But hanging onto hat. Next part I'll bet me you not heering before!!

Of coursely, before preseeding, we can explaning as we go along. When BC stayshun are on air and BC radio are turned on, when tooned to stayshun, neon bulb flickering on acct. of awdio signal across it. When neon light flickering, stayshun on air, and other way around natchyourally to.

Now for slicky part. Running antenna to BC radio and also running it neer xmitter feeder lines. Neerer the better. Now, lastly, needing to make some adjustments to amchoor rig. Making note that these adjustments are very important. If not making them you not having foolproof sistem. It are not required to making all of them, howsumever—just enuf to making FFFCM work.

First, going into each stage and taking out any newtralizing condensers. Next, taking out any parasitic traps that are kicking around. Lastly, removing any bias you having anywhere. Now, in addishun to these adjustments, you having one last thing to do. Turning up modulayshun control as far as it will go, and ditto with awdio gain control for mike.

That's all there is to it, Hon. Ed!! When you going on air, you will never see neon bulb go off, which meening you never having to go off air in middle of 1/c QSO!! Needing explanayshun?? Okey.

You ever heering of BCI? That sumthing that we used to having back in 1940 B.T. (Before Television). It sumthing like TVI only harder to get. When amchoor having BCI he coming in all over dial of BC set.

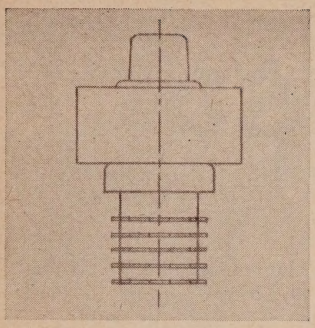
That are basis of Scratchi's FFFCM sistem. When going on air, your own xmitter are cawsing terrifick BCI in BC set and no matter where you tooned, your own signal and your own voice are keeping neon bulb blinking. If having BCI, how can you telling if BC stayshun still on air- You can't Hon. Ed. Aren't that reel 1/c slicky idea!!

Pleese not riting to thanking me. Just telling everybuddies there problums are over.

Respectively yours,
Hashafisti Scratchi

Third Party Traffic Legal (Phone Patches)		Don't Talk To These Countries (Even on SSB)
Canada	Ecuador	Cambodia F18, XU
Chile	Liberia	Korea HL-HM
Costa Rica	Panama	Indonesia PK, YB-YI
Cuba	Peru	Iran EP-EQ
Nicaragua		Viet Nam F18, XV, 3W

← For further information, check number 79 on page 126.



New ceramic tubes assure longer life—greater dependability

Ultra-compact new HT-33 kilowatt amplifier first to employ extra-safe, extra-long-life ceramic power tube



Performance and dependability were key words in the Hallicrafters laboratories when the HT-33 was on the drawing boards. That's why our engineers insisted on new, costlier ceramic power tubes. Result: another Hallicrafters first that means consistently higher performance over a longer life.

Here's what ceramic tubes mean to you: 100 watts greater plate dissipation. Greater overload safety. Unbelievable ruggedness (they'll withstand repeated 11 milli-second shocks of 50g) and reliability. *Advanced design, too.* Notice the clean lines, the *compactness* of the HT-33—just 12⅜ inches high, for trim table-top application. See it, and compare these and other features, at your supplier's today.

MORE FACTS ABOUT THE HT-33

- Six amateur bands: 80, 40, 20, 15, 11-10 meters
- Simplified tuning: greater power transfer and higher harmonic attenuation.
- Low drive requirement: 8 watts P.E.P. will drive to full KW
- New type Neon Indicator light for fuse overload.
- Quieter operation: higher performance allows low speed blower.

NEW
FROM
hallicrafters
CHICAGO 24, ILLINOIS

WHERE THE BEST IDEAS IN COMMUNICATIONS ARE BORN

For further information, check number 71 on page 126.

EDITORAL
WAYNE GREEN

. . . de W2NSD

NEVER SAY DIE

The reaction to the Double Sideband article by W2CRR in the January CQ has been very interesting. A couple of letters have come in accusing me of pulling a Larson E. Rapp routine. Most of the people that I have talked to about it say that they read the article through about three times before they really were convinced that it was straight dope.

And no wonder, for the implications of the article are tremendous, suddenly making the generation of sideband signals so simple that it takes but a few minutes to convert the usual transmitter to it. When I saw the article for the first time I remembered back to a pamphlet I bought about twenty years ago on single sideband, describing the systems of that day. The system was identical to W2CRR's, except that they threw in an antenna filter tuned to one sideband to filter out by brute force one of the sidebands. This was OK for a commercial transmitter tuned to one frequency, but I'd hate to try to use that type of sideband suppression in a ham rig. Better to leave both sidebands and filter one out at the receiver.

During November, while on a short trip down to talk over our coming WPX Award and other DX matters with Dick Spenceley, KV4AA, I managed to shoulder him away from his key for a few minutes and get his Johnson Kilowatt fired up on sideband. The band conditions were amazing . . . everything all over the states was coming in. I sat there for several hours working one station after another. One fellow asked me to check his signal for him . . . I did, it sounded nice and clean . . . perhaps a bit of residual sideband, for I could hear a little beating when I tuned off to one side. He was in Syracuse and told me I was listening to Double Sideband. Well, what do you know? Amazing. If I were not looking for something like that I never would notice it. He said that few of the SSB stations he worked ever knew that he was DSB. In view of the lack of suppression on some SSB rigs the difference isn't much.

With that demonstration I decided that CQ should really go into DSB full tilt. We have coming up an article on converting the Command transmitter to a mobile DSB/AM rig, an article on converting the DX-100 to DSB, complete with voice break-in, and two or three others promised. I'd be interested in a quickie on converting other popular commercial transmitters to DSB . . . like the B&W 5100, the 32V, etc. Any rig with either push-pull or parallel tubes in the final can be converted by changing one coil and a couple other connections.

The real benefit of this article I expect to accrue to our DX brethren, since few of them can afford the cost of our SSB exciters or can get the parts to build one of their own. This may greatly speed our sidebanders toward their DXCC and their 150 prefixes.

Nomenclature

This emergence of DSB has brought up another problem. The term SSB was a shortening of SSSC . . . single sideband suppressed carrier. But some of the fellows have been going out after the SSB awards with carrier inserted, using just one sideband. While this technically meets the SSB definition and has managed to help get WAS/SSB, it really should be classified as AM. As more and more Double Sideband stations come on we are going to be in trouble with our SSB designation since a lot of us won't be able to tell whether we are working a DSB or SSB station. Perhaps a shift to a term like just plain "Sideband" would help, making it clear that this always means "with suppressed carrier."

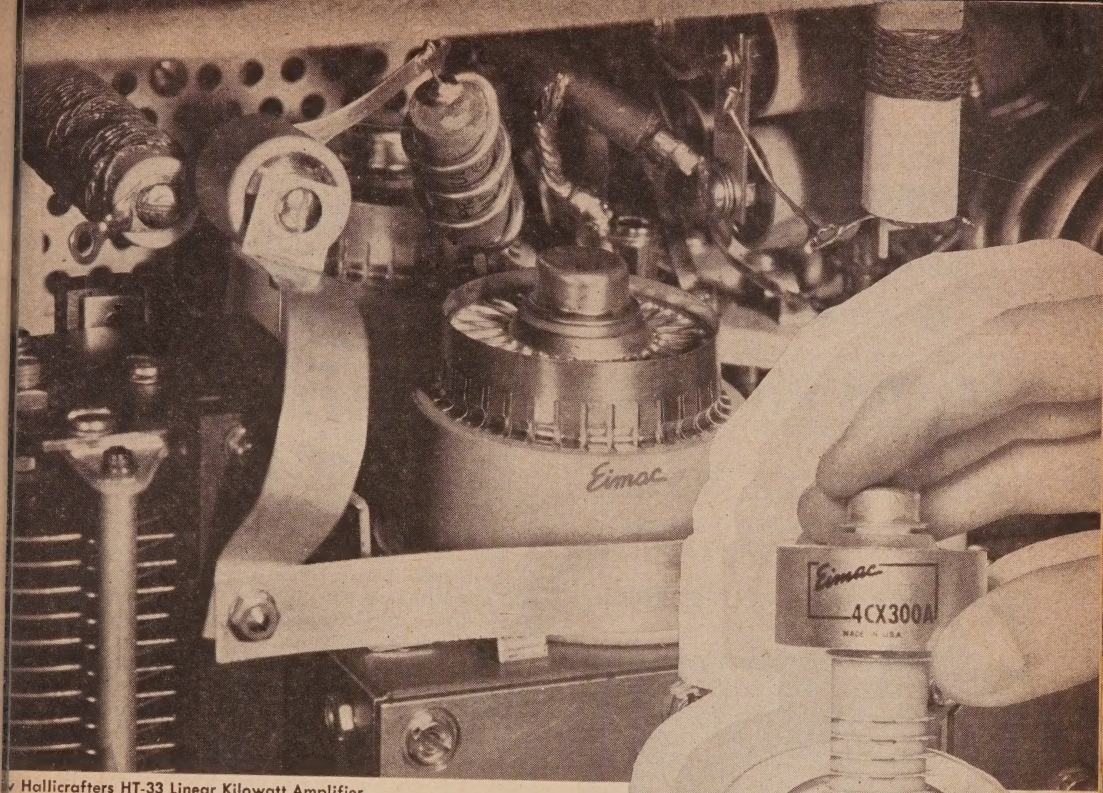
Virgin Islands

That is quite a spot they've got down there. The more I visit the more I like it. You take off from Brooklyn at midnight and by sunrise you are stopping at San Juan for breakfast. Then a short flight to St. Thomas, arriving a little after nine a.m. The islands are breathtakingly beautiful when you come in by air. If you have a camera you can snap some terrific pictures as you approach St. Thomas.

There are some expensive hotels and some reasonable ones too. Judging from the visitors roster at Dick's, most of the hams must move into his spare room. The climate is always warm, running between 75° and 85°. There are few rains, the last real hurricane hit there about forty years ago. During the rainy season little squalls blow over now and then, each one lasting about two to five minutes. Everyone ducks in a doorway for a minute.

The bug situation is amazing. There are a

For further information on EIMAC check number 64 on page 126. →



Hallicrafters HT-33 Linear Kilowatt Amplifier

New Hallicrafters 1 KW Linear uses Eimac ceramic tetrodes

When you look inside Hallicrafters new HT-33 one kilowatt linear amplifier, you will see two Eimac 4CX300A ceramic tetrodes. By choosing this powerful new tube, Hallicrafters engineers assured themselves that the rugged construction, extra long life, and reliable performance you demand in modern transmitters would be inherent in their amplifier.

Here is a practically "break proof" tetrode. Made entirely of ceramic and metal, a pair will easily take a full kilowatt input in SSB, yet they are small enough to fit in the palm of your hand.

To fulfill their exacting requirements, Hallicrafters engineers also chose the Eimac SK-700 air system socket for the HT-33. In addition to providing optimum cooling arrangements for the tubes, they employ screen to cathode bypass capacitors for stable, high-gain operation, and feature lock-in socketing action and extremely low inductance terminals.

For further information on the 4CX300A, contact Eimac's Amateur Service Bureau or visit your Eimac distributor.

EITEL-McCULLOUGH, INC.
SAN BRUNO · CALIFORNIA
EIMAC FIRST . . . with ceramic tubes that can take it.

Eimac

TYPICAL OPERATION 4CX300A Class AB_1 R-F Linear Amplifier (Frequencies to 175 Mc, per tube)

D-C Plate Voltage	1000	1500	2000 volts	Max-Signal D-C Screen Current	25	20	15 ma
D-C Screen Voltage	350	350	350 volts	Peak R-F Grid Voltage	50	50	50 volts
D-C Grid Voltage (approx.)*	—50	—50	—50 volts	Driving Power	0	0	0 watts
Zero-Signal D-C Plate Current	100	100	100 ma	Max-Signal Plate Dissipation	125	150	175 watts
Max-Signal D-C Plate Current	250	250	250 ma	Max-Signal Plate Power Output	125	225	325 watts

*Adjust grid voltage to obtain specified zero-signal plate current.

New! New!

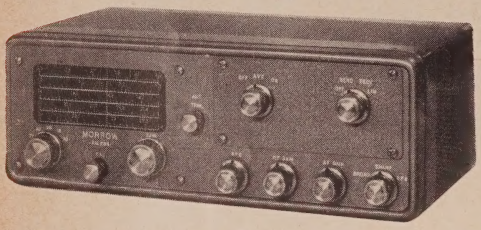
MORROW
PRESENTS
THE

FALCON RECEIVER

FIXED, PORTABLE, MOBILE

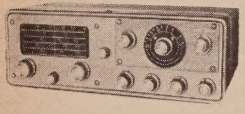
Exactly matches our MB-560-A transmitter in size; interchangeable with MBR-5's cables and power supply.

YOU CAN HEAR THEM WITH THE FALCON!



Amateur net $169.00
Less power supply, speaker and BCT*

SELECTIVE BANDPASS: Narrow 2.8 KC, Broad 9.2 KC at 6DB down.
SENSITIVITY: 1 microvolt with 14DB signal to noise ratio on 10 meters.
DUAL CONVERSION superhetrodyne receiver eliminates images.
Tunes amateur bands 75, 40, 20, 15, 10 meters.
Provision for Broadcast accessory tuner.
Size: 4" high, 11¾" long, 7⅛" deep.
Weight: 6½ lbs.



*Conelrad Monitor and Broadcast tuner accessory (BCT) has its own dial — no retuning required when switching from an amateur frequency to broadcast and back again. BCT amateur net, $19 95. FALCON with BCT installed, $189 00 amateur net (less power supply and speaker)

SEE YOUR JOBBER

Prices Subject to Change Without Notice

QUALITY AND PERFORMANCE

MORROW
radio manufacturing co.
2794 Market St. Salem, Ore.

For further information, check number 80 on page 126.

few ineffectual mosquitoes, and that's about it. Few people have screens. The stores have wide open doors.

There isn't a lot to do there, really, but if you are driven to activity you can keep busy. I rented a Volkswagon and buzzed out to swim at the various beaches . . . Hull Bay, Cokie Point, Magen's Bay, etc. I rented an Aqua-Lung from Caron (Leslie's father) in town and went out diving with the Harmon's, who take a skin diving trip out every morning. They run glass bottom boat tours in the afternoon which you certainly shouldn't miss if you are weak-kneed about going down after your beauty in person.

You probably won't be able to swing a flight in Bill Greer's (KV4BF) Aircoup (wait'll you see my Kodachromes from the air), but you can get one of the local charter planes to take you up for some sightseeing you will never forget. Don't forget your camera. In a few minutes you can fly over St. Thomas, up to St. John, the next island, and then on to Tortola, which is British.

Try to get over to St. Croix, the third of the American Virgin Islands, which is 40 miles to the South of St. Thomas and about a half hour by DC-3. Bill Thomas, KV4BB is usually at the airport tending the CAA equipment. Up on top of the hill overlooking the airport you will see his house and rotary beam. Fishing, sailing, and drinking are popular activities on St. Croix. Rent a car from Sam Pivar, KV4AS and see the island. Take along several rolls of film, you'll need 'em. If you are of a mind to fish try Bill Miller at Christiansted. He will arrange everything quite economically. I went out skin diving with him several times and we had good luck. A couple good sized grouper succumbed to my spearing, plus some other beautiful specimens. The coral reef there certainly is the most awe inspiring I have ever seen.

Doc Randy James, KV4AQ, is available for a minute or two if you get any internal miseries . . . but you have to catch him on the run. He went by me so fast I didn't even get a picture of him. If his race horses are as fast as he is he will win everything on the island.

More of this travelogue stuff some other time, now back to business.

The WPX Award

A new award is always a touchy thing. I was anxious to get the verdict on this one as announced in the January CQ. The response has been excellent. All of the DX'ers are going for it. KV4AA complains that everyone is asking for another QSL for the WPX, so things are already in motion. I have been working on a small booklet which you will be able to use to keep track of your conquests. Wait about another month and we should have all the hot scoop on this big deal. I

[*Continued on page 100*]

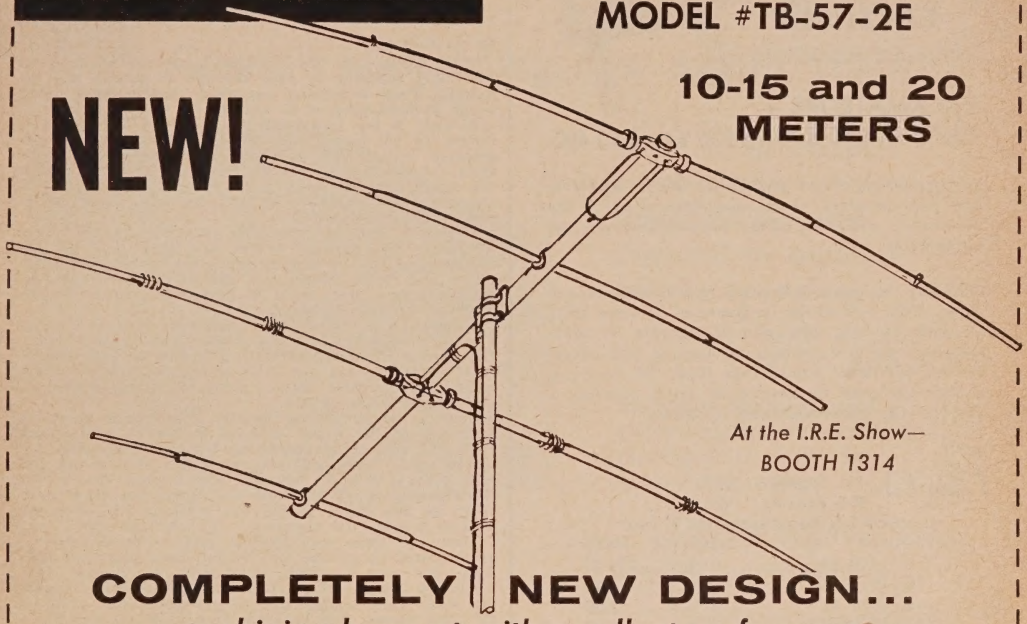
telrex

"TRI-BAND"

MODEL #TB-57-2E

NEW!

10-15 and 20 METERS



At the I.R.E. Show—
BOOTH 1314

COMPLETELY NEW DESIGN...

combining low cost with excellent performance on 3 bands with one transmission line

HOT! PRACTICAL! and FOOLPROOF!
Fully calibrated for assembly to our precise specifications without adjustments or tuning!
36 lbs. of educated aluminum—optimum spaced 2 elements on 3 bands (no interlacing).
Optimum spaced director for 10 meters.
Optimum spaced reflector for 15 meters.
Optimum spaced reflector for 20 meters.
Gain 5.6 or better on each band.
20 ft. boom with tri-band driven dipole —precision adjusted for feeding with a single 52 ohm coax!
Rugged all aluminum construction designed to withstand 80 mph winds.
F/B ratio 18 db or better on each band.
Horizontal beamwidth 65 degrees or better on every band.
Will handle up to 1.5 KW.
V/S/W/R 1.3/1 or better all bands.
Heavy duty gusset mounting plate for mounting to 2" OD mast support (Supplied as standard equipment).
Approximate weight: 36 lbs.
Longest element length: 32'-9"
Turning radius: 21 ft.
Wind load at 100 mph: 4.91 sq. ft., 151 lbs. Can be rotated by Telrex R 100S rotator in winds up to 75 mph.
Note! A heavy duty TV rotator will handle up to 35 mph.

If you are tired of pruning and tuning, and want results worth many times the cost, buy a Telrex "Tri-Band"

$119.75 F.O.B. Asbury Park, N. J.

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TV & COMMUNICATION ANTENNAS
THE STANDARD OF COMPARISON

ASBURY PARK 44
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Tel.: PRospect 5-7252

For further information, check number 92 on page 126.

ONE DAY Processing!.



FA-9 CRYSTALS

For AMATEURS—
EXPERIMENTERS 1500 KC to 50 MC

Wire mounted, plated crystals for use by amateurs and experimenters where tolerances of .01% are permissible and wide range temperatures are not encountered.

CIRCUIT: Designed to operate into a load capacitance of 32 mmf on the fundamental between 1500 KC and 15 MC. Designed to operate at anti-resonance on 3rd overtone modes into grid circuit without additional capacitance load. 5th overtone crystals designed to operate at series resonance. **(Write for recommended circuits)**

Prices Pin Diameter .093"
Pin Spacing .486
(FA-9 Fits Same Socket as FT-243)

FREQUENCY RANGE	TOLERANCE	PRICE
1500-1799 KC	.01%	$ 4.50
1800-1999 KC	.01%	4.00
2000-9999 KC	.01%	3.00
10000-15000 KC	.01%	4.00
Overtone Crystals—3rd Overtone Operation		
15 MC-29.99 MC	.01%	$ 3.00
30 MC-54 MC	.01%	4.00
Overtone Crystals—5th Overtone Operation		
55 MC-75	.01%	4.50
76 MC-90 MC	.01%	6.50

PRECISION CRYSTALS
COMMERCIAL USE
F-6 SERIES
1500 KC — 50 MC

NOTE: The FA units will not necessarily have the correct correlation for Commercial use.
For commercial applications, the F-6 type unit should be used. Write for details!

ONE DAY SERVICE! Crystals are sold direct, for fastest possible service. When cash accompanies order, International prepays Airmail postage; otherwise, shipment made C. O. D. Specify exact frequency and crystal will be calibrated to .01% or better of this frequency.

International
CRYSTAL MFG. CO.
18 N. LEE PHONE FO 5-1165 OKLAHOMA CITY, OKLA.

For further information, check number 75 on page 126.

Letters . . . to the editor

To the Editor:

Until a year ago life had been peaceful and it seemed we would continue to pass through it quietly and unnoticed. Then something happened that changed everything. Richard went on 15 meters.

Richard is my son, aged 12. At 10 he had become a novice. In his novice days the 80-meter rig was a low-powered kit-job and the antenna a beginner's makeshift. On this the boy cut his radio eye-teeth. He worked the locals, came to know them, pumped them for advice and whet his appetite for a better rig, more power, and the general class ticket.

Within a year he was able to drop the "N" from KN2IAD. The day he earned his big ticket his feet left the ground and his ambitions soared skyward. Kilowatts and multi-beams and ground-planes—what they were and how they came to be—seemed the only conversation he was capable of.

I knew I was licked but I stalled as long as I could. Finally, I made the best settlement I could get—a Collins 32v3 and a Hammarlund HQ140X. The new rig arrived. A 40-meter antenna got itself strung astride our apartment and the QSL's began coming in, nearby states and a few more distant points.

Then I did something foolish. I bought a great big wall-map of the world. Richard looked at it long and hard and then asked something I should have said "no" to. He said, "Dad, will you mind if I stick a pin into each place I work?" Sounded like a good idea to me. Businessmen do it to show the territories they work. Can't be any harm in the boy marking his conquests. And so I said, "Of course not, go right ahead."

Then and there was born a passion for pin-sticking as possessed no human ever before. Soon there was only room for pins in such far places as Greece, Iran, Australia, Japan and the Union of South Africa. He had the pins. They simply had to get themselves stuck in all those places. And he knew how to do it, too! That's when I first heard about 15 meters.

From that moment on, the peace at home and goodwill among our neighbors, which we had spent a lifetime cultivating, TVI'd off into the heavens.

Well, sir, I live in an apartment 16 stories up, surrounded by 114 neighbors in our own building and many thousands within the TVI radius. Since 15-meters burst into my ken I haven't come to know them all, but I'm well on my way. I've also joined a gym to restore my muscle-tone. And I don't go out alone at night anymore.

Sincerely yours,
David M. Daynard
55 Central Park West
New York 23, N. Y.

Cord slippage

Gentlemen:

I was having trouble with cord slippage on a tuning shaft altho the cord was quite tight. I applied a small bit of stearic acid (about the size of a pin head) with the finger tips to the shaft and cord and the slipping trouble was over. This is a white powder and obtainable at any drug store. It is harmless and will not damage the cord.

While I am writing I might as well inquire as to why there are very few articles pertaining to receivers. I have had this discussed among the Hams and they, too, find the majority of articles are about Xmtrs and they'd enjoy a yarn more often re receivers.

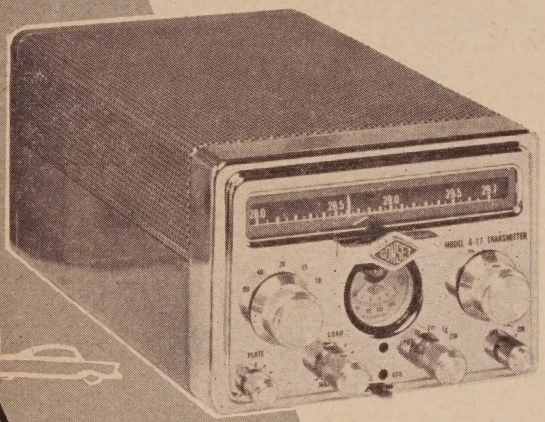
Wade Williams
El Paso, Texas

According to the cards sent in a lot of you readers build your own receivers, but we hardly ever get an article submitted on 'em. How about it, fellows? You write the articles and I'll print 'em . . . that's the way we've been working it, isn't it? —*Ed.*

[*continued on page 110*]

now... G-77

Gonset's outstanding new mobile transmitter



Now . . . in compact combination . . . all the desirable features essential to superior mobile operation

Small—easily mounted—
6½" wide, 4¼" high, 9" deep.

Exclusive design assures exceptionally low battery drain . . . eliminates troublesome high-current relays.

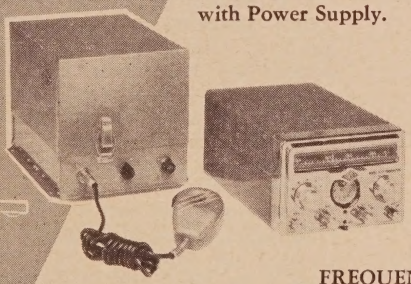
Operates on 6 or 12 volts.

Uses heavy-duty vibrator . . .

Has output voltage of 500-600, full load . . .

Many features, including dry rectifiers, eliminate rectifier standby drain, greatly minimize overall drain . . .

A "Hot", effective and efficient modulator permits fullest modulation . . . has integral speech clipping . . .



G77 Transmitter with Power Supply.

FREQUENCY RANGE: 80-40-20-15-10 meters . . .

FREQUENCY CONTROL: VFO or crystal. (Switchable). Each band is spread over calibrated dial scale . . .

POWER INPUT: 50-60 watts. (Modulated) CW provisions.

OUTPUT CIRCUIT: Pi network. Output tube, type 6146.

CONTROL: Full press-to-talk. Built-in antenna relay.

Price . . . including power supply 279.50
(Less microphone and crystal)

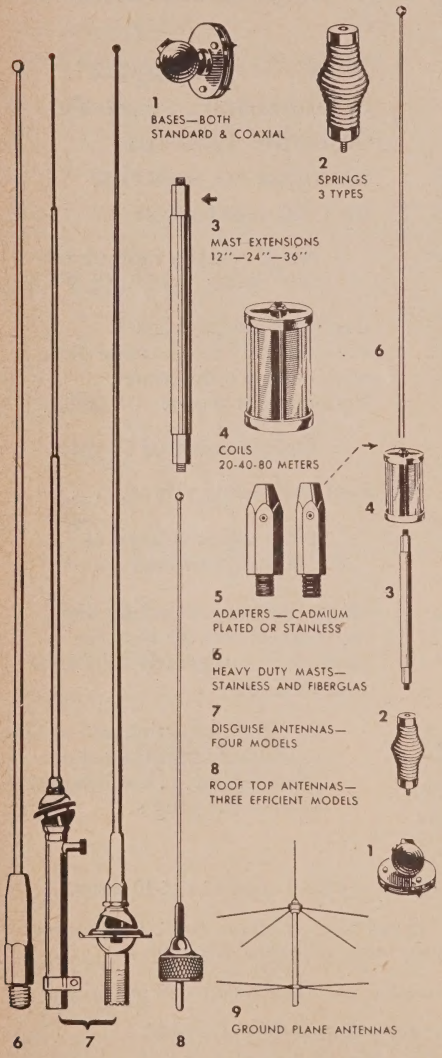
GONSET . . . . . Burbank, Calif.
DIVISION OF L. A. YOUNG SPRING & WIRE CORPORATION.

GONSET

For further information, check number 68 on page 126.

New complete line for communication Ward Antennas

Pioneer antenna maker now adds new bases, new masts, new springs and coils for all your requirements . . . in all price ranges.



See distributor or write for newest catalog

Ward PRODUCTS CORPORATION
A division of THE GABRIEL COMPANY
Dept. CQ — 1148 Euclid Ave. — Cleveland 15, Ohio

In Canada: Atlas Radio Corp., Ltd.
50 Wingold Ave., Toronto, Ontario

For further information, check number 94 on page 126.

Apology to Adm. Bruton

February 1, 1957

H. C. Bruton, Rear Admiral US Navy
Director, Naval Communications
Room 4C677, Pentagon Building
Washington 25, D. C.

My Dear Admiral Bruton:

I take this means of expressing my apologies to the US Navy, and to you, for the article published on page 19 of the February 1957 issue of "CQ" magazine, of which I am publisher. The article was written during my absence from New York and I hasten to assure you that I neither read nor approved of it before its publication. Even if every statement in the article were supported by irrefutable written proof I would not have authorized publication of certain derogatory opinions expressed by the writer concerning Navy procedures. More important, I most certainly would not have authorized publication of the personal attack on you. I would at this time like to repudiate the article in its entirety and I say to you, Sir, that I sincerely regret that it appeared in print.

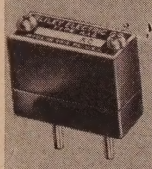
It is my opinion that the writer of the article, primarily because of his enthusiasm to push his project within very narrow time limits, neglected to present a more factual picture for CQ's readers. Because the major part of the writer's efforts was necessarily handled via long-distance telephone conversations, and with almost a score of different individuals, misunderstandings arising therefrom contributed to the interpretations which were subsequently printed. Naturally, as an ethical publisher, I cannot and do not condone such reporting.

I especially regret the statements in the article attacking you personally. I am well aware of your outstanding Naval career, your outstanding war record, wherein you were awarded the Presidential Unit Citation and you wear that Ribbon for meritorious service as a submarine commander in the Battle of Midway; for your subsequent awards of the Commendation Ribbon and Combat "V", the Navy Cross for extraordinary heroism and Gold Stars in lieu of a second and third Navy Cross. I also fully appreciate your fine reputation in the Navy and in the Communications-Electronics field and your continuing interest in amateur radio over many years. Certainly there is no justification for an attack on your character and reputation, basically because you rendered a decision in your official capacity as the Director, Naval Communications, with which our writer may not have seen fit to concur.

I am also aware of the many active radio amateurs in the Navy and the Naval Reserve, and of the Navy's interest in support of amateur radio at its shore activities. I hope that it will be possible in the near future for the Navy

[*Continued on page 109*]

BLILEY NOVICE BAND CRYSTALS



AX2

BAND	MULTIPLIER	CRYSTAL FREQ. RANGE	TYPE	PRICE
80 Meters	1	3700.0 to 3750.0 kc's	AX2	$2.95
40 Meters	2	3587.5 to 3600.0 kc's	AX2	2.95
40 Meters	1	7175.0 to 7200.0 kc's	AX2	2.95
15 Meters	1	21,100 to 21,250.0 kc's	SR10	8.50
15 Meters	3	7033.33 to 7083.33 kc's	AX2	2.95
15 Meters	6	3516.66 to 3541.66 kc's	AX2	2.95
2 Meters	6	24,166.66 to 24,500.0 kc's	SR10	8.50



SR10

Bliley CRYSTALS

BLILEY CRYSTALS FOR SPOT FREQUENCIES IN NET OPERATIONS



MC9

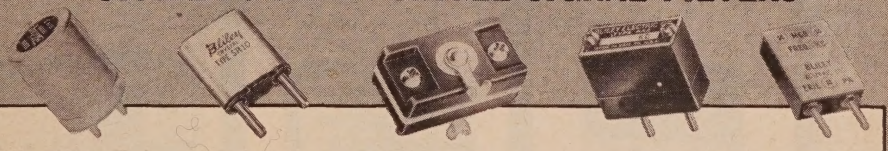
TYPE	APPLICATION	TOLERANCE	PRICE
MC9	3 mc-12 mc experimental frequencies	± .03%	$6.50
SR10	12 mc-27.5 mc experimental frequencies	± .03%	8.50



SR10

Bliley CRYSTALS

BLILEY CRYSTALS FOR AMATEUR • EXPERIMENTAL CITIZEN'S BAND • SINGLE SIGNAL FILTERS



KV3 SR10 CF6 AX2 MC9

TYPE	APPLICATION	TOLERANCE	PRICE
KV3	Reference Frequency 100 kc	± .005%	$8.50
MC9	Marker Frequency 1000 kc	± .05%	8.00
MC9	13.6275 mc (Multiplier to 27.255 mc) CITIZEN'S RADIO SERVICE (CLASS "C")	± .04%	5.50
SR10	27.255 mc (3rd Overtone Crystal) CITIZEN'S RADIO SERVICE (CLASS "C")	± .04%	5.50
CF6	455 kc — 456 kc — 465 kc Single Signal Filters	± 5 kc	4.50
AX2	1800-1825 kc; 1875-1900 kc; 1900-1925 kc; 1975-2000 kc	See Note A	3.75
AX2	3500-4000 kc; 7000-7425 kc; 8000-9000 kc	See Note A	2.95
AX2	14-14.5 mc	± 10 kc	3.95

Note A: We will supply to integral spot frequencies (no fractions) as ordered; calibration ± 500 cycles in factory test oscillator.

NEW HIGH STABILITY PACKAGE WITH 100 kc AND 1000 kc CRYSTALS

This compact temperature controlled package provides a high stability reference source at both 100 kc and 1000 kc. Precision reference for general amateur use.

TYPE	DESCRIPTION	STABILITY	PRICE
TCO-2L	6.3V Oven	75°C ± 5°C	$ 9.00
BH6A Crystal	1000 kc	± .0002%	12.50
BH9A Crystal	100 kc	± .0005%	11.00



TCO-2L

Crystal units described are calibrated in recommended oscillator circuit—adjustable to zero beat (at 75°C) in this circuit.

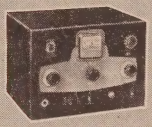
BLILEY ELECTRIC CO. UNION STATION BUILDING **ERIE, PA.**

Major producers of crystal units, crystal ovens, oscillator assemblies and solid ultrasonic delay lines for commercial and military equipment.

For further information, check number 57 on page 126.

Punch your signal home ...with one of these 4 VIKING full power* amateur rigs!

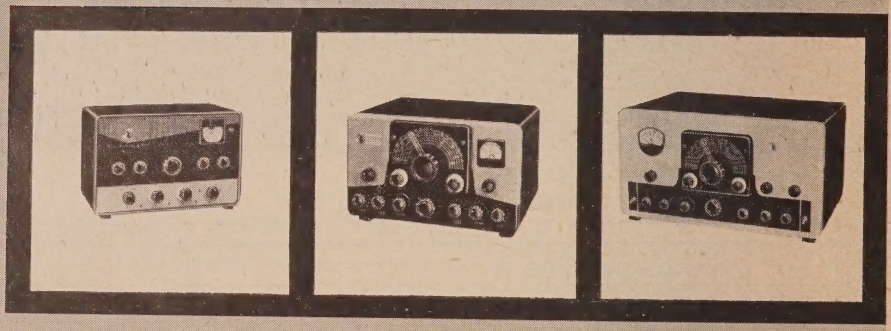
* Top performance isn't simply a matter of watts. Only carefully integrated equipment design can be counted on to develop effective power that punches your signal home, every time. That's what we call "communication power" . . . and your Viking transmitter delivers it in full measure! Viking transmitters are engineered for outstanding flexibility and performance. Integrated in design from their rugged, highly stable VFO through high effciency output circuits, Viking transmitters deliver *full* communication power!



"ADVENTURER"

VIKING "ADVENTURER"—Used to earn the first Novice WAC! (Worked all continents.) Self-contained, effectively TVI suppressed, rated at 50 watts CW. Instant bandswitching 80 thru 10 meters—operates by crystal or external VFO. Break-in keying is clean and crisp. Wide range pi-network output handles virtually any antenna without a separate antenna tuner. Designed for easy assembly. With tubes, less crystals and key.

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



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Cat. No.	Amateur Net
240-104-1 Kit	$349.50
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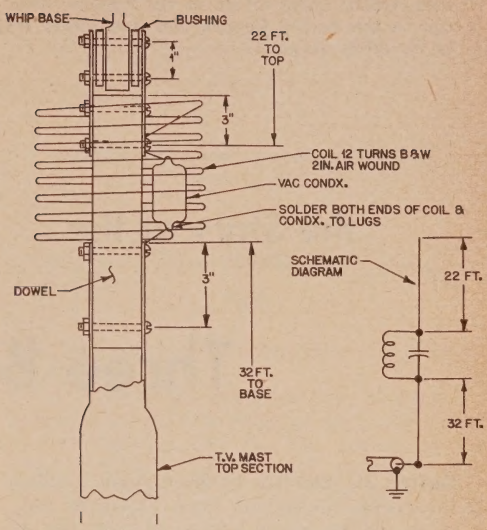
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For further information, check number 76 on page 126.

Another How-To-Do-It for you rag chewers . . .



all-Band Vertical

Herbert W. Harmon, W6BXZ
10156 Amboy Avenue
Pacoima, California

That trap system of multi-banding beams might just be the thing I needed for an all-band vertical. Ideas like that strike now and then . . . this one kept teasing me until I gave in and tried it out.

Construction

I dug out the hack saw and a pile of old tubing, retired to the back yard, and got down to business. What I had in mind was building one half of the W3DZZ all-band antenna which was described in the March 1955 QST, and standing it on end. This meant I would end up with something about 54′ high, which was within reason. The only real ingenuity was called for when it came to inserting the trap at the 32′ level. This was taken care of by using a hickory dowel as an insulator and fastening the vacuum condenser (from a surplus antenna relay unit) and coil in place. The coil was made from Air Dux #1608 or B & W #3900 coil stock, about 12 turns of 2″ diameter at 8 turns per inch. Cut the coil to resonate at 7200 kc.

I settled for one of those 40′ TV masts from the local radio-parts house for the bottom section (with a little removed) and invested in a surplus whip antenna (comes in screw together sections) for the top twenty-two feet. So far it has remained vertical through sixty-mile winds with only one set of guy wires.

Firing Up

Once erected, I connected coax to the end, grounded the shield, and fired up on 80 meters. Glory be! It loaded just fine. Next, lets try forty. Mmmm, OK there too. Ditto for twenty, fifteen and ten. The only time I had seen loading like that was when I used a 50 ohm resistor. But was it working? Three quick QSO's on forty phone right through the early evening QRM, a few on 75 under miserable conditions, and some checks on twenty, fifteen and ten showed that it was indeed radiating all that r.f. The angle of radiation on the higher bands is somewhat higher than you would get with a beam, but this makes it possible for much better stateside contacts and is quite an advantage to rag chewers like myself.

So there you have it . . . an all-band vertical which is inexpensive to construct, easy to put up, and does a bang up job. ■

Multi-band beams are of top interest these days. CQ is proud to present this article by the pioneer in the field, G4ZU, whose article in the February 1956 RSGB Bulletin sparked most of the multi-band beams now on the market. Captain Bird here proves that he is still two steps ahead of everyone else and gives us his latest designs.

Capt. G. A. Bird, G4ZU
94 Shirley Way
Croydon, Surrey, England

the Story of the

Three Band Minibeam

During the past two or three years, a steadily increasing interest has been shown by amateurs in the problems associated with the design of multi-band directional antennas. This can be explained partly by the growing popularity of band switched transmitters and more particularly by a desire to explore the possibilities of the fifteen-meter band, which is rapidly becoming a serious rival to ten and twenty-meters for long distance DX work.

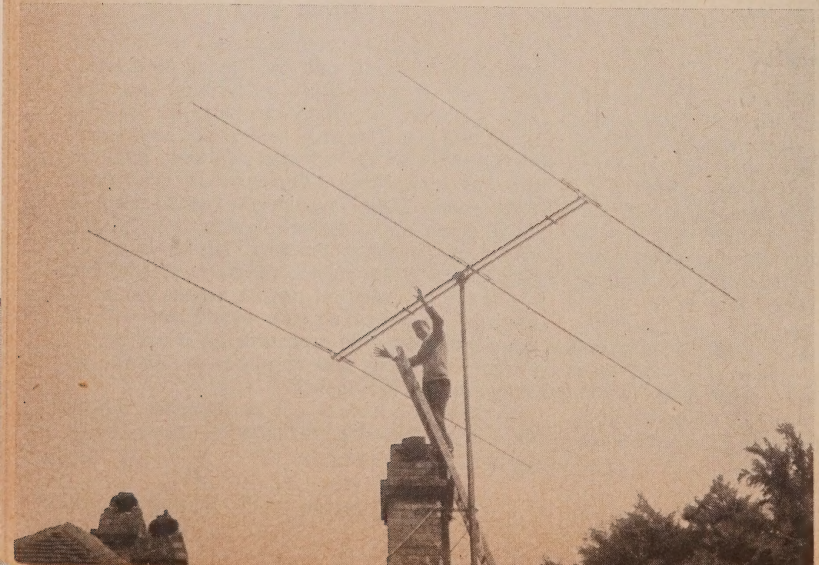
The writer therefore, makes no apologies for submitting what is, to all intents and purposes, a case history of his experiments, both successful and otherwise, with multi-band antennas.

It is hoped that by recording details of the results obtained with several different patterns, readers will be able to select the type which appeals to them most.

Although antenna design inevitably involves a fair amount of calculation, every effort has been made to restrict mathematical treatment to a minimum and whenever possible, reference is made to work by other writers where it is felt that the reader might wish to embark on a more detailed study of a particular point or if it seems desirable that the performance claimed should be substantiated from some independent source.

Prior to 1953, the only antenna in regular use at G4ZU was a two element twenty-meter beam. As antenna space was very restricted, this beam used coil loaded elements to reduce the total span and to avoid overhanging neighboring property. It had been found by experiment that twenty-three feet was about the shortest length which could be tolerated on twenty meters without serious loss of efficiency. Previous attempts to reduce the span to sixteen feet had resulted in a drastic reduction of forward gain and band width, although the front to back ratio remained at a more or less normal figure[1].

While pondering the problem of how to get on fifteen-meters it occurred to the writer that



The Author with his 3 band beam

if the loading coils on this twenty-meter beam were shorted out, its resonant frequency would not be far off 21 mc. The prospect of covering both twenty and fifteen meters with a single antenna proved so attractive that as a trial a relay was mounted at the centre of each element so that the loading coils could be switched in and out of circuit as required (*fig. 1*).

Tests were conducted on the antenna in this form during the early part of 1953 with quite promising results. The performance on twenty-meters did not appear to be impaired in any

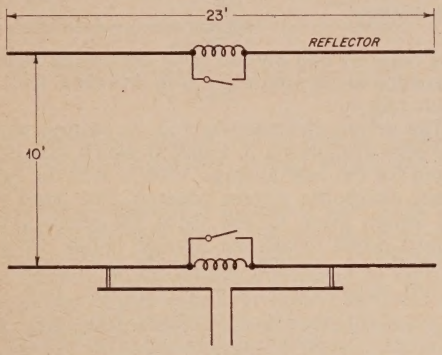


Fig 1.

way (something like 200 different countries had been worked on this band) and the gain and front to back ratio on fifteen-meters seemed well up to standard. Full advantage was taken of the DX openings which occurred on this band from time to time, and it was not long before a hundred different countries had been worked on fifteen-meter phone.

Although it was naturally very pleasant to have a beam in operation on fifteen-meters at a time when so many other stations were struggling along with dipoles, it was realized that before long something would have to be done about ten-meters. So far this band had remained more or less dormant but it was obvious that some time in the not too distant future it was suddenly going to burst in to full activity, and it would not do to be caught napping.

To keep one step ahead on ten-meters would demand some careful preparation. Although it might have been possible to extend the coverage of the existing antenna so as to include ten-meters, it was felt that the additional loading coils, relays, and control wires would make the system unduly complicated and the possibility of contact trouble developing in an inaccessible position at the top of the pole was not a very happy thought. Having recorded all the appropriate data the beam was therefore dismantled and stowed away so that tests could

Ref 1. W6SAI Beam antenna handbook. Page 67. (It is probable that Bill Orr's figures refer to 20m beams with 16-17 ft. elements.) Also see appendix to this article, Para 6.

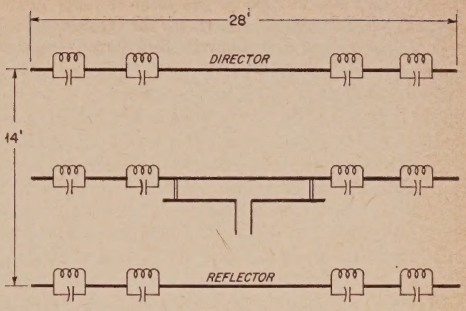


Fig 2.

be conducted on a *three* band beam of a different pattern.

This new beam employed the well known system of tuned traps inserted along the length of the elements (*fig 2*). The tuning of this beam proved to be far more laborious than was anticipated as there was considerable interaction between bands and every time it rained the traps had a tendency to go off resonance. Difficulty was also experienced in obtaining a satisfactory standing wave ratio. After a lot of juggling a figure of 1.5:1 was achieved at a spot frequency in each band but it was found that the VSWR rose to 10:1 or more towards the band edges. Some misgivings were also felt regarding the mechanical weakness introduced at the points well out in the span of the elements where the tuned traps were inserted.

The performance on twenty-meters appeared to be quite up to the standard of the original beam and excellent results were also obtained on fifteen and ten-meters. It was found however that the back to front ratio fell off very badly in wet weather. It was never really established whether this was due to electrical breakdown of the trap insulation or merely the result of moisture collecting on the coils. It is probable that ways have been found of avoiding these troubles with the commercially made beams of this pattern which have recently become very popular.

After using this beam for some months it was decided that the size and weight were rather too great for comfort, particularly in view of the fact that on ten and fifteen-meters only a portion of each element was doing any useful work. In addition it was found that the band width of the traps was not sufficient to maintain uniform performance over the full extent of these bands. This, combined with the high SWR towards the band edges was a matter of some concern as serious DX work frequently involves a trip down to the c-w portion of the bands as well as activity well up in the phone segment. It is true, of course, that many single band beams have been known to suffer from exactly the same defects.

It began to look as though this beam was unlikely to make the grade as a permanent installation, but before finally dismantling it some

thought had obviously to be given to the alternatives which were left. It was wondered at first whether a separate ten and fifteen meter beam stacked above a twenty meter short beam would fill the bill, but after reading of the difficulties experienced by others who had embarked on structures of this nature it was decided that it would be merely a waste of time. In pretty well every case writers reported loss of forward gain, poor front to back ratio and serious changes in VSWR when attempts had been made to stack beams in close proximity.[2] The weight and wind resistance, quite apart from the rather unsightly Xmas tree appearance of 3 beams stacked one above the other would in any case have made it unsuitable for an urban location.

Matters now seemed to be approaching a condition of stalemate. The summer of 1954 was well advanced and the neighbors, who had seen these curious structures go up and down, had passed the stage of mild amusement and were beginning to have doubts regarding my sanity (I began to wonder myself!). It seemed that if I didn't find any answer soon I would be coming close to giving up amateur radio altogether. I read feverishly through every article I could find on antennas for years back, but all to no avail. The only hope left was to go right back to the beginning and approach the problem from a new angle. After a certain amount of figuring I hit on an idea which appeared to have possibilities.

How about using the original set up of *fig. 1* but do away with the relays by using stub switching? The idea was at least worth a trial, so I strung a ten-meter dipole across the living room with a loading coil at the center. Across the loading coil I connected a stub made of 300 ohm twin feeder, ¼-wave long at ten-meters. A little juggling with the turns in the loading coil and a check with a GDO and to my delight I found I had an element that would resonate equally well on ten or fifteen-meters (*fig 3*).

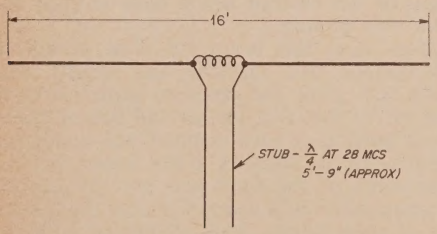


Fig 3.

On ten-meters the open circuited ¼-wave stub provided an effective short circuit across the loading coil so that the wire behaved like a straight-through element. On fifteen-meters the stub merely looked like a small capacity across the loading coil so that the number of turns required for resonance was somewhat less than I had expected. From here it was not

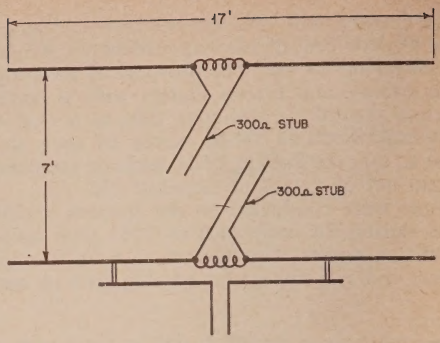


Fig 4.

long before I had my old relay controlled beam converted to an automatic stub switched 10/15 beam (*fig 4*).

The driven element was fed, as before, with 300 ohm ribbon via a T-match which was adjusted for the best average VSWR over the two bands which the system covered. For want of any better place to put them the stubs were pushed down inside the tubular boom, which resulted in a nice tidy appearance and guarded against deterioration due to hot sun, rain or

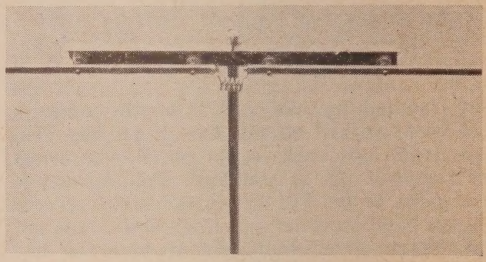


Fig 5.

heavy icing. The elements were supported on insulators mounted inside a piece of U-section channel which protected both the loading coils and the insulators from the rain (*fig 5*).

On the air tests were so promising that it was decided to extend the scope of the system to cover 20-meters as well. A three element beam with a 10/15 director and a 15/20 reflector seemed to be a logical beginning.

The driven element presented the biggest problem. It would probably have been possible to use stubs and coils as on the parasitic elements, but it was felt that this would make the whole set up rather too complex. A trap loaded driven element after the style of *fig 2* was another possibility. It was clear that if the driven element was unloaded and was an exact resonant length on any one band the impedance fluctuations when going from one band to an-

Ref 2. Beam antenna handbook. Page 65.

For further information see: RSGB Bulletin of Feb 1956. 'The G4ZU three band Minibeam'; Amateur Radio Sept. 56, published by Wireless Institute of Australia; New Zealand Amateur magazine, Break-In. Aug 56. The Malayan Amateur Radio Magazine for March-April-May-June, 'Tuning the Minibeam!' in Sept-Oct 56 issue. Also RSGB, Dec 56.

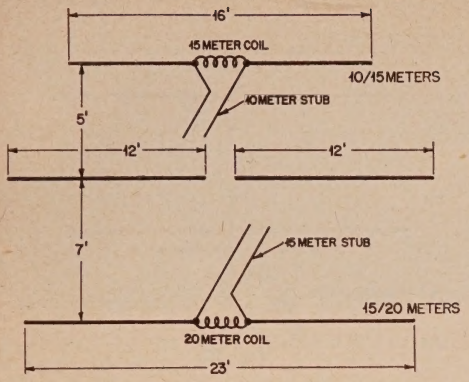


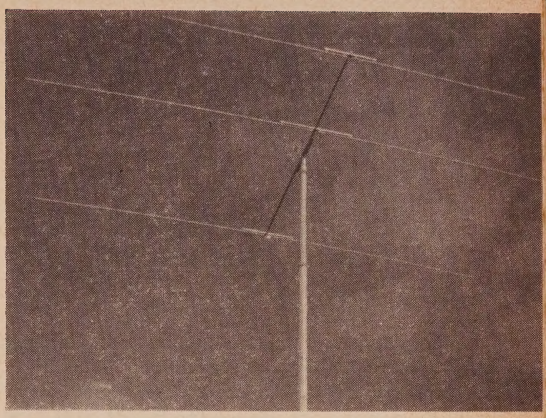
Fig 6.

other would be greater than could be readily accommodated with any normal matching system.

Previous experience indicated that traps in the driven element should be avoided if at all possible due to the risk of electrical breakdown and the structural weakness inherent in an arrangement of this nature. It should be noted at this point that although half-wave driven elements are normally employed in parasitic arrays, this is by no means essential and in certain cases there may be definite advantages from the point of view of gain and radiation resistance in using a length other than half-wave. After a certain amount of experimental work a length of 24 feet was finally chosen for the driven element. Providing fairly large diameter tubing was used, the reactance changes could be taken care of with a very simple compensating network, and with the aid of a matching section of open wire line or 300 ohm ribbon a substantially resistive feed impedance of about 50 ohms was obtained on all three bands. (This matching system will be described in more detail later in the article.)

The total weight of the beam was found to be just on ten pounds and in view of its compactness it was given the name of THREE BAND MINIBEAM. The overall dimensions of the beam are shown in *fig 6*. And some idea of the general appearance can be gained from the photograph, *fig 7*.

An attempt will now be made to analyze the behavior of the beam in detail band by band. To start with ten-meters it might be well to refer to an article which appeared in the April 1955 issue of QST written by W6AJF. In this article it was shown that a four element beam (*fig 8*) could be replaced with advantage by a three element array using shortened driven elements and a single close spaced *director* (*fig 9*). It was claimed that an arrangement of this nature provided a higher front to back ratio and resulted in no loss of forward gain, although the saving in overall size and weight was considerable. (The measured gain over a dipole is 7 db.)


Fig. 7

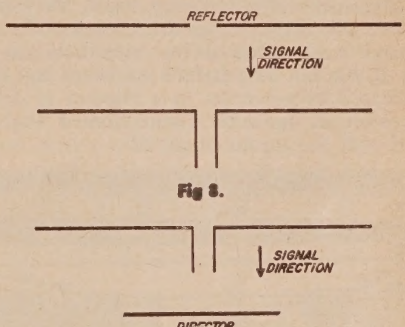


Fig 8.

Fig 9.

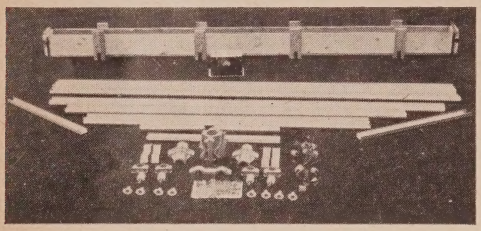
Referring back to *fig 6*, it will be observed that the positioning of the elements is very similar if one disregards the reflector. It might be thought at first sight that the reflector would serve no useful purpose on ten-meters, but, as a result of the relatively wide spacing on this band it was found in practice that it would operate successfully as a passive reflector. The performance was not far short of that which could be obtained with two half wave reflectors in phase. In addition to improving the front to back ratio the reflector also provided an improvement in forward gain of something like 2½ db, making the overall gain approximately 9½ db. It will be seen that on ten-meters the beam is effectively a five element array and gives considerably more gain and greater band width than could be obtained with five elements in line on a boom of the same length. The band width is probably sufficient to cover the eleven-meter band as well as ten-meters.

Turning now to fifteen-meters, as the director and reflector are both fully resonant on this band the Minibeam can be expected to give a performance which is well up to the standard of a normal three element close spaced beam. If anything, the gain tends to be somewhat higher and the radiation resistance is advantageously increased due to the lengthened driv-

en element (approximate gain 7½-8 db).

No attempt was made to resonate the director on twenty-meters as this would have provided no increase in gain and would probably have lowered the radiation resistance to a point where the efficiency would be seriously impaired.[1] The antenna is therefore a shortened close spaced two element beam as far as 20 meters is concerned and the gain will be somewhat less than the figure for a full size twenty-meter beam. The efficiency should however be superior to that given by some of the sixteen-foot long miniature beams which are apparently being used quite happily on twenty-meters in various parts of the world.

The Minibeam was used in this form during the Spring and Summer of 1955 and a large number of tests were made on each band against a dipole at the same height and also comparative checks against other stations using separate beams for each band. Very great interest was shown in the Minibeam and many requests were received for constructional details. It was not long before the beam had been duplicated by amateurs in a number of different countries, most of whom seemed well satisfied with the results obtained.



Above is a commercial Minibeam with its shipping crate. It packs to a seven foot long package.

Towards the end of 1955 the writer was invited by the Radio Society of Great Britain to give a lecture on the Minibeam at the Institution of Electrical Engineers in London. This meeting was so well attended that it became a matter of "standing room only" and shortly afterwards approaches were made by several engineering firms with a view to marketing the beam commercially.

In the meantime a certain amount of work had been done on the prototype of a Minibeam in which loading coils could be eliminated altogether. One model had already been constructed and tested on VHF, but difficulties had been experienced in obtaining castings and fittings for a full size version. Full recognition must be given, at this stage, to the *Panda Radio Co. Ltd.* of Rochdale, who very generously put their engineering facilities at my disposal and arranged for the manufacture of the parts required.

The first design of the new pattern to be tested was a two band beam for ten and fifteen meters working on principles somewhat similar to the original two band beam of *fig 4*. The

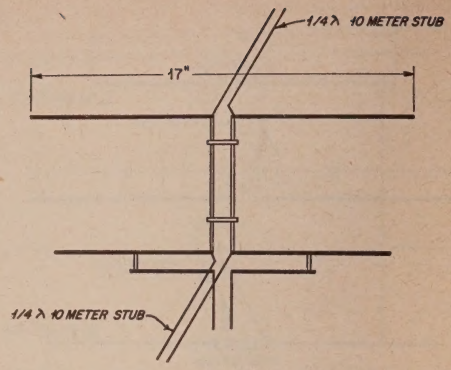
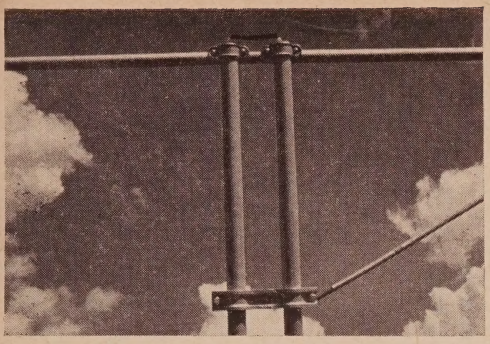


Fig. 10.

main difference is that the loading coils have disappeared and the single boom has been replaced with a twin boom, complete with two adjustable shorting bars (*fig 10*). The radiator and reflector were split at the center and connected to the two legs of the twin boom by means of right angle castings. On ten meters a straight through path was provided on each element by connecting a ¼ wave stub across the gap in the center, these stubs then being pushed one down each leg of the boom. The beam therefore operates on this band exactly like any normal two element beam, and can be resonated by adjusting the element lengths in the usual fashion. The tuning of the beam on ten meters will not be upset by any subsequent alteration in the position of the shorting bars as these form no part of the electrical circuit on this band. This can be verified by placing a shorting strap across the center of each element and it will be found that the performance on ten meters will remain unchanged.

The tuning of the beam on fifteen meters is controlled by the position of the shorting bars. On this band the stubs no longer behave as a short circuit, but look more like a small capacity across the center of the elements. The current flowing in the elements is therefore forced to take the path down one leg of the boom to the shorting bar, across the shorting bar, and back up the other leg of the boom. It is not therefore necessary to make any adjustment to the element lengths. The section of the twin boom between each element and its associated shorting bar is in effect providing inductive loading and the precise amount of loading can be varied in a very simple and convenient manner merely by sliding the shorting bars up and down the boom. This mechanism has been given the name of "trombone tuning." The amount of the total element length absorbed in the boom is less than would be expected at first sight. This is because the stubs provide a certain amount of capacity loading across the boom sections. The exact position of the shorting bars for correct operation on fifteen meters will vary somewhat according to the capacity of the particular ma-



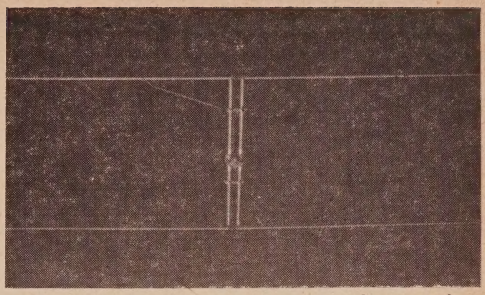


Fig 11. A two band stub tuned beam with gamma match feed system.

terial used for the stubs, but an average setting is 18 to 20 inches.

It will be appreciated that this design represents a considerable advance over the original coil loaded version of *fig 4*. Resistive losses in the twin boom loading sections will obviously be much lower than with loading coils. In addition, the tendency towards detuning in wet weather, which is such an annoying characteristic of coil loaded beams, is completely eliminated. The stability is, in fact, of such a high order that the beam can, if desired, be dismantled and reassembled at another location with good prospects of the tuning remaining on the nose.

A "T" match can be used to the driven element with balanced feeder. If it is desired to use coax feed with a gamma match it is important that the outer conductor of the coax be bonded to the radiator shorting bar and the gamma rod returned to the same point (*fig 11*).

With a little experimenting it is not difficult to obtain a satisfactory SWR. The variables are, of course, the length and diameter of the gamma rod, the tapping point on the driven element, and the capacity of the series condenser.

Once it had been established that the twin boom design with trombone tuning was working according to plan, no time was lost in developing a twin boom version of the *three* band minibeam (*fig 12*).

Referring to the diagram it will be observed that the overall dimensions remain virtually

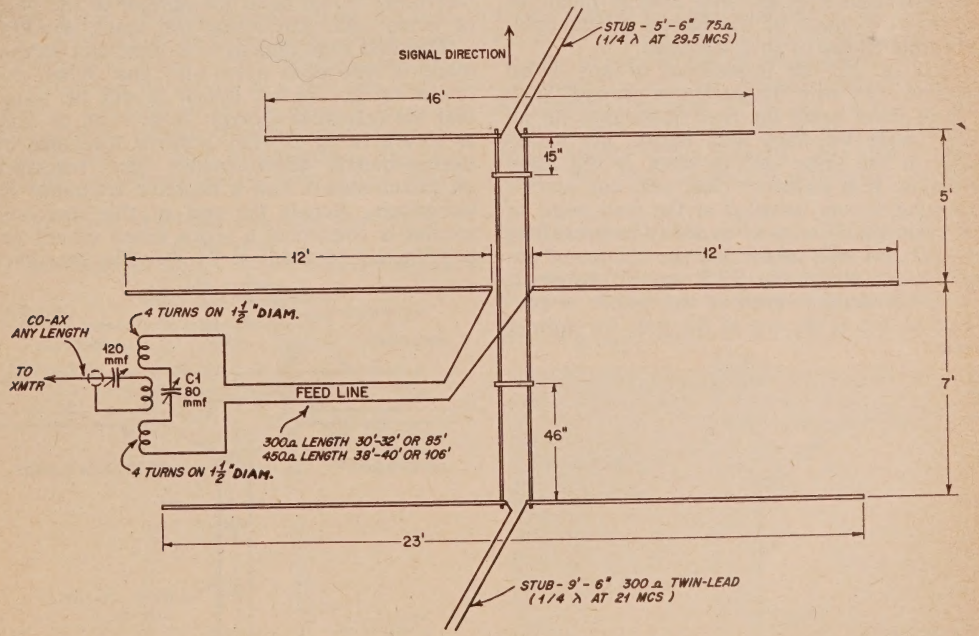
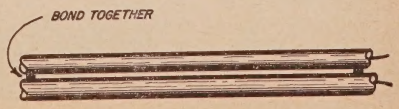


Fig 12. Three band beam. For high power the director stub can be made of two pieces of 50 ohm coax back to back as shown at right. Corks can be threaded along each stub to keep it centrally dispersed in boom. Boom diam should be at least 1½" to avoid excess capacity to stubs.



unchanged, but the loading coils have been eliminated through the use of a twin boom with 'trombone tuning' sections for both the director and reflector. The ¼-wave stub across the center of the director is resonant at approximately 29.5 mc and enables it to operate as a straight through element on ten-meters. On fifteen-meters the section of twin boom between the director and the shorting bar comes into play and provides the requisite amount of inductive loading.

In a similar manner the reflector, which is self resonant a little below 21 mc, has connected across the center a ¼-wave stub tuned to the same frequency.

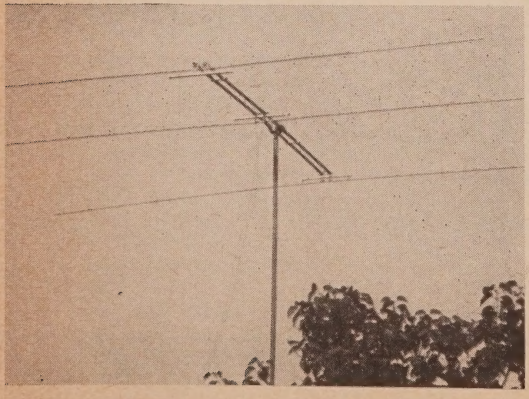
On twenty-meters the twin boom section provides inductive loading which enables the reflector to operate in the correct manner on this band.

As far as the driven element is concerned, the original form of construction with a twenty-four-foot element was retained so that the beam could continue to function as a five element array on ten-meters.

The overall performance on ten, fifteen and twenty meters was found to be well up to the standard of the original coil loaded Minibeam and the stability was such that even under conditions of heavy icing it continued to function in the normal manner.

Before embarking on a description of the somewhat unusual method of feed adopted for the Minibeam it is felt that readers might be interested in some of the factors which influenced the choice of such a system.

First of all, the impedance of any beam tends to vary with height above ground. With a three band beam the feed impedance on all three bands will vary with height, not necessarily at the same rate or even in the same direction. It is therefore clear that any sort of matching system installed at the feed point of the beam itself, must, of necessity be something of a hit and miss affair, and the chance of obtaining an acceptable SWR on all bands is somewhat slender, even if the owner is prepared to live at the top of the pole for quite a while.



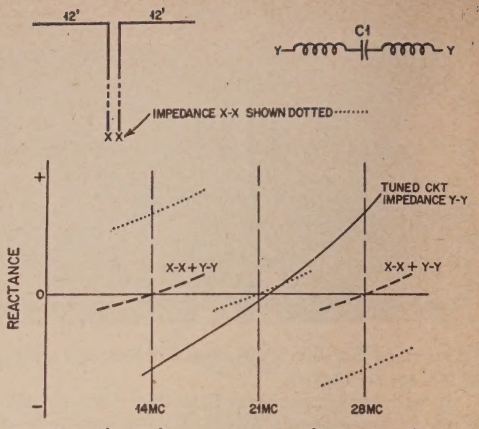
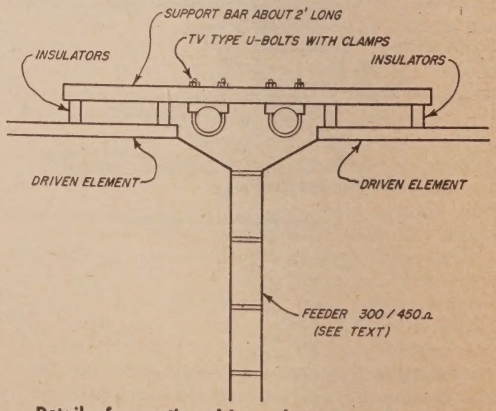


Fig 13. Chart shows reactance changes at bottom of matching section and opposite reactance changes in tuning unit which cancel to give zero reactance on each band.

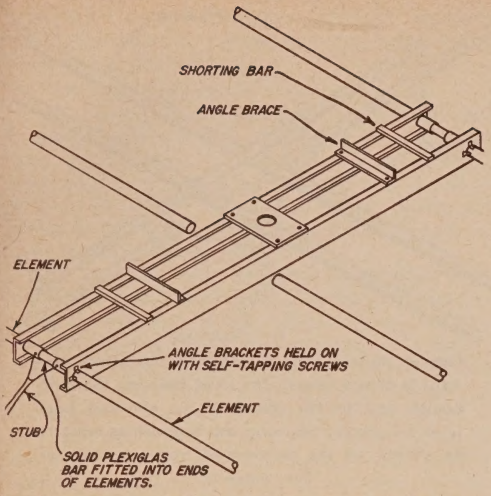
Secondly, no antenna is capable of maintaining a resistive feed impedance of constant magnitude over the full extent of an amateur band. Increased losses due to standing waves are therefore accepted as inevitable with normal methods of feed when operation near the band edges is contemplated.

It was therefore decided that the most convenient position for the matching system of the Minibeam would be at the *bottom* of the pole, or better still, just inside the shack window.

The first requirement is a matching section made of 450 ohm open wire line. When this is cut to the correct length it will be found that the reactance changes from band to band as shown in *fig 13*, i.e., positive reactance on twenty-meters, approximately zero reactance on fifteen-meters and a negative reactance on ten-meters. Across the end of this matching section is connected a series tuned circuit approximately resonant at 21 mc. The reactance



Detail of mounting driven elements and attachment of open wire feeders. At left is shown experimental Minibeam fed with open wire line.



Above is one method of constructing twin booms using angle aluminum. Hollow 1¼ in thick tubing of plexiglas if available, could be fitted over elements instead of the bar fitted into the ends as shown.

slope of this tuned circuit will be in an opposite direction, i.e., negative, on twenty-meters through zero on fifteen-meters to positive on ten-meters. If the L/C ratio is suitably chosen it will be seen that the sum of the reactances on each band will tend towards zero. This means that we have a system which will resonate automatically on three bands without adjustment. The tuned circuit can be coupled to the transmitter by means of a link and coaxial feeder of any desired length. With a *two turn* coupling link correct transmitter loading was obtained on ten and fifteen-meters but the coupling on twenty-meters was found to be slightly less than optimum. To correct this the reactance of the link was tuned out on twenty-meters by means of a series condenser of approximately 120 mmfd. This provided tighter coupling on twenty without affecting conditions on the other two bands to any marked extent.

In normal operation the transmitter can be switched from band to band without making any adjustments to the matching system and on the few occasions when operation is required right on the band edges it is a simple matter to tune out any reactive component by means of C_1, thus ensuring the lowest possible SWR in the coax feeder.

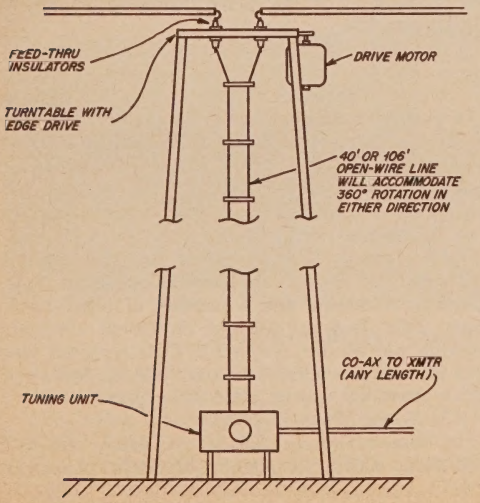
The normal length for the matching system when made of open wire line is 38-40 feet.

It was found that if the feeder legs were strapped together, the feeder plus beam would resonate as a top loaded vertical on 80-meters. A switch can therefore be included on the matching unit for selecting this condition when required. For the highest efficiency on 80-meters a good earth or system of radials is essential.

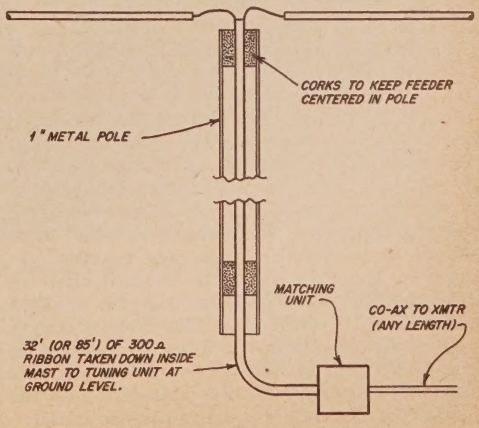
Three hundred ohm ribbon may be used for the matching section with transmitters under 200 or 300 watts, but due to the lower velocity factor of this type of feeder the optimum length will be 30-32 feet. If this length is not found convenient the correct impedance conditions repeat with lengths of 85 feet in the case of 300 ohm ribbon and 106 feet with open wire line. It may be necessary to trim the feeder length by small amount as the velocity factor of different feeders varies somewhat according to the method of construction.

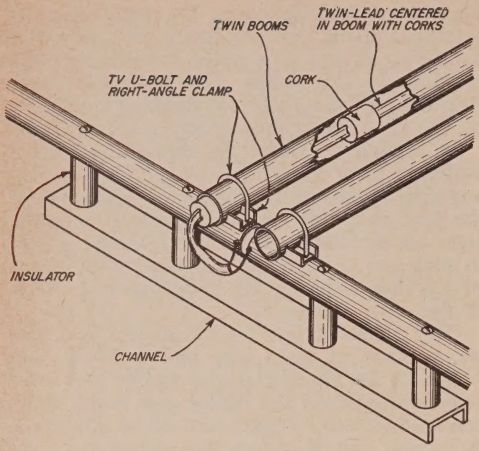
In cases where an antenna tuning unit of conventional pattern is already in use at an amateur station the Minibeam can, if desired, be fed direct with a 300-450 ohm line of any length that may be found convenient. It will

One method of feeding with open wire line is shown below.

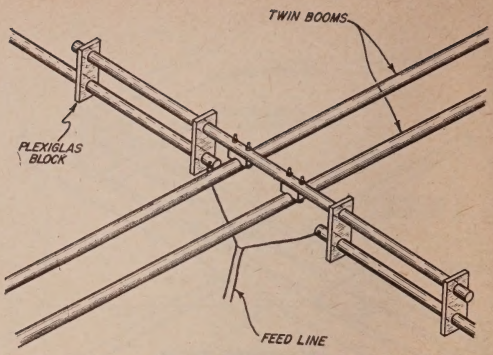


When using a pipe mast and a TV type rotor with a hollow center, 300 ohm ribbon or circle type feed line can be run down the inside as shown. This makes a clean looking installation.





One method of constructing reflector/director sections. Note twin lead is passed through corks and stored in booms. This makes for a clean looking antenna.



One of several ways to construct the driven element is shown above. The area between the twin booms and to the center of the shorting bars is at r-f ground allowing the supporting mast to be placed at the mechanical balance point of the antenna.

then be necessary, of course, to retune the antenna tuner in the normal manner when changing from band to band.

Remember that this antenna is resonant to three bands with no retuning. If your final doubles to get ten meters you are sure to find a good deal of 20 meter signal getting out, and not where you want it either. Therefore, don't use this antenna system with transmitters that do not have sufficient tuned circuits to suppress harmonics. If trouble is experienced a good antenna tuner in the shack will help.

I am experimenting at the moment with several different systems which will permit direct coax feed to the Minibeam.

It is regretted that, at the present stage of development, it is not possible to enter into correspondence on this subject or on matters connected with the design of the Minibeam but further details will be made available as they develop. ■

Appendix

(1) Choice of stub impedance. Too high a stub impedance will restrict the bandwidth at the higher frequency. If the impedance is too low, excessive capacity loading will occur at the lower frequency. The optimum impedance for the 10/15 director stub is 75-150 ohms, and for the 10/15/20 reflector, 300 ohms. Excessive capacity between the shorting stub and the boom can be avoided by threading corks along the stubs to maintain them centrally in the tubular boom. The resonant frequency of the stubs should be checked after insertion in the boom as there may be a slight change in VF. Average length for director stub if made of 75 ohm twin: 5 ft 6 ins. Average length for reflector stub of 300 ribbon: 9 ft 6 ins. For high power applications, the voltage across the open end of the stub is equal to the current flowing in the parasitic element, multiplied by the stub impedance.

(2) Shorting bar settings. Average figures are 15" for director, and 46" for reflector. For highest F/B ratio, especially on 20m where the Q of the antenna is fairly high, the shorting bars should be adjusted with the aid of a field strength meter for minimum radiation off the back of the antenna. As with all beams, the tuning tends to shift in an HF direction with increasing height above ground. The tuning adjustments should therefore be made with the antenna at least ¼ wave above ground, or preferably, in the final working position. This is particularly important on 20 meters. Fortunately the shorting bars can be reached fairly easily from the center of the antenna if a ladder is leaned against the supporting structure. (See photo)

(3) Gain figures, and front to back ratio. Valid measurements of gain and front to back ratio are difficult to make with any real precision, and often compare not too favorably with the rather exaggerated claims made by some antenna manufacturers. (See page 26, Beam Antenna Handbook by W6SAI.)

Conservative figures for the Minibeam are 9.5 db on ten, 7.5-8 db on fifteen, and about 4-4.5 db on twenty. The effective gain over a dipole on a DX path is naturally very much greater and may amount to as much as 3 or 4 S-units under suitable conditions.

Back to front ratios of 20 db can be expected on all three bands, and considerably higher figures can be obtained with careful tuning.

(4) Patents. The design of the Minibeam is protected by Patent applications in the U.S.A., Canada, Australia, and a number of other countries. This does not prevent individual amateurs making use of the design for their personal use, but it would be unwise to start making beams of this pattern for use by some other person.

(5) Some of the pioneers.

In Great Britain. G5SD*, G3HLS, G8TH*, GW3AX, G8KS, G3DO, GM3BCL. Overseas. ZS1JA, PJ2AA, KV4BB, ZL1TA, VK6NF*, K2CJN,

W8QJR*, VE2JS, EA8BV, VP7NF, VS4BO* VS6BE, VK4EJ*, SVØWK, 5A1TA, F3DJ, VS6CY*, G2PL*, G5BZ*.

*Indicates single boom version.

(6) Shortened antennas. The bandwidth and radiation resistance fall as the *square* of the degree of shortening, e.g., if a 20m beam is shortened to 2/3 normal length the Rr and Δ fall to 4/9 or about half the normal value. Shortening down to half normal length, i.e., 16 ft, would reduce Rr and Δ to one quarter!

(7) Matching unit: To satisfy all possible variations of antenna impedance that may be encountered at different heights above ground it may sometimes be necessary to change the L/C ratio of the tuned circuit by as much as ± 20%. If the link is adjusted for correct coupling on 15 meters, the coupling on 20m can be controlled by means of the link tuning condenser, and the coupling on ten meters by trimming the length of the matching section. Alterations in length of the matching section have a more pronounced effect on ten than on the other two bands as a given change of length represents a larger fraction of a wavelength at the higher frequency.

(8) Other applications: The Minibeam design is not restricted to bands which are harmonically related.

A model is under construction at the moment for the new British 4 meter (70.2mc) band, which will also operate on five and six meters. It is hoped that this new design will facilitate cross band contacts between the British Isles and the U.S. as the beam will operate at full efficiency on the received frequency as well as on the transmitting frequency. This design incidentally incorporates a different type of driven element which permits direct coax. feed. (Details in Dec. 56 RSGB)

The principle has also been applied successfully to multi-band TV arrays, and commercial networks where different frequencies are necessary for night and daylight operation. ■



K6GMI Builds Operating Desk from CQ Plans

Hal Spaulding, K6GMI sent in this photo of his recently completed operating desk, as originally described in the February 1956 *CQ*, page 32. The three calls are the results of this being a three ham family. Son Bud (K6GYS) is now in the Air Force as a technician, XYL Carla uses K6GYT. In the center is the Collins 75A4. To the left is the Barker and Williamson 5100 exciter and 51SB sideband generator. Note the Electro-voice 64 microphone to the left, D-104 to right. ■



Martha Gunter, W9HIX
Lindenwood College
St. Charles, Missouri

a Russian QSO

Last July, I had a very thrilling experience. I had just finished a QSO with a KN2 and was casually tuning 15 meters when I heard a UA3 calling CQ. Naturally I quickly zero beated his frequency and called him. I was really excited and even more so when he answered. I had heard that Russian stations had been ignoring American stations but this one seemed to be an exception. I expected a quick exchange of signal reports and then a 73. But it wasn't like that. Probably it would have been, though, if if it weren't for *CQ magazine*. Good old *CQ!* I had before me the May 1956 *CQ* and it was turned to the DX section. In this section there was a column with English sentences and their equivalent in Russian along with instructions on how to send the Russian by Morse Code. Therefore I decided to give it a try. He understood the Russian, believe me. Who ever guessed that I'd be sending Russian over to Russia via ham radio. It seemed like a crazy dream. He told me that few girls could speak Russian that he had met over ham radio—I didn't give myself away. But I went on in English pretending to know a little Russian, therefore I got my own medicine back. He sent a lot of Russian in code to me, so there I sat writing down letters that made no sense. Too bad *CQ* couldn't have gotten me out of that spot. Say, what *does* one do in such a position? hi. I did find out that he was 28 years old and that his QTH was Moscow. Thank goodness he did send an occasional English sentence. It's funny but before I had always thought that Russians were gruff, unfriendly people. But now I realize that they are a lot like us in so many ways. I found it hard to say 73s to my new found friend but I knew I should let my fellow ham friends have their chances at him so we parted.

I quickly sent a QSL card to Russia and really didn't expect any answer. But last week I received a gaily decorated envelope direct from Moscow. In the envelope was a letter written in Russian—wouldn't you know it. Well, here I go again, I said to myself laughingly. Luckily I knew someone who would translate my letter and I took the letter over to his home. Mr. Crasanoff was very pleased to help me out. I owe much thanks to him.

The following is the letter as translated:

Dear Martha,

I was glad to receive your letter and two post cards and I ask your forgiveness for being so late with my QSL. Soon after our QSO I was on vacation and was away for about a month. I was in Helsinki, Stockholm, Copenhagen, two weeks in London, and one week in Scotland. In Edinburg I saw my friend GM3GND—George Brown who worked very much 21 mc and 40 cw. In London I met some English short wave hams G5LN, G2CDI, and others. As I came home I went to the Central Radio Club for QSL Cards and among them was your letter which I read with great pleasure. I write in Russian and think it would be a good lesson for you in Russian language. Because it is very difficult to write in English as the English words are not written the way they are pronounced. I can only speak very little. I continue to study English and hope I will soon be able to write it. I also study German. Next year in Moscow I will attend an international festival of youth and toward that occasion many of the Moscow young men and women study foreign languages.

As I have told you I am 28 years old and have been interested in being an amateur since 1943 and have been a ham since 1948. At first my DX was with 10 watts. In the amplifier there is a tube gul3, this tube is similar to your 813. The receiver—RXTGK39. The other home made 15 tube with two r-f amplifiers. If you are interested in the technical details of my radio station I will write to you about it in the next letter.

I work in the radio technical enterprise as an engineer. The same time I study in the university to obtain the degree. Besides radio, my hobbies are—chess, automobile rides, water skiing, sports, and fishing. I also like music very much and play piano a bit—violin and accordion—I studied before the war. My favorite composers are Beethoven and Tschaikowsky. Up to now basically I like the classical music. I didn't seem to like band music but after I had been in London Palladium and heard the variety with Hardy Sceomby in Almacoven I began to pay more attention to this type of music.

I have something to ask you—could you send me, for a time, one of your ham journals *QST* or

CQ? Here it is very difficult to obtain these magazines. I would not want it if it cost too much. I have for 1956 only 1 number of *QST* 'July' and I got that in England. In the event you couldn't send these to me I would appreciate one of these books—RADIO AMATEURS HANDBOOK, edition 31; ANTENNA BOOK, edition 6; and any Call Book and anything else that in your judgment would help me in directing the antenna—the rotor beam or with TVI. In return I can send you a magazine published here either in Russian or English for example—NEWS; and send to your father some stamps. I have to end it here. Very 73s and best DX. Hope to see you on 15 meters. Till we meet again.

LENOID UA3CR

Receiver Protection and Muting

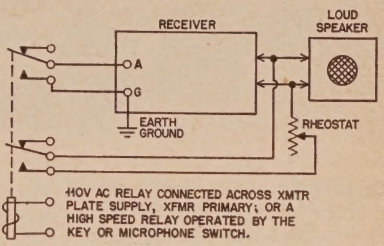
Charles Felstead, KH6CU
3010 Monsarrat Avenue
Honolulu 15, Hawaii

An arrangement that permits muting the receiver during transmission, or reducing the output to a convenient level for monitoring the transmitter is illustrated in the diagram.

The same effect may be obtained by introducing additional grid bias into the r-f and i-f stages of the receiver to block them or reduce their gain; but that requires modification of the receiver, a not very desirable procedure with expensive equipment.

This arrangement requires no change in the receiver, only a variable resistance or rheostat that is shunted across the loud speaker or headphones during transmission. By adjusting the resistance or rheostat the receiver can be made completely silent during transmission or enough output can be permitted to provide a check on the quality of the transmitted signal when operating on the same frequency as the received signal.

The amount of resistance across the loud speaker or headphones will depend upon the impedance of the circuit in which it is used, and will have to be determined experimentally.



The relay can have a 110-volt a.c. winding and be connected across the leads to the primary of the plate transformer in the transmitter, so that it is actuated automatically when the plate supply is turned on; or it can be a relay of the high-speed type that is actuated by keying, thus permitting break-in operation.

The additional contacts on the relay are employed to disconnect the antenna from the receiver and short and ground its input, thus protecting the receiver from being burned out by the strong signal from the transmitter. The ground connection on the receiver should be an actual earth connection, such as a driven rod or cold-water pipe connection. ■

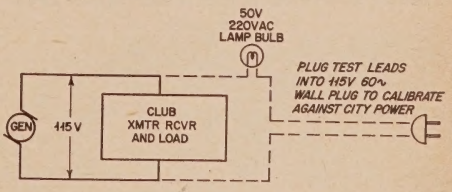
Setting the Club Portable Generator to 60 Cycles

E. H. Marriner, W6BLZ
528 Colima Street
La Jolla, California

It is a good idea to calibrate the club 115 v a-c generator in order to know where to set the indicator for 60 cycles for best operation on field day and in emergencies. Once the dial indicator is marked it is easy to reset properly in the field.

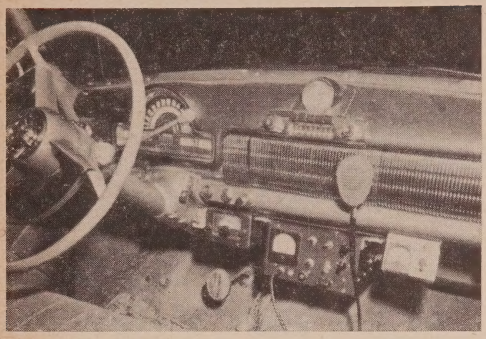
The city power line is an excellent standard to calibrate the club generator against. A very simple, inexpensive means is by using a 50 watt, 220 volt, a-c lamp bulb and a few clip leads with some zipp cord; as simple as that.

Connect the generator to a transmitter or load in operating condition and then clip a 50 w, 220 v lamp (or two 50 watt 110 volt lamps in series) bulb across the load in series with the city 115 volts 60 cycle power line. As



the generator is cranked up to speed with the frequency control the lamp will start to flicker slower as it approaches synchronization with the city line. The slowest flicker point indicates when the generator is synchronized with the city power frequency. Now mark your generator frequency control dial in order to set it on field day in the field when there is no city power to calibrate it against. ■

Charles A. Albrecht, K2BHM
Maxwell Road, RFD #2
Watervliet, New York



the Mobileer

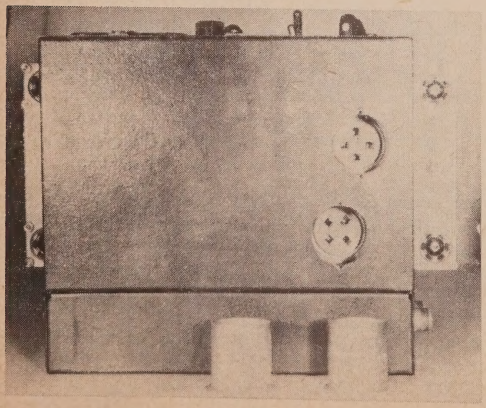
"There goes all the leg room in the front." How often have you heard this? An effective rebuttal is that the front panel of this transmitter is only 5 inches high and 9 inches long. Power in excess of 60 watts input to the final stage is easily accomplished with broadcast quality reports on audio. Using miniature plug-in coils, it is not restricted to Amateur frequencies and may be changed to C.A.P., C. D. or what have you.

The transmitter is housed in a 5″x9″x6″ Steel Utility Cabinet of the Premier type (*Premier C-596*). This cabinet was chosen as it is the only known case with the 5″x9″ panel removable. Removing one of the 5″x9″ panels, a 7″x9″x2″ chassis was bolted to the cabinet as shown in constructional detail, No. 1. All holes are drilled and punched in the cabinet, the aluminum slide rails, the modulation transformer, the relays, the *SO-239* connectors, and the banana jack are installed in the cabinet, and the assembly wired. At this time, the banana jack is loosely secured in the cabinet to facilitate subsequent alignment with the antenna loading condenser when the chassis is inserted into the cabinet.

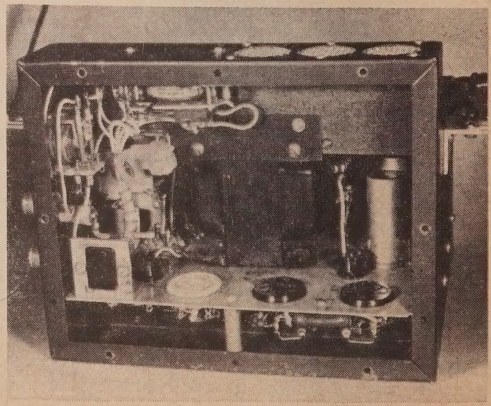
The chassis consists of a sheet of flat aluminum 8″x9″x1/16″ punched and drilled to constructional detail No. 2. The power plug bracket, audio gain control bracket, and antenna loading condenser bracket are then mounted. (Note: Author used a 6 prong *Cinch-Jones* plug on experimental transmitter, as shown in photos, but transmitters can be more easily constructed with Octal plugs.)

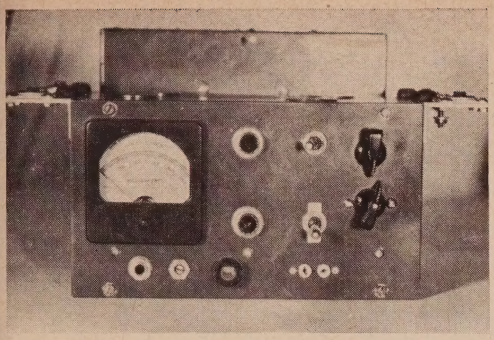
After drilling and punching the front panel, (see constructional detail No. 3), the panel is mounted on the 3 small angle brackets on front of the chassis. Following this operation, components are mounted and the chassis is wired. At this time the antenna loading condenser screw is run in flush with the mounting projection. This assembly is then inserted into the cabinet. Because of the minimized space, it is

Bottom view showing coil shields before inserting in unit.

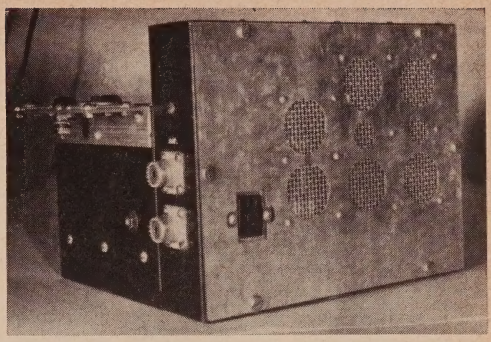


Back view, Cover removed





Close-up of front

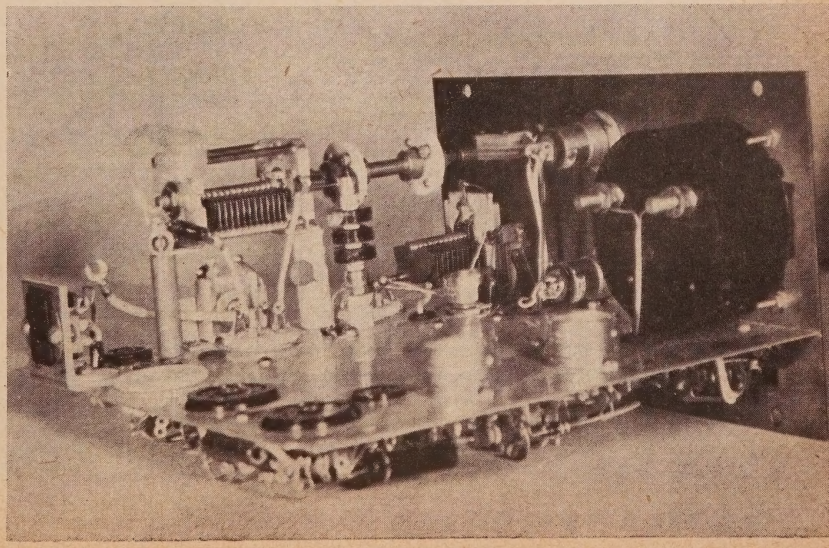


Rear quarter view showing co-ax connectors

essential during assembly that extreme care be taken to assure adequate clearance for all mounted components. The front panel screws are inserted and tightened. Next the screw through the chassis into the stand-off post in the rear of the cabinet is inserted and tightened. The banana jack is now adjusted to align with the condenser adjusting screw. The screw is then run out into the banana jack. The jack is then checked for concentric alignment with the screw, and the jack is tightened. At this time, the modulation transformer plugs are inserted into their respective sockets in the chassis together with the relay harness. The antenna lead from the chassis is connected to the insulator post, located below the antenna relay.

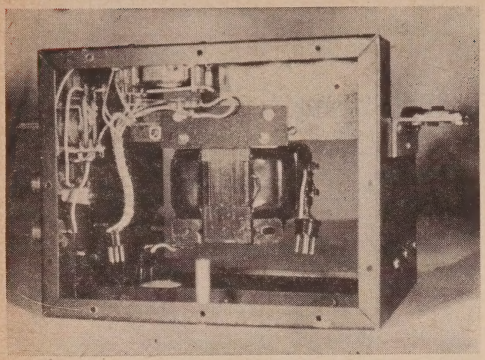
There are two aluminum shields for the plug in coils (see constructional detail No. 1), which are made by spinning a ¼″ flange on two pieces of 1⅜″ aluminum tubing cut just long enough to touch the chassis when assembled through the 1⅜″ holes in the bottom of the cabinet and held in place with sheet metal screws. These aluminum shields also act as guides for changing the plug in coils. There is adequate space between coil shields and coils, and therefore, there is little danger of arcing. This completes the assembly of the transmitter.

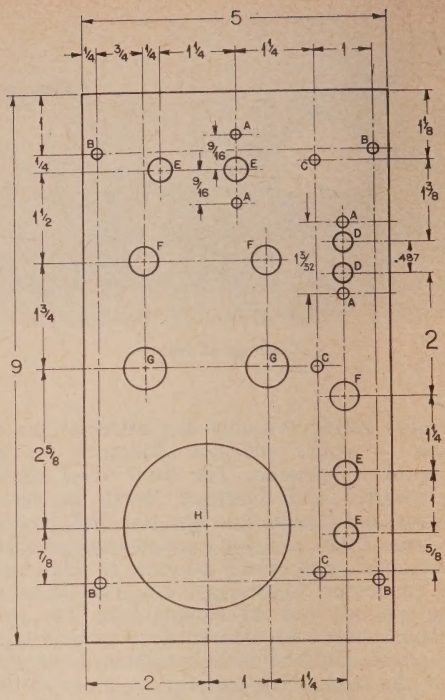
To replace tubes, the snap plugs are removed from the top of the cabinet and by means of a tube puller, the 6BF5 and 12AU7's may be readily changed. The 6146 and 6L6's can be changed by removing the back plate. Complete disassembly of the transmitter is unnecessary. With all tubes, coils and crystal inserted, (and *don't* forget the fuse), the filament switch is turned to "ON". The green pilot lamp will light. On depressing the "Push to talk" button on the mike, the red pilot lamp will light and B+ is applied to the transmitter. (Author used a *Carter 4037AS Dynamotor* for high voltage). With switch *SW2* open, the screen voltage is removed from the 6146 and the Oscillator is tuned to maximum Grid Drive. *SW2* is then closed and the final dipped to resonance. The antenna loading condenser is then adjusted to give proper loading. (Upon releasing the "Push to talk" button, the B+ relay de-energizes, opening the circuit of the dynamotor field and grounding the B+ so that



The chassis is bolted to the removable front panel.

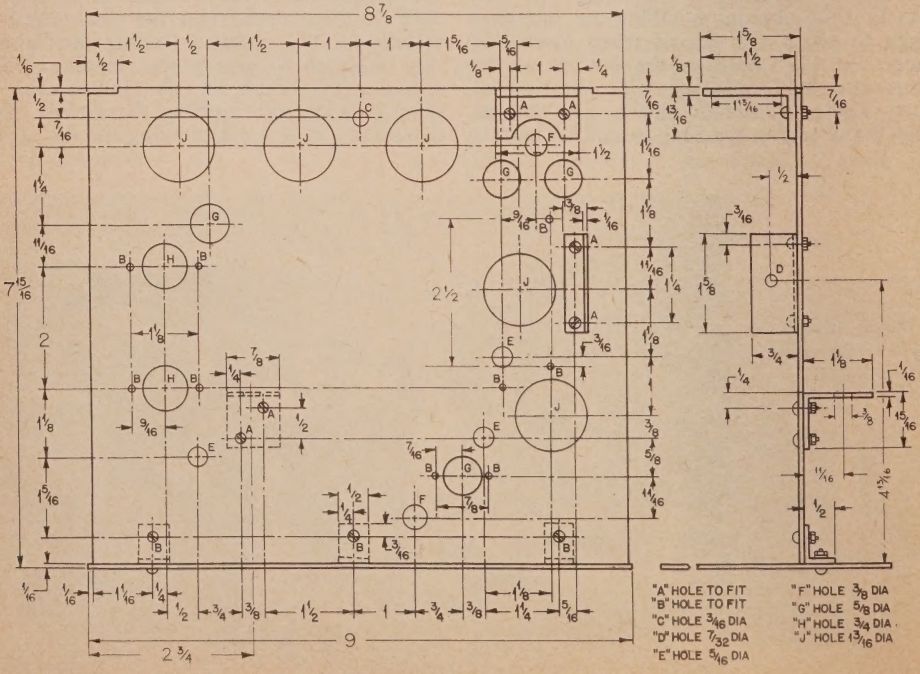
Rear view, chassis removed

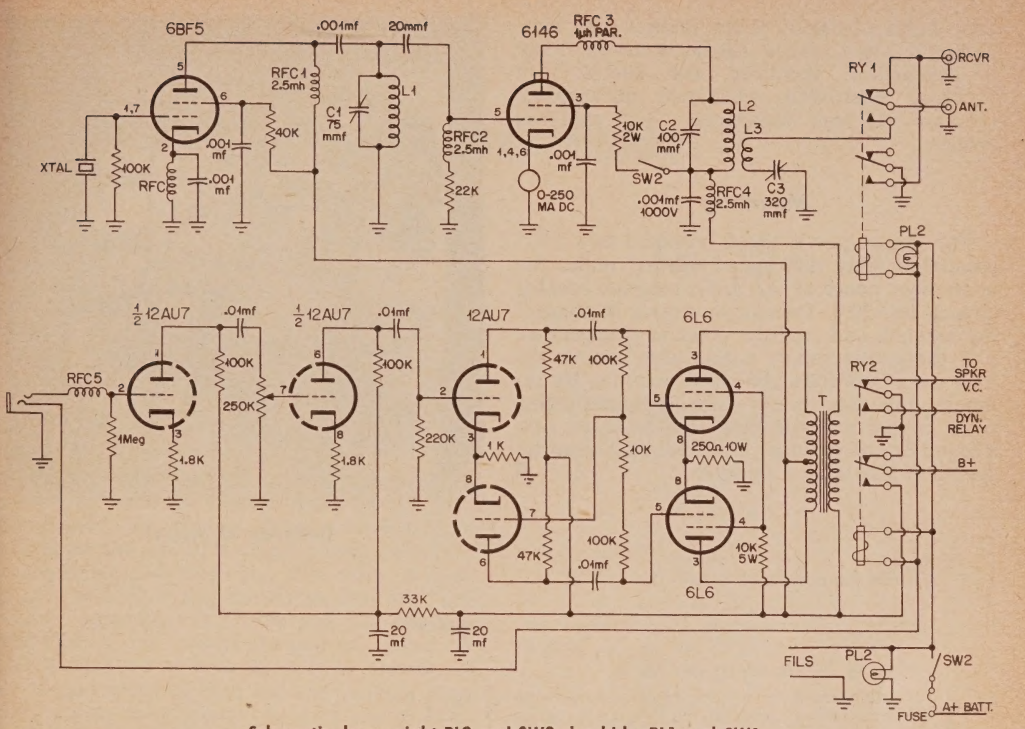




no dynamotor commutator whine is heard in the receiver. This gives immediate receiver action.) This transmitter may operate equally well on a 12v system. The 6BF5 has a 6 volt filament with a current of 1.2 amps and the 6146 a 6 volt filament with a current of 1.25 amps, a 125 ohm 1 watt resistor paralleling the 6BF5 filament or a 50 ma pilot lite will permit series connection with the 6146. The 6L6's may be series connected and the 12AU7's are 6v or 12v. The relay may be substituted or series connected if resistance permits. Similarly the

Below, constructional detail #2, Right: #3





Schematic, lower right PL2 and SW2 should be PL1 and SW1.

Parts List

Resistors

1—1 Meg ¼w
1—220K ¼w
5—100K ½w
2—47K ½w
1—40K 1w
1—22K ½w
1—10K ¼w
2—1800 ohm ½w
1—1K ½w
1—250 ohm 10w
1—10K 5w
1—10K 2w
1—250K Vol. Cont.

Condensers

1—75 mmfd Var (Johnson 167-104)
1—100 mmfd Var (Johnson 167-151)
1 — 320 mmfd Padder (ICA 613)
1—20-20 @ 450 volt Elec.
4—.01 @ 600 volts Disc Ceramic
4—.001 @ 600 volts Disc Ceramic
1—.001 @ 1000 volts Disc Ceramic
1—20 mmfd Mica
NOTE: All capacities in μfd unless otherwise specified.

4—2.5 mh RF Choke @ 125 ma
1—2.5 mh RF Choke @ 300 ma (National R-300U)
1—1μh @ 300 ma Parasitic Choke

T — Modulation Transformer (Stancor A-3892)
1—0-250 ma DC Meter
Rly 1 — Antenna Relay (Advance AM/2C/6VD)
Rly 2 — Relay DPDT 6VDC (Guardian 200-M2-8 Relay, Guardian 200-6D Coil)

1—6BF5 Tube
1—6146 Tube
2—12AU7 Tubes
2—6L6 Tubes
2 — 4 pin Ceramic Retainer Ring type Sockets
2—4 prong Coil forms 1" dia. x 2" lg (Millen 45004)
1—7 pin miniature Ceramic Shield Base Socket & Shield
1—8 pin Octal Ceramic Retainer Ring type Socket
2—9 pin miniature Bakelite Shield Base Socket & Shield
2—8 pin Octal Bakelite Retainer Ring type Socket
1—8 pin Octal Bakelite Retainer Ring type Plug
1 — 3 pin minature Retainer Ring Socket (Amphenol 78S3S)
1—3 pin miniature Plug (Amphenol 78S3P)
1—4 pin miniature Retainer Ring Socket (Amphenol 78S4S)
1—4 pin miniature Plug (Amphenol 78S4P)
1—6 pin miniature Retainer Ring Socket (Amphenol 78S6S)
1—6 pin miniature Plug (Amphenol 78S6P)
1—Crystal Socket (Millen 33102)

1 — Cabinet 5"x9"x6" (Must have Removable 5"x9" panel) (Premier C596)
1 — Chassis 7"x9"x2" (Premier CH-404)
1 — 8"x9"x1/16" Aluminum plate for Chassis
1 — Aluminum 7"x9"x 1/16" Back Plate
2—Amphenol SO239 Antenna Connectors
2 — SPST Bat handle Toggle Switches
2—Pilot Light Assemblies (Johnson 147-1110)
1—Fuse post (Littlefuse 341001)
1—3 Circuit phone Jack
1 — Banana Jack (all metal for ¼" hole)
1 — Panel bearing assembly
2—Insulated Couplings
3—1¼" Snap hole plugs
2—#51 Pilot Bulbs
1—10 amp. Littlefuse
2—Insulator post ¾" lg ½" Dia. 6-32 threaded holes (Birnbach #444)
2—Posts 1½" lg x ½" Dia. 6-32 threaded holes (not necessarily insulator)

Coil Data

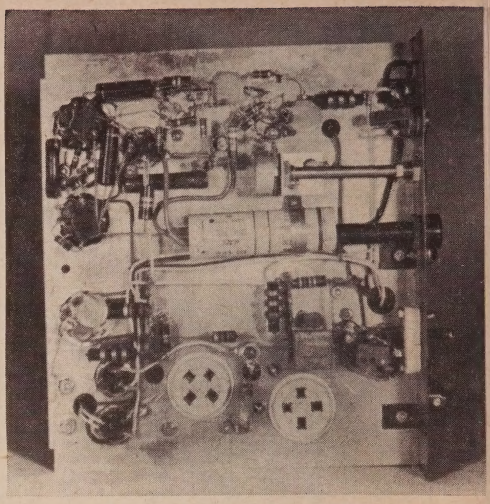
All Coils Close wound on a 1" form (Millen 45004)
L1—4MC 35 turns No. 22 Enameled wire; 14MC and 28MC 10 turns No. 18 Enameled wire
L2—4MC 35 turns No. 22 Enameled wire; 14MC 10 turns No. 18 Enameled wire; 28MC 5 turns No. 18 Enameled wire
L3—4MC 8 turns No. 18 Enameled wire interwound on cold end of L2; 14MC and 28MC 3 turns No. 18 Enameled wire interwound on cold end of L2

The Modulation transformer ratio is 6,000 to 3,200. If the Stancor A3892 is used, the following combination proved most satisfactory: #2 to plate of 6L6, join 3 and 6, and connect to B plus; #5 to plate of 2nd 6L6. On final side of transformer join 8 and 12, join 9 and 11. Connect #8 to B plus and connect #9 to RF Choke #4.

pilot bulbs changed. Since interior car temperatures often exceed 120°F. a crystal mike is impractical, therefore, the author uses a *Shure* controlled reluctance microphone (*Ranger* 505 high impedance), with excellent results.

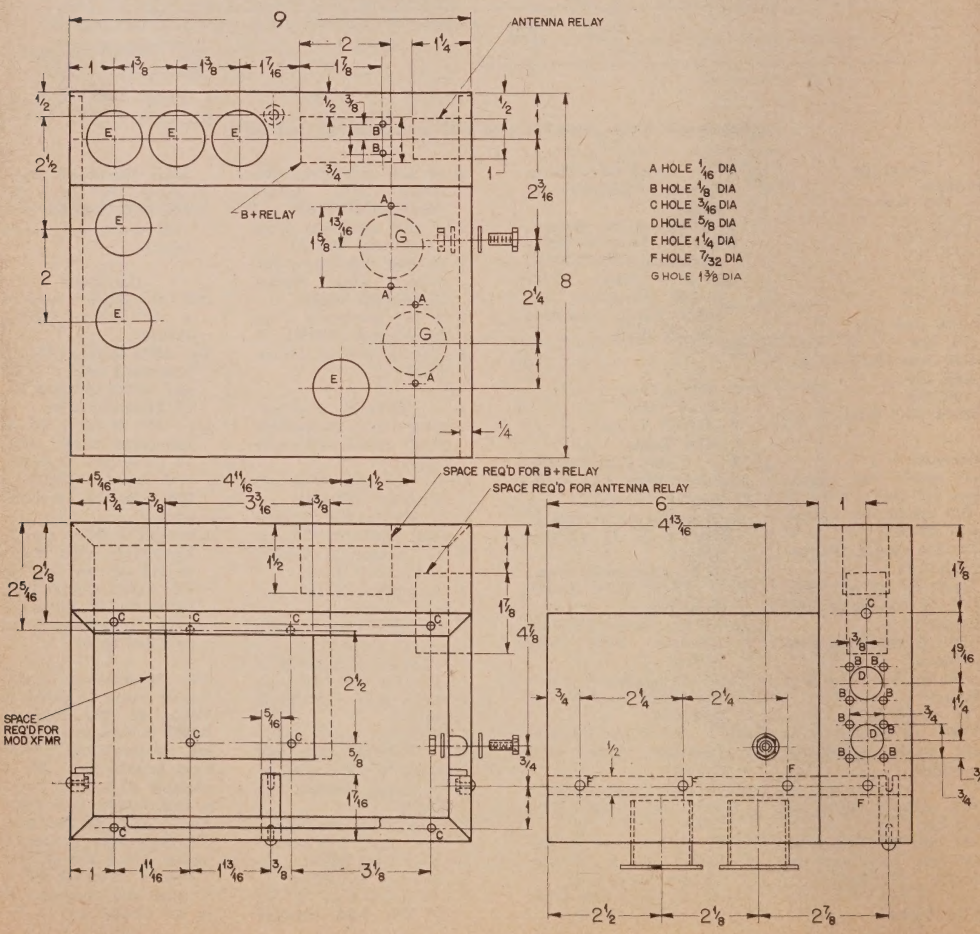
Mounting

The transmitter is shock mounted to a 5¼" aluminum relay rack panel secured under the instrument panel to the radio receiver bracket already installed. To remove, simply disconnect the antenna and receiver antenna connections, pull the power supply socket and remove the four wing nuts from the shock mounts. By removing four more screws, the aluminum panel, noise clipper and converter can be taken out. The total removal time or installation time required is less than 5 minutes. ■



Underside of chassis

Constructional detail 1



Antenna-Changeover Relay for the AT-1

Ralph Schachat, W1GIF; and Martin Glicksman

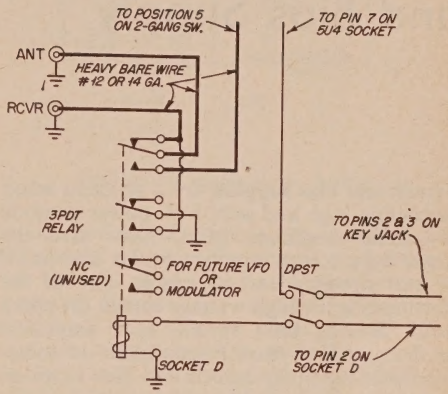
2800 University Ave., Bronx 68, N. Y.

The incorporation of an "antenna-changeover relay" into the circuit of the Heath AT-1 transmitter, or similar Novice transmitters, will allow the use of a single antenna for both transmitting and receiving. The relay is completely built into the chassis so that no "outboard" equipment is visible and the neat appearance of the unit is maintained. Since the unit is enclosed as it is, there is no chance for any signal escaping into the surrounding areas and causing interference. In addition to eliminating the need for a separate antenna, the installation of this relay according to instructions will provide a convenient place for connecting the receiver's antenna wire. This is sometimes difficult and inconvenient under ordinary conditions.

The recommended relay is a 3PDT *Potter and Bromfield* 6 volt 2-C relay (#KL14A). This relay, even though miniaturized, has heavy silver-plated contacts which wear well and assure good electrical connection. Although the 3PDT relay is slightly more expensive than the DPDT model, the unused third set of contacts can later be used for controlling the B+ of a modulator or a VFO, with a minimum of time and trouble.

When the relay is properly installed, it will automatically switch the antenna to the receiver or transmitter at the proper time. In addition, it will ground the antenna of the receiver while transmitting and protect the receiver from picking up excess radiated power that might burn out some of its front-end components. The transmission can also be monitored since use of this relay will allow just about the right amount of signal to be picked up from the transmitter.





Conversion Diagram

Construction Procedure

Remove the single pole, single throw plate switch (upper right in photo). Put in the same size and shape double pole, single throw switch and reconnect the two wires to the two contacts on the right side of the switch, (as seen in photo). One of the two contacts on the left side of the switch will later be connected to one side of the relay coil, and the other to the hot side of the 6 volts a.c. line.

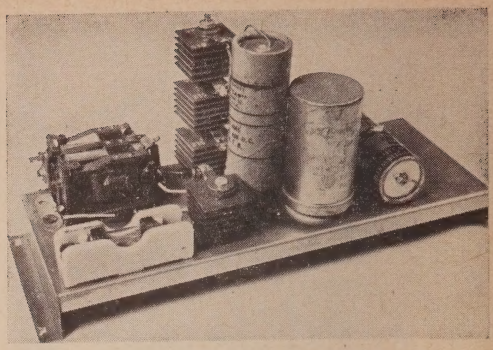
Remove the power cord from its entrance hole in the chassis, and enlarge the hole so as to accommodate a coaxial socket of the *Amphenol* variety type SO-239. Drill a new entrance hole for the line cord, at a convenient spot such as shown in the lower right of center in photo, and replace the cord through a rubber grommet.

The triple pole, double throw relay is mounted in the lower left corner of the chassis, as shown. Complete the wiring according

[*Continued on page 118*]

Felix W. Mullings, W5BVF
715-24th St.
Galveston, Texas

Little Gem Screen and Bias Supply



The complete power supply can be tucked away in an out of the way corner of the rig.

Screen and bias supplies are a problem when constructing high and semi high power pentode and tetrode amplifiers. Many have used the clamper type screen supply with its associated tube and circuitry and of course, one of the major items is the high wattage screen dropping resistor. Having built several final amplifiers over the past few years I decided to do something about the bulky screen and bias supplies, normally used. Since the advent of TV, the use of selenium supplies in circuits not generally thought of in amateur circles previously were examined. A voltage tripler circuit was built using easy obtainable parts along with a bias supply which many amateur constructors should appreciate. An isolation transformer was first considered but later discarded it in favor of fuses as there is no need of isolation if the precaution is taken to keep the grounded side of the AC line at the same potential as the chassis. Since the final had to be completely shielded for TVI, the AC leads brought into the chassis were filtered and once inside used for the filament transformer of the final tubes. Two leads can then be run across to the screen and bias supply with the lead that grounds fused with a one amp fuse. If the plug gets reversed, the fuse will blow with no damage. Since the fuse is inside of the shield, it need not be filtered as it would have to be if the fuse were brought outside for easy changing. When the transmitter is first fired up, check the voltage between the chassis and external ground before grounding the chasis and then mark the plug or polarize it to prevent blowing this fuse. (It was decided to use a non-isolated line for this supply.)

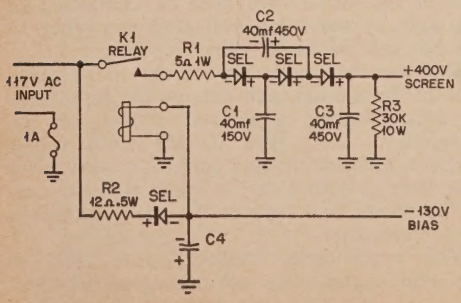


Fig. 1.

Construction Details

The supply is built on a sub chassis and the shape of the sub chassis will determine the arrangement of parts. This arrangement is not at all critical and can be confined to the space available within limits. The sub chassis used here was specially bent and formed to go within the grid shields of the final. The supply was designed for a c-w final. If both c-w and modulated final is to be used three supplies can be constructed on the same sub chassis with little more space than the two for the c-w rig. The 400 volt supply consists of three 100 ma selenium rectifiers and three 40 mfd filter condensers. Two of the 40 mfd condensers must be 450 volt rating and the other can be 150 volt rating. A 5 ohm one watt resistor is in series with the input to this supply and this will afford adequate protection in case of a failure of the parts or a short circuit. The 130 volt supply consists of one selenium rectifier 100 ma capacity and one 80 mfd condenser for filter. The input of this supply is protected with

Parts List—Fig. 1

C1—TC 48 Mallory
C2—TC 78 Mallory
C3—TC 78 Mallory
C4—TC 492 Mallory
R1—5 Ω 1 watt
R2—12 Ω ½ watt
R3—30K 10 watt
Relay K1—10000Ω Leach coil # 361
All selenium rectifiers 100ma RR #6M2 or equivalent.

Parts List—Fig. 2

C1—40-150v Mallory TC 48
C2—40-450v Mallory TC 78
C3—40-450v Mallory TC 78
C4—80-150v Mallory TC 492
C5—40-150v Mallory TC 48
C6—40-450v Mallory TC 78

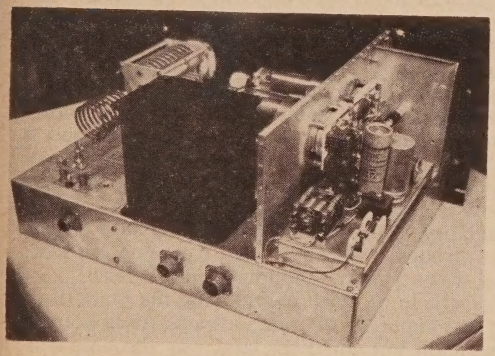
R1—5 Ω 1 watt
R2—12 Ω ½ watt
R3—30 K 10 watt
R4—33 Ω 1 watt
R5—15 K 5 watt

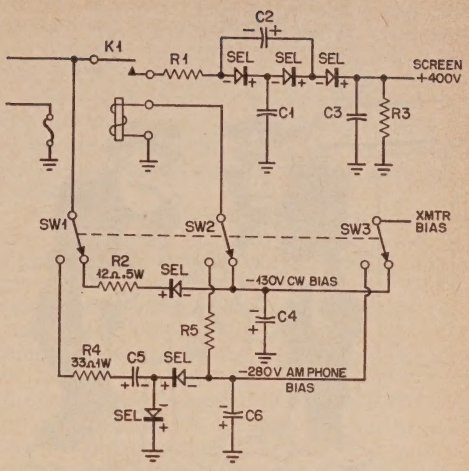
Relay K1 = 10,000 Ω leach coil #361
All selenium rectifiers 100 MA RR 6M2 or equivalent

SW1, SW2, SW3 } switch CW-phone

a 12 ohm one half watt resistor. One other protection is incorporated and this is a 10000 ohm d-c relay with the coil shunted directly across the 130 volt bias supply. The contacts are in series with the input to the 400 volt supply. By using this relay there can be no screen voltage without there is the full bias voltage. If the supplies are to be used with AM phone, an additional selenium supply can be built in using a voltage doubler circuit as shown in *fig 2*

Fig. 2.



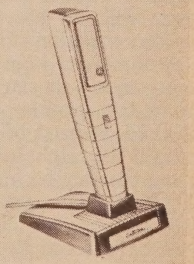


. . . showing the supply in the Author's rig.

for the additional negative bias required with AM phone. *Fig 1* is the circuit used for c-w. The 400 volt supply has a bleeder current of 15 ma but the two bias supplies depend on the relay coil resistance for their bleeder since only one supply is used at a time and this coil current is approximately 10 ma with the values of voltage used. If the 400 volt supply is used for additional stages of the transmitter, the current capacity can be increased by simple use of a larger selenium rectifier and increasing the capacity of the filter condensers. No other change is necessary. This supply can be increased even up to 500 ma and more in this manner. The bias supply capacity can also be increased in this same manner though with the components listed here the supply can be run to about 80 ma but voltage begins to drop off around this amount. Naturally the larger the filter condensers the better the regulation and output. ■

Electro-Voice Model 927

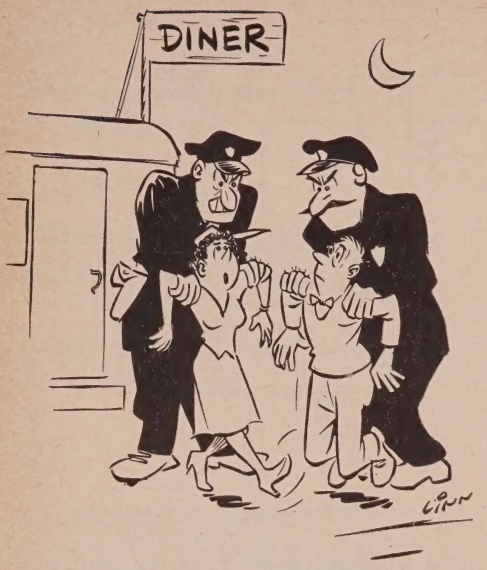
There is no excuse for the miserable quality you hear on the phone bands when you could just as easily invest in at least one good mike for the shack. This one is ideal for hams, and costs only $22.50. How about using your real voice this year? Write Electro-Voice, Buchanan, Michigan for spec sheet 53280.





Data Handbook

OK Fellows, dig down for 35c and push Allied Radio into the next highest income bracket. This 64 page book should sell for at least a dollar so stop worrying. When it arrives you will find all sorts of formulas, tables, and other data you go crazy looking for when you really need. Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois.



by Helen Harris, W1HOY

P.O. Box 2502
Medfield, Mass.

In Jail

In small-town U.S.A. lived a most charming family. It consisted of two children (terrors both), a pet (one small but very lively fox terrier), one father (poor tired bread-winner of the family), and one mother (sweet, gentle, nagging old hag). The time was sometime during the second World War, and the great moment had arrived: Dad was finally given a short vacation. As usual, he couldn't decide where to spend it. He had very carefully hoarded his gas ration stamps so that if the moment ever did occur he would "Be Prepared."

After a great deal of hemming and hawing, mother and father parked the children with grandma, picked up the dog and away they went. Didn't know where they were going, just went. The great trouble was that because of the war father was not permitted to be "ON THE AIR." And what ham ever goes on a vacation without a lot of radio gear along, or better still, on his way to visit another ham. Another vacation side-line for these fine fellows is to hunt out high locations. But what's the point when you can't even get on the air. The trip didn't promise to be very interesting for the O.M. because of lack of radio, but his XYL thought she might have time finally to see a part of the country without having to nurse along a bunch of tubes, etc., so they wouldn't be joggled and broken during the ride. She might even have room to change position in the car once in a while. Anyway they headed west with no particular destination in mind (she thought).

Very funny, but as luck would have it the car seemed to have a mind of its own and turned here and there of it's own accord. Imagine the surprise of the XYL when it finally had to stop to be serviced in a small town by the name of Mt. Carmel, in Illinois. Anybody ever hear of that place? Odd, but up to that time the name rang no bell with her at all.

It was about six o'clock in the evening when we arrived in Mt. Carmel and about the time of day to quit driving. So-oo-o, after touring the town a bit in the car, we registered at a hotel and then went to dinner. We left the car parked in front of the hotel just around the corner from Main Street. As I recall it we had a marvelous dinner and seeing as we were splurging for a change we decided to go to a movie afterward. The movie is dead in my memory, good or bad. However, I know we did sit through it because when we came outdoors we went window-shopping and I recall very well the huge clock overlooking the main drag. It was about 11:00 p.m., not a startling hour of the night but you'll see later why the time suddenly became important.

We walked to the far end of the business district and located a diner. Naturally it was eating time again, always is with us around, so we entered and had hamburgers. I still recall how crowded the place was when we entered, and I noticed how the crowd seemed to be thinning out very fast after we came; but I laid that fact to the lateness of the hour.

It was probably about forty-five minutes later that we finished our food and leisurely sauntered out of the diner. When I stepped out of the door I felt a very firm grip on either arm; looking up I found that attached to each grip was a large-sized, well-muscled minion of the law. (At the moment I didn't take the time to notice that they were also most attractive specimens of the species). Turning around to call on Sam for help, an explanation, or what-have-you, I found that he too had a double

escort. We were paralyzed for a few moments and then were too breathless for speech. Looking around we discovered a cordon of policemen "holding back the surging crowd", and I'm not kidding. Have you ever been really scared breathless just because you didn't know what was what? Well we both were that time.

With no explanation at all we were rushed to the police-car; Sam in the front with a cop on either side; me in the back with a cop on either side. First one cop then the other would ask each of us our names, address, Sam's occupation, my occupation, where Sam worked, our names, and then begin all over again. This went on until we arrived at the police-station, (oh, those prison bars) and it was obvious that they were trying to get us to cross up one another.

The 3rd Degree

When we got inside the station and into a decent light, the chief of police again asked Sam's name and of course wanted to see his draft card and other identification. He seemed to be bothered about Sam's name and kept harping on it. When Sam handed over his identification papers he explained that "Sam" was his middle name and the one he always goes by, but that his first name was actually Francis. At that we both thought from the look in his eye, and the apoplectic purple which his complexion suddenly turned, that we were to be guests of the city for the night. Couldn't understand it either, after all we hadn't done anything. Sam had given his correct name and as far as we knew we were perfectly innocent of any wrong-doing. But what can you say to a cop with a beautiful, shiny badge and lots of authority behind him.

Being the hour of the night that it was, there was no way to get in touch with the company where Sam worked and of course the police wouldn't take anybody else's word for it that Sam was working where he said unless they had direct contact with the company officials. Apparently it did no good to carry papers of any kind because they didn't believe papers.

The questioning began all over again, and this time they added a few new questions. It was like a dime store "thriller," but darned if I liked being either a heroine or a villainess. If I had known which one it was to be it might have helped my peace of mind. Among the new questions were those asking where we had spent our time since we had arrived in town. We told them, and to this day I can't understand why they didn't check with the hotel at which we registered, but they didn't. We were asked to tell the story of the movie we had seen and by that time I was just too nervous to talk (which didn't help our case), so Sam gave them full particulars. He did such a good job of telling the tale that he wasn't believed. Too pat a story. At that moment I wondered why *I* had to be blessed with a husband with such a good memory, and why he had to be blessed with a wife who got a case of nerves at the wrong moment.

About 4:00 a.m. we finally convinced them (by our honest faces and by finally rousing one of the big-shots at the plant) that we were perfectly harmless citizens. They then gave *us* an explanation.

It seems that while we were driving around, after entering the fair city, we had the brilliant idea that while we were there it would only be good sense to see the Meissner plant. We inquired of a traffic policeman where the plant was located and he very obligingly gave very minute directions. Before registering at the hotel we located the plant and drove past it very slowly. The place seemed to be deserted except for the watchman at the gate but just to make sure we drove around the block and past the place a second time. Then we went to register at the hotel. Before having dinner we once more drove past the plant and this time Sam stopped, got out and asked the watchman if there was any chance of being permitted to go through the factory. The watchman replied in the negative, as he said there was no one there at that hour, but that the plant opened at 8:00 a.m. the next morning and if we wished we might inquire at the office at that time. Sam was quite disappointed as we had intended to head on our way again bright and early but because of his wish to see the place we decided to wait. *What a mistake!*

The Missing Links

Put together these facts; we did *not* know that the Meissner plant had been turned over to doing work for the Army. We had asked directions to a war-plant (apparently the cop became war-conscious after the directions were given). We had driven past said war-plant several times, (thus arousing the watchman's suspicions, which were not quelled when we asked information about factory working hours). We did disappear (they thought), actually we were in the movie. The police couldn't locate our car so they were sure it was hidden out somewhere in the town for a quick get-away. Add to these the fact that Sam had a beard and that we were driving a Packard (second-hand) and all of these things led the law to believe that we were foreigners doing sabotage work. The final blow when Sam gave them his full name. It seems that the police chief's name also was FRANCIS S. HARRIS.

After profound apologies for their suspicions and assurances of their help if we ever needed it we were again loaded in the police-car and this time taken to our hotel. We never did understand why they couldn't find our car for there it was, still parked where we had left it, in front of the hotel. ■

Guadalcanal to Port Moresby

Aboard Yasme....

Danny Weil, VK9TW

Whilst there are many things for me to do at the moment to square up Yasme, I feel I just have to prop my typewriter up in the cockpit and put down my present feelings before they got lost in the maze of future incidents.

The sun is pouring down on me, and whilst it is hot outside here, the cabin is like an oven, and in any case I have to be here to attend the helm. The wind is fluky, what there is of it, and in seconds it will veer or back as much as 45 degrees . . . I keep putting on the motor, then stopping it; putting up one type of sail, pulling it down and putting up another. .

But I am getting ahead of myself, let's start from the beginning; from Honiara, the place I didn't see, except for the shack and the short tract of land from Yasme to the rig. I had decided to leave on the Sunday morning . . . what a fool I was to change my mind, but I was fed up with the place. It had hardly been sociable. I had been working about 14 hours a day on the rig for two solid weeks, and trying in the other odd hours to fix up the Yasme. I should have got a good night's rest Saturday night and started early Sunday morning, but as I said before, I was fed up. When I found that I had all the gear aboard, the thought of staying in the place for a further 12 to 14 hours was too much so I upped the anchor, stuck on the engine and got out. As is usual in these parts, no wind. I didn't care. I was getting away from the place and was aboard my beloved Yasme with the feel of the ocean pushing all the unpleasant feelings from my thoughts. Only the true sailor knows that feeling, it's wonderful. Progress was slow for the sea was like the proverbial mill pond. Several times I thought there was a puff of wind and hoisted the sails, but nothing came of it, so down they came again. The engine purred quite happily. Since my new magneto the troubles had vanished and she started the first push of the button.

We plodded along the coast at around 4 to 5 knots, gradually leaving Honiara astern. Slowly very slowly, we rounded the tip of Guadalcanal, and the dim light from Cape Esperance shone weakly in the distance . . . even the light looked fed up with the place. The evening was perfect, the sky covered with myriads of stars, and high in the heavens a very thin slice of moon shed its silvery glow over the mountains, casting deep shadows everywhere. The sea glistened like crystal. Along the coast countless tiny lights sparkled, slowly moving backwards and forwards. They were the natives with their pressure lamps night-fishing. The fish being attracted to the light are made easy prey for the native spears, and it has become the custom around here to do the majority of the fishing at night. As I cleared Cape Esperance, and the light vanished between a headland, so I noticed a couple of flashing lights suddenly turn on. Apparently the authorities at Coughlan Harbor seeing my navigation lights must have assumed I was entering the port, and had switched on the landing lights. Seeing that I maintained my course they finally switched them off. Why oh why didn't I accept their offer and enter the harbor at the time? I should have had a good night's rest and missed what happened later, but . . . I didn't.

I did expect that once I rounded the tip I would have an offshore wind, but it remained a deadly calm. The sea had now developed a terrific swell, causing Yasme to do some of the most unearthly rolling. I tried putting up a large jib and sheeting it hard-in to break the roll, but nothing seemed to help. It looked as though I was in for a tough night. Cooking was impossible since nothing could remain on the stove, so I settled myself in the cockpit with a flask of coffee and a bag of fruit. It was hardly a comforting meal for one not having had a good load of chow for around 24 hours, but under the circumstances it was the best I could do.

There had been some satisfaction in getting away before skedded time, but with this infernal rolling and lack of wind, I was beginning to wonder what I had gained in leaving early. Right through the night the calm persisted, so the old iron horse had to plug away to keep us on the move. Several times during the night I was shaken from my lethargy by a slight puff of air disturbing the stillness. Up would go all sails, but it was nothing at all; my pulling of ropes went for nothing. I might tell you lads that to pull up around a thousand square feet of canvas at 2 to 3 a.m. on a boat with a 45 degree roll is no easy job. It's tough enough to hoist the darned things on a level

deck, but when one has to curl one's toes around any slight projection to maintain some sort of balance, and still exert enough power to hoist the sails . . . need I say more. All this at the bewitching hour of 2 a.m. when one gets the feeling that death is just around the corner . . . what a life! Then after all the work of getting the darned things up, I'd have to pull 'em down again five minutes afterwards. That night was hell, and by morning I had covered the terrific distance of 50 miles. As I looked astern, there, towering over me was . . . GUADALCANAL. I just couldn't seem to lose the darned place, and from appearances it would be keeping me company for some time yet. It was another taste of yesterday. Still no wind, and the sea looking as though it had never had a ripple in all its days. Occasionally a large chunk of sea food would cavort around the boat, now and then trying to become airborne. Interesting, but I needed wind . . . even a one mile per hour wind would do to steady Yasme up, but we weren't that lucky.

Breakfast was the same as dinner last night, except that the coffee was luke warm and had a bitter taste. The way I felt, even nectar would have had a bitter taste. I looked again at the wind charts to buoy up my spirits, but I was beginning to lose faith in all wind and weather charts. Around noon my prayers were answered when out of the southeast came a zephyr . . . that's a polite name for a wind that is nearly. It was enough to stop the rolling. I brewed some coffee and got out the frying pan and the eggs. By this time I was so hungry I didn't bother to thaw out the eggs, just stuck 'em straight in the pan . . . shell and all, and propped around them, standing like soldiers, were strips of ice-bound bacon. Slowly the heat melted the ice. which in turn mixed with the fat. They didn't seem to like each other. There followed a series of minor explosions and not having any clothes on, I had to vacate the galley at top speed. When the explosions died down I grabbed a large storm coat and approached the galley to view the results. The bacon had subsided back into the pan, even to the point of turning up its toes, so I knew that all the fight had been knocked out of that. The eggs had split into mixed yolks, whites, and shells, whilst the fat continued to grumble and mutter deep in its throat, being the winner all round. After attempting to separate the shell from the eggs I decided to scoff the bacon and feed the eggs to the fish.

After "chow" I decided to take a few sights, just for the hell of it. It's nice to know where the heck you are. Just at that moment the sun went on strike, so I plonked down a mark on the chart with "D.R." at the side of it. This means I hope I am there, but I am probably about 50 miles from there.

The breeze, what there was of it, continued through the day and evening, but I still had to keep the engine running to make any way. As night fell, I knew that it was going to be another sleepless night. The poor old Yasme does not like steering herself with the engine on, so that means perpetual watch at the helm unless I want to go around in circles.

By now I was half dead, and my eyes were aching with the strain of keeping open. I had covered such a short distance since leaving Guadalcanal that I just had to keep on going to get any place. Sure, I had lots of food and fuel aboard, but who the heck wants to sit around the ocean forever waiting for a wind?

After my sked with Jock (ZL2GX) I settled myself at the helm wrapped in a duffle coat and blanket . . . it was almost freezing and a thin rain fell continuously, penetrating through to the marrow. As I sat there with this gentle breeze blowing from the southeast, I noticed in the northwest a terrific black cloud building up. The night was moonless and very dark, but this cloud was blacker still and stood out for miles across the horizon. Being on the leeward side I didn't pay much attention to it, assuming that whatever was building up was blowing away from me . . . that's what I thought . . .

Stretching myself out in the cockpit in an endeavour to get comfortable on the hard seat, I finally got myself settled into a position where every roll didn't try to saw off my prominent bones. Lying there in a half stupor, without any warning it HAPPENED . . .

One second I was lying in a horizontal position, the next I was vertical, actually standing on the inner sides of the cockpit coaming.

For some unaccountable reason, the wind had swung a complete 180 degrees, and I was getting the full blast of a hurricane, typhoon or what the heck you care to call it with *all canvas up* and sheeted in hard. Yasme was thrown absolutely flat, and the cross-trees on the mast were actually in the water; the engine which had been running steadily suddenly roared as the prop was brought clear of the water. Water poured into the cockpit and flooded into the cabin, and I could hear the water pouring in through the forward hatch which was wide open. Panic stricken, I clambered out of the cockpit and ran along the side of the cabin to free the jib halyard and sheet. I had already let the mainsail sheet go. The wind screamed through the rigging and the towering seas broke right over Yasme, trying hard to sink her as fast as possible. Above all this noise I could hear the gush of water as Yasme gradually filled up. In those fleeting seconds I saw the lashings around the dinghy snap like cotton and deck gear of all types drop over the side. Cans of gas, ropes, canvas awnings all slid into the seething black waters. I was terror stricken. I watched in a daze while a small bucket floated away, somehow surviving the turmoil . . . it looked so pitiful as it floated away with assorted gear bobbing around it. One lifebelt available . . . how long could I exist in those shark infested waters even if I managed to reach it? The wind

screamed sheets of rain across the prostrated Yasme. This was it . . . I'd had a good run and this was the end. I would cling to life as long as possible, but I knew in my heart that in that deserted part of the ocean my chances of survival were nil.

Some how I crawled back to the cockpit . . . in that befuddled brain of mine the cockpit meant security; it was a false sense for the cockpit was almost full of water. Then my brain started to click a little more logically and I knew why I wanted get back . . . to close the cabin doors to try to stop that flood of water pouring into the cabin. Afterwards I realized that I had also managed to close the forward hatch. So many things happened in those few seconds that my mind just wouldn't work fast enough to be aware of what was going on. I reached the cockpit, blood pouring from dozens of unfelt minor gashes picked up on the way. With numbed fingers I fumbled with the catches holding the doors back, then, as they became freed, the water slammed them shut with a force that nearly burst them inward. As they closed, the water was temporarily stopped from seething into the cabin, but still Yasme was down. Would she ever come up?

The sails were in the water, creating a suction. But what to do about it? I picked my way forward again to try to drag the sails inboard. The halyards had gotten tangled up holding the sails in position. I lay along the mast trying hard to grab a handful of taut wet canvas. My nails broke, and blood seemed to flood over everything as I made a superhuman struggle to pull that mainsail in. Oh if I only had a knife to cut it adrift, but all my knives were somewhere in the bilges under many feet of water. How long I struggled there in that maelstrom of rain and wind I shall never know, but finally the sail very slowly started coming inboard. I strained every muscle of my body in a last endeavour. I just had to get that sail out of the water. Slowly, very slowly the sail built itself up around me, and, as it came in, so Yasme gave a terrific lurch . . . was this her final gesture before taking the last plunge?

Sluggishly, she slewed around, coming up into the wind, then, so very slowly, the mast left the water . . . the sea making one final clutch to hold it, but Yasme was the stronger this time, and with a funny sort of shake, she rose up like a fighter that has just been counted almost out. For a moment I was spellbound. Could this be possible? Was I dreaming? . . . There was Yasme lying about 4 points off the wind, rolling sluggishly, but nevertheless, *upright*. How I thanked God in those few moments. I just stood there in the cockpit and cried with relief. My body was in an awful state with bruises and cuts, but I was alive and Yasme was still afloat. My spirits soared, and it wasn't until then that I realized that the main engine was still running. My luck had changed, and while I knew that Yasme had taken a severe caning, I knew she would be OK in the end.

I grabbed the gear that was trailing over the side, managing to pull the dinghy back aboard.

It took courage to enter the cabin. I don't know what I expected to see, but it sure was an utter shambles. Books, papers, tea, sugar etc., were sloshing around in the foot of water that covered the floor . . . and there was two feet more below the flooring so you can imagine the amount of water in her. First thing, get shor of all that water. If she got another lay down nothing would save her for the water would tend to throw her more quickly. The king sized bilge pump I have connected to the main engine took ¾ hour to clear her, but it was faster than the hand pump, which would have taken me 24 hours.

By now I had hove to with the Yasme lying fairly easily. The wind had continued to build up in strength and the seas appeared to be get-



ting bigger and bigger. Outside it was black as pitch and the rain was still falling in torrents. At the mast head I could see the sickly glow of the riding light as it reflected against the rain . . . who the heck is going to see that in this weather.

Every drawer on the port side had snapped its lock and had distributed its contents into the glorious mess. A 5 gallon drum of oil in the forepeak had broken adrift, and although the cap had come off, fortunately very little oil had leaked out. Two broken cans of insecticide and a bottle of after-shave lotion added to the assortment of odors in the ship. All the radio gear was OK, having been well fitted in on the port side. Had it been on the starboard, nothing would have stopped it being flung to the other side and that would have been the end of the DXpedition for some little while.

Apart from the glorious mess, I found very little material damage in the cabin. There was a large loss of food and reading material through breakage and water, but other than that, there was absolutely nothing to worry about . . . Huh!!! My biggest shock came when I got the deck lights switched on and discovered that not only had I lost 8 cans of gas and *all* my heavy ropes, but my brand new Orlon mainsail and no. 2 jib had disappeared

over the side. They had been stowed under the dinghy, and when the dinghy went over the side, well, that's when the sails went. To even consider looking for them was out of the question. The sea had gone mad, visibility was nil, and my position was unknown. It was a terrific wrench to lose those wonderful sails, but when I see the philosophical side of it all, I should consider myself very lucky that I am able to sit here in the now dry cockpit and tell you all about it.

Perhaps this is my time to say something about those famous sails from "Hard Sails Inc.," Islip, New York. Perhaps, had I had my old sails up at the time, this would never have happened. When I come to consider that a 100 mph wind hit those sails and they never tore one little bit . . . well . . . I know my old ones would have flown into tatters and Yasme would have stayed upright; but then, we can't have jam on both sides. There is no question about those sails, they are real tough and although to-date they have had one of the worst canings possible, they still maintain their shape and most important of all, they don't *mildew*.

To get back to my story . . . I figured that the best thing to do was to get all the heavy gear back into place. The Yasme had a dangerous ¾ list to port . . . so would you if you had a few tons of gear stuck on one side. What a job *that* was. I thought I would never find a place to put all the stuff that had got onto the floor. You know how it is at home with a drawer. It fills up over the years and somehow after you drop it there seems no way to get it all back in again.

As the first shock of fear wore off I lost my numbness, and began to sweat. The Yasme, although riding fairly steadily, would periodically give a dirty lurch as she fell off the top of one of those mountainous waves and I would be thrown across the cabin. As I glanced at the clock to see if it was still going after having been thoroughly doused in water and having had all sorts of gear on top of it I noticed it was sked time for Dick, (KV4AA). The generator was still running so it took no time to fire up the rig and give Dick a call. There he was, calling me. I went back, but he didn't answer. Had the old Viking had gone out on me? Before I had a chance to think more about it a W came in and told me that Dick was 5 kc higher. I was getting out, but the VFO had shifted quite a bit, and the key was shorted so I was sending out a signal all the time. It had also been thoroughly doused. There I was with two pieces of wire, 5 kc off frequency, the ship lurching all over the place, touching them together in an endeavour to call Dick.

No good, for I can still hear Dick calling away. I looked around for something to help . . . aha, a small bottle of gas! I poured some over the key and with a semi-dry rag, tried to dry it off. Then I connected the key and sent out a *very* ragged call. Dick came back, admonishing me for being 5 kc off the frequency!

I tried to tell him what had happened, and get over to him that I just couldn't copy cw right then. Dick hates phone, but my almost wrecking Yasme got him there . . . Hi! Dick, looking on the bright side, pointed out that this certainly had given me something to write about for my next article. If I have to have a typhoon like that and almost lose the boat and my neck to write an article, I'm giving up writing. I gave him my approximate position and a rough idea of what had happened, easing my mind considerably. By the time I had finished my sked the wind had dropped considerably and soon there was hardly a breath of air about. Without the wind to steady it the sea went haywire, and I knew I had better get a bit of sail on and get the engine cracking.

I went out on deck to hoist the jib. The ropes were in an unholy mess. Wires and ropes were tangled, tied in knots, and wrapped around the mast and sails . . . It was such a mess that I temporarily gave up and went back into the cabin to think about it. After two days without sleep my weary body needed a rest.

Sitting in the cabin certainly wasn't helping, so I went back outside to review the mess. It was still pitch dark, and whilst the deck lights were on, they didn't illuminate the top of the mast, and that is where the worst mess was. I just had to get some sail on her, and the only solution, as much as I dreaded the thought of it, was to climb that mast and work from the top down. I was clean out of strength by then, as you can well imagine, but I couldn't see any alternative. To put up a sail, one has to have a rope coming from the mast head, and that's all there is to it.

Never have I done it at night in the sort of sea that was running. It was utter lunacy to attempt it in my present state of health.

My muscles ached and my bones creaked as I slowly climbed that slender piece of wood. I dared not look down. Every lurch of Yasme threathened to tear me loose into the black seas below. The faint glow of the riding light finally came level with my eyes . . . I had reached the top. I hardly had the strength to hang on. I tied a piece of cord around my waist and lashed it to the mast. Seconds seemed like hours. The cord bit into my waist with the strain, but it eased my aching muscles long enough to fumble around the mess of lines at the mast head. I lost all sense of time as I struggled to clear the tangle. I could hear the crash of the waves as they built up and collapsed, and occasionally I would hear a breaker fall on the deck many feet below. Apart from those sounds I was completely isolated from the world. My body had become almost immune to pain.

I have no recollection of coming down the mast, except I do know I somehow found a

useable halyard and hoisted a sail. My next awareness was of being stretched out on the bunk. Yasme had ceased her fantastic lurching and settled to a slow roll. Several times I attempted to get up and start the engine but my body completely ignored my brain and I lay there in a semi stupor. Queer dreams flitted through my befuddled brain. My mind seemed to completely disassociate itself from my body, and I felt light in the head . . . I must have slept, I don't know, but later the whole world seemed to have come to a standstill. Dragging my aching body off the bunk, I staggered out into the cockpit, and around me was peace. The sea had turned itself into a flat mirror, the rising sun sent a shimmer into the sky as it penetrated the early morning mist, and Yasme was dead still; not a movement, not a sound anywhere.

I looked around the decks and was shaken to see the chaos. The dinghy was still half over the side and the decks were a shambles.

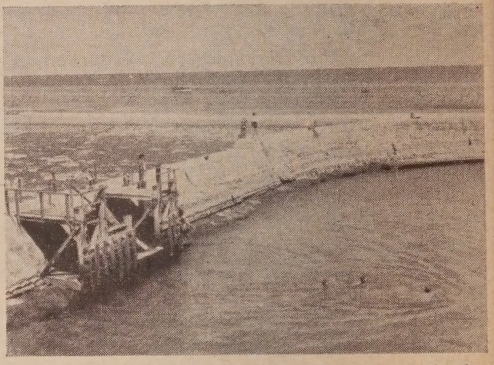
My body was a mass of pain. I patched all over with plaster to cover the many cuts and abrasions. Any movement at all was an effort, manual labor was impossible. I left the one sail up and started the engine, settling myself in the cockpit with one hand on the tiller and let the day use itself up. I needed to get sights, but the sky was clouded completely. I dreaded the coming night. Twilight came and, as is usual in the tropics, darkness fell almost immediately afterwards. The moon was completely hidden by the clouds and what few stars there were at first soon vanished

Around 8 p.m. I felt something in the air which wasn't quite normal. I scanned the horizon, looking for the dreaded black cloud bank, but nothing could be seen except the low lying clouds and a faint haze everywhere. Something was brewing. Next a fine misty rain settled in and with it came a slight breeze. I stumbled along the deck, fighting the agony, and got that tiny jib down . . . I had got to the state where I was afraid to carry anything. With the sail down the Yasme reverted to her monotonous roll, but the engine plugged along faithfully. Then, dead astern, I noticed a low lying dirty black cloud. With the wind coming from dead ahead it would be impossible for it to come anywhere near the boat, but *it did.*

With a sudden gust it hit Yasme dead astern. The screaming in the rigging put seven different sorts of fears into me, but I was ready for this one, and after the first gust, bang went the cabin doors, and with engine going half speed I let it blow me in the right direction.

Many times it tried to broach me to, that is to swing the Yasme around so she would be beam on to the wind and sea, but I wasn't having any this time, and every time that wind tried to creep around, so I would counteract it with a touch of the helm in the right direction. By gosh, that wind did its darndest to get me into trouble, but being prepared made all the difference in the world. Apart from a severe wetting no damage was caused. It lasted for two hours before it finally fizzled out to the inevitable flat calm and disturbed sea. All that night I ran with the engine and the tiny pocket handkerchief sail up. My body would take no more . . . I went to sleep at the helm and when I awoke at daybreak I was heading back the way I'd come.

We moved along all that day under the first fair breeze of the whole trip. By 6 p.m., with night soon to fall, if I was going to maintain all sail to keep moving, I had to decide whether to stay awake all night to watch for those vicious black clouds. Whichever way I do it, I shall feel like a wet rag in the morning . . . and people actually go sailing for pleasure! My sights that evening put my position at Latitude 10 degrees 57 minutes South, and 156 degrees East Longitude, on my starboard hand about 10 miles off should be a treacherous row of coral called Pocklington Reef. With luck and a fair breeze, I might sight land the next day . . . Rossel Island.



After that sight the clouds mastered the heavens and no further sights were possible. This made my position *very* doubtful. I endeavoured to maintain some sort of course, but the tendency was to swing the ship seaward . . . those reefs would put fear into anyone. Naturally I got further from land than was really necessary, in fact, at one time I must have been 60 miles from the coast. The winds were building up into gale force and not knowing my true postion was beginning to bother me. I was in contact at all times with Frank, VK9FN at Port Moresby and other lads in VK land, but they were unable to help me in fixing a postion. They tried to find a station which could give me a fix, but those stations fitted with direction finding equipment were not able to tune to my frequency. Four days passed without a sight, and according to my reckoning I should just about be arriving at Moresby. With gale force winds, 30 foot seas, and visibility down to almost zero in a blinding rain, I dared not close the shore to look for the right spot. I knew that should I sight a reef, there would be no time to turn away to sea and clear it.

Things were beginning to look a little grim. Whilst I was in continual radio contact with Frank and Captain Hawley, the Port Captain at Moresby, there was little either of them could do for me. Yasme was taking water fast and the king-sized bilge pump was going practically all the time to keep her clear. The seas were breaking clean over her, and even though I hove to, I had to finally hoist some sail to steady her. The gear still piled on the port side was giving her a dangerous list, but I was too weak to shift it. Four days now . . . no sleep, hardly any food, and still this stinking weather. Would it ever calm down? I knew then that I had certainly passed Moresby, but I could do nothing to prevent it . . . my poor little engine bravely plugged on, no match for those seas and high winds. We were being tossed around like a matchbox.

I had taken benzedrine until it poured out of my ears in an endeavour to keep awake, but still my head kept falling on my chest and it seemed impossible to keep my eyes open. I dared not sit down, but kept standing on the seat of the cockpit facing the blinding rain, its force cutting at my face. I was wrapped in a thick duffle coat, long since soaked through, and I shivering in the bitter cold of the evening. I kept both the main engine and the generator running, for if they were allowed to stop I should never be able to start them again. I didn't have power to do anything except stand there and wait for dawn to break. I have no recollection of the night passing for mind had ceased to function, I knew that I couldn't hold out much longer.

I was now entering the fifth day of this hell, something had to happen today. The morning broke with thick clouds everywhere, the seas still piling high, and the rain down to a miserable drizzle. At 8 a.m. Frank was on sked as arranged from the night before and I told him of the night's happenings. I told him I would try to get some sights if the sky cleared. He waited whilst I sat on the cockpit roof hoping for the sun to pop through the cloud banks. There didn't seem much hope of getting a sight, but I trained the sextant on the sky, my arm cramping with the strain. My eyes kept closing, and it seemed that my mind was a separate unit from my body, and that all lines of communication had broken down.

Sometime later . . . when, I just don't know, the sun decided to peep out for a second, and whilst I snapped it up, I knew it was useless. It had no form, just a hazy ball in the sky, but it might be better than nothing.

After those few shots, the sky became completely black, so I climbed painfully back down to the cabin and I called Frank to give him the news. He waited while I worked out this very doubtful sight and passed it along to Captain Hawley. Then we all settled down to wait for further activity from the sun. All the time there was continuous repartee between various hams in VK and other lands, all passing on their best wishes and doing a wonderful job in keeping my frequency clear. Not even a PY was able to break through.

The morning dragged on with me sitting on the roof of the cabin gazing into the sky with half closed eyes. Bang at 10 a.m. a rift came in the sky, and there was the sun, surrounded by massive cloud banks. Never have I taken sights so quickly . . . I got seven in less than 4 minutes . . . every one noted with the angle and the time to a split second. I thanked God most fervently in those minutes, and worked up enough energy to get back to the cabin.

Under normal conditions, I hate mathematics, logs, cosines, etc., but under these circumstances where every second counted my brain refused to function at all. The figures in the tables whirled around in front of my eyes, my note pad was soaking wet, and to decipher my figures was a job unto itself. I plugged through the calculations and finally arrived at a position line. I passed this on to Frank, but wasn't happy about it, so worked another . . . then another. Finally I had to agree that the sights where as right as they ever would be, and now, whilst we had a line which gave us a very vague Longitude, we needed a Latitude with which to cross it to determine the exact spot . . . would I be lucky at noon? Back to the cabin roof.

I lashed a rope around me to hold me in place on the heaving boat. A thin drizzle of rain beat into my face, smearing the sextant mirrors and lenses. Five minutes to twelve and still no sign of the sun; three minutes, two minutes . . . this just couldn't happen to me . . . I *have* to get that noon sight. My sextant was set at the approximate angle, and many times I imagined I saw the sun and worked the micrometer screw . . . How crazy a man gets after 5 days without sleep! My imagination was playing all sorts of silly tricks because I am sure I saw the sun. The sextant screw seemed to work automatically, I wasn't aware of touching it. Slowly the sun rose to its zenith, and slowly the screw turned . . . for a few seconds, the sun remained stationary, then, with a funny sort of hop, dropped suddenly . . . the screw stopped turning, somehow, a figure appeared in the log book, and then I found myself seated at the chart table working out the sight.

I don't remember what happened, but according to the figures in the sight book, I had worked out three sets of sights, and all were within ½ mile of each other! This couldn't be possible, but a recheck brought the same results.

Frank passed the postion to Captain Hawley, and it was then we all realized I was 10 miles past Moresby and about 20 miles south of it. I swung Yasme around in an endeavour to make a favorable course, but it was hopeless. For three hours, with canvas up and engine full out I covered ½ mile by log. I was forced

to sit at the helm continuously as every wave did its darndest to throw Yasme off course. This was impossible, and I knew fatigue would win eventually.

Captain Hawley had repeatedly told me that I only need say the word, and assistance would be forthcoming immediately. Visions of fantastic salvage bills, and worse visions of brave men losing their lives in those terrible seas made me loathe to accept his offer, but finally I realized I could hold out no longer and accepted his offer. Within 15 minutes of my request an air sea rescue craft was at sea heading for my last known postion. I just sat there in the cabin and cried like a baby.

Call me what you like, that feeling of relief cannot be put into words . . . no man in this world can find the words so that others can feel as I did.

The Search

The rescue launch started at 5:30 p.m. and gradually, the storm, as though afraid it would be cheated, gradually increased its fury. Yasme lost all resemblance to a yacht, and became just a piece of scrap wood tossed about the ocean. Radio contact was maintained continuously with Frank. The air sea rescue launch was in contact with the shore base, who were in turn in contact with Frank, and he passed on the dope to me, so at every moment we all knew exactly what was happening. The arrangement was made that the rescue launch would fire a series of three very lights, and I would reply should I sight them . . . how the time dragged on. I was told the launch would arrive about 7:30 p.m. I strained my eyes into the inky blackness, but nothing could be seen. The rain had increased until it was difficult to see the mast head light . . . that light was their only guide should they sight my flare. I prayed the electrical system would stay intact for a few more hours. 7:30 arrived, and with it a message to say the boat had been delayed and would arrive at 8. I knew it was futile to even try to sight the rescue boat since it was hardly much larger than Yasme, so I stayed at the rig and waited for instructions from Frank. Time dragged on . . . then, "VK9TW, VK9TW, this is VK9FN . . . first flare will go up in precisely one minute . . . break." I shot back, "Roger, Roger, Roger . . . OK Frank," and I tore out on deck armed with my flare gun.

I tried to look in every direction at the same time. I realised that it was next to impossible to sight anything in that raging sea. First I looked astern, then to port, then to starboard . . . nothing . . . only blackness and rain. Had that minute passed? I wasn't sure. My heart sank and I felt that everything was against me. Well, one last look forward . . . Yes! There it was! A red streak in that storm rent sky. Its tiny glow lighting up the clouds for a few moments. I was so shaken that I couldn't bring my gun up. Finally I snapped out of my coma and away went my flare. It climbed into the sky and its green glow lit up Yasme so she looked like a ghost ship.

Somehow I fell into the cabin and flashed the news to Frank, who in turn told me they had sighted both my mast light and the flare.

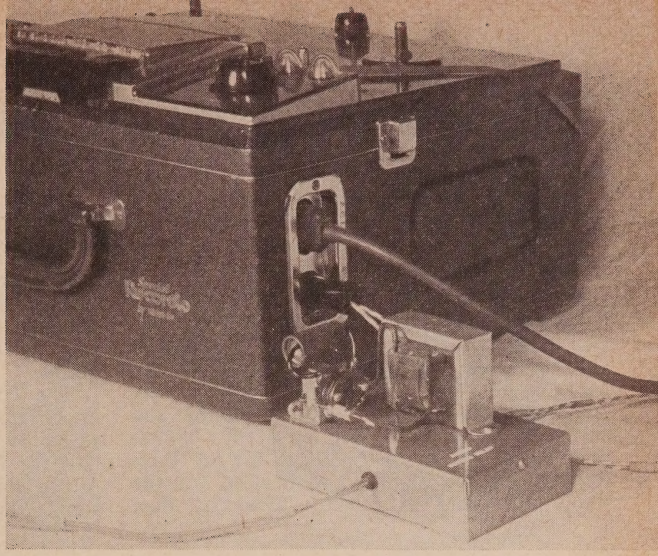
After the good news was passed back and forth I went out and stood waiting in the cockpit. First their navigation lights became visible, then the whole ship appeared, bouncing over the sea like a cork. She was a powerful job, flat bottomed and designed for speed . . . certainly not for towing a ship such as mine. Carefully they circled Yasme, sometimes towering 30′ above her, sometimes 30′ below. Three times I tried to pass a line and each time it fell short.

The skipper of the launch managed, with a fantastic throw, to get a line across the bows of Yasme. I grabbed it, and although my fingers were numb with cold and almost raw I tied on my towing hawser, which was quickly taken in by the launch. Slowly she circled Yasme to strike the right position to take the initial strain, and then, very slowly, taking the strain, off we went.

Whilst this launch was capable of 15 knots, the mountainous seas, the short flimsy towing hawser, and the waterlogged condition of Yasme all cut down the speed to three knots. I was having a hell of a time aboard Yasme and I knew the skipper and crew of the launch were probably in a worse state. I sat in the cockpit in a stupor for the whole trip. Several times I stood up to let the wind and rain blow the cobwebs away, but I fell back into a stupor directly I sat down.

The tow started around 8 p.m. and many times through the night I clawed my way out of the overwhelming desire for sleep wondering what was happening. I remember on two occasions the launch circling the Yasme for no apparent reason, and we were moving so slowly I found it impossible to steer Yasme properly. I cursed the skipper for those apparently unnecessary circles. Afterwards I discovered that the tow line had parted three times, and the circling was necessary to ease the strain whilst they reattached it to the stern of the launch. Many times the Yasme was in the trough of one wave, the launch in another, and the tow line cleaving through the center of the intervening 30′ wave. Neither of us could see the other, and the only knowledge that we were together was the continual twanging of the tow line, as the seas first let it slack and then brought the line up taut as a bow string. Perhaps my thought should have been about the consequences had it broken at the Yasme end, but as luck would have it, it always went at the launch. As you can well imagine, all idea of time was lost to my befuddled brain. I do remember on one occasion seeing a light ahead . . .

[*Continued on page 104*]



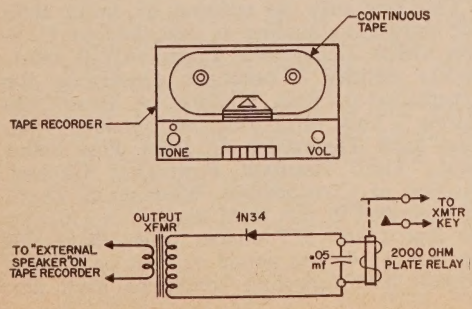
the Contest Keyer

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Minneapolis 18, Minn.

After operating in the Sweepstakes contest and similiar activities, it became apparent that some sort of machine to send the *CQ's* would be desirable. There have been many articles written on types of wheels that can be used for this purpose but the idea used in this article is probably the most versatile and, if a tape recorder is available, the cheapest.

The desired c.w. is recorded on the tape recorder. The output of the recorder is rectified and run a relay which keys the transmitter. By using a continuous tape the CQ's and call sign can be sent over and over again. The nice part is that no modifications need to be made on the tape recorder. Aunt Susie won't mind your borrowing her tape recorder for two weekends if you promise not to hurt it.

Schematic of hook-up



With this keyer one may set new record for the number of CQ's sent without signing. Just hook the recorder to your transmitter, let it send CQ's all night, and see if anybody answers you in the morning.

If a high impedance output is available on the recorder, the transformer is not needed. The relay need not be too sensitive. This one came on a temperature control unit found on the bargain pages of Burstein Applebee's 1956 Catalog p. 129. The whole unit with relay, tube, sockets, potientometer, etc. sells for less than a buck.

The number of uses for this keyer is almost unlimited. On a reel of tape I recorded not only my CQ but also the "GE OM TNX FR CALL" answer—leaving a blank space in the tape for the RST report which was sent manually. If I'm receiving a c.w. station reasonably well with a high signal to noise ratio, I can record his signal and play it back to him just as he sent it.

Any words spoken on the tape come out just as dashed. This is the c.w. man's revenge—converting phone into c.w.

Thanks go to WØHGH who helped in the construction of this keyer.

I shudder to think of the next Sweepstakes contest. So many amateurs have access to tape recorders. ■

Third Class Mailing

Fred J. Lingel, W2ZGY
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Mailing information is often one of the first needs of a new club, conference or radio service shop. Unless you are lucky enough to have someone who has been "through the mill" before, the job of mailing announcements may be difficult, time-consuming and costly. This task fell in my lap when I undertook the job of Editor-Publisher for the Rags Review, *Fig. 1*, monthly publication for the Radio Amateurs of Greater Syracuse, then



earlier as Publicity Chairman of the April 5-6, 1956, Magnetic Amplifier Conference in Syracuse. Careful use of mailing information may often result in considerable saving such as by using bulk mailing privileges. In addition a non-profit scientific group such as a qualified amateur radio club, may also be able to obtain still further saving by using "non-profit organization" privileges.

In general the mailing rates which we may use are the familiar first class hand written sealed envelope, and third class printed post card or unsealed envelope with printed matter. This last type is one you will probably use for your initial announcement and your subsequent follow-up notices and is one to be elaborated. Second class mail will probably not be of interest as it is used mostly by large newspapers and magazines. It involves a special permit, posting the list of subscribers with the Post Office Dept., paying for the mail by the pound or ton, etc.

"The "material" for third class mail for most groups may be printed matter obtained by printing press, multilith, mimeograph, etc. It will be used for such items as announcements, meeting notices, "fliers," booklets and programs.

The "container" for the material may be an envelope with the flap folded in and unsealed, a special sealed envelope with a "Pull Out for Postal Inspection" tab at one end, a folded over sheet which may or may not be stapled together or a post card.

Postal Rates

The postal rates for third class mailing for any quantity of any assortment is 2c up to the first 2 ounces and 1c more for each additional ounce. For example 3c for 3 ounces, 4c for 4 ounces, etc.

This rate may be reduced by using Bulk rate third class mailing as described by U. S. Post Office Department Form 3610-B (Rev. 10-52) entitled "Conditions Governing the Acceptance of Bulk Mailings of Third-Class Matter." This form may be obtained from your local Postmaster or from Post Office Dept., Third Assistant Postmaster General, Division of Classification, Washington, D. C. As described in this form the rate is 1½c for the first 1 and 5/7 ounces while above this the rate is 14c per pound of mail or fraction thereof. The following conditions must also

be complied with:

a. There must be at least 200 pieces identical in size, weight, and number of enclosures but the textual matter need not be identical in every respect.
b. Ten or more pieces going to the same town or city must be tied together securely both ways with string.
c. Each group of 10 or more pieces must have the top envelope reversed so that no address will show. The package must then be marked with the city or town to which it is to be sent. There is no need to separate by zone numbers. If there are 10 packages for a State, these in turn must be bundled and labelled with the name of the State. Instead of marking the envelope, the package may be labelled by wrapping a plain sheet of paper in with the envelopes and marking it with the city, town or state as required.
d. A $10.00 bulk third-class mailing permit for the calendar year must be obtained from the Postmaster of the Post Office where you mail the material.
e. A "Statement of Mailing" postal form mus tbe filled out for each group of bulk mail. It must show the weight of each piece, the number of pieces to a pound, the name of the group holding the permit, the permit number and the date. This form 3602, 3602A, or 3602PC may be obtained from your postmaster.
f. The material must be mailed from the Post Office at which you have the bulk mailing permit number. Non-profit organization third-class bulk mailing allows reduction of the mailing cost to 1c for the first 2 ounces and approximately 1c more for each additional ounce. Permission for this type of mailing must be obtained in writing through your local postmaster. It is often granted to church groups, volunteer service organizations, 100 per cent charitable groups and non-profit scientific organizations. Amateur Radio groups may be interested in checking to see if they can qualify for this latter classification. The Radio Amateurs of Greater Syracuse, for example, were able to meet the proper requirements and were able to reduce their mailing cost from $85 to $60 per year. When such permission is obtained the words "Non-Profit mailing" or "Non-Profit Organization" must appear in the upper right hand corner of the "envelope" under the "stamp." All of the requirements previously listed for the 1½c rate must also be met.

The "stamp" for third-class mailing may be applied in one of several ways such as the following:

a. It may be pasted on the same as regular personal letters and paid for when you purchase the stamps. If you use third class bulk mailing you must use precancelled stamps.
b. It may be printed on by the post office as their regular 2c third class or bulk mailing 1½c third class precancelled stamped envelopes.
c. It may be printed on by a postage meter machine generally available at post offices, business offices or letter service companies. This is called metered mail. Here the postage is paid to the group operating the postage machine generally with a small extra charge for handling.
d. It may be printed on by a printer using a nonmetered mail permit number obtained from the postmaster on application. This $10.00 permit fee is separate from and in addition to the bulk mailing fee. It is paid once and continues on as long as the permit is kept active such as by using it at least once a year.

Undelivered Mail

To be advised of undelivered or forwarded mail you may use one of the following:

a. Print in the upper left corner of the "envelope" your return address and the words "Form 3547 Requested." Then pay the postman 2c for each piece he returns to you when the address is unknown or 3c for each form 3547 he returns. Form 3547 contains the new address of the party to whom the piece was sent.
b. Print in the upper left hand corner of the envelope your return address and the words "Return Postage Guaranteed." Then pay the postman 2c for each piece he returns to you.
c. Note that the above return rates apply even though your initial rate per piece may have been 1½c or 1c.

Reply Requests

To obtain replies to a request—such as registration for a conference, you may use one of the following cards in your announcement envelope.

a. A self addressed unstamped card.
b. A 2c self addressed post card such as those obtained from the post office. These may be obtained in blocks to reduce printing cost, and cut apart after printing.
c. A printed self addressed post card with a permit number and a statement that the post office will be paid 3c if the post card is returned. These are called "Business Reply Cards" and the permit is obtained from your local postmaster at no charge.

In conclusion a few notes on mailing methods may be helpful. For example—post card

[*Continued on page 106*]

a 100 Watt DSB Mobile Transmitter

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When John Costas, W2CRR, came up with his double sideband suppressed carrier transmitter (CQ, January 1957) we looked over the pros and cons and came to the unbelievable conclusion that here, at last, was the closest approach yet to something for nothing. For the mobile operator fighting QRM and low efficiency antennas, this mode of emission has, in general, all the advantages of SSB but is actually simpler to build and operate than an AM transmitter of equivalent power. Here are the advantages as compared to an AM rig in the same power class:

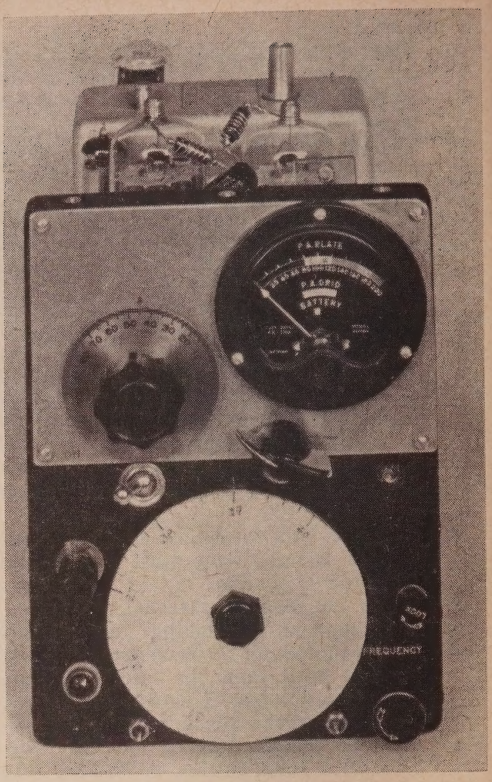
1. More "talk power."
2. Easier and less expensive to construct.
3. Lower average d-c input power required.
4. No critical or specialized components needed.
5. Instant change to straight AM if desired.

The drawback of the system, if it can be interpreted as such, is that you will now be talking to the SSB men and must therefore be equipped to receive them. Lacking a b.f.o., this can easily be done by using the transmitter VFO for carrier insertion, as will be explained later.

The basic difference between a high level DSB transmitter and a conventional AM rig is in the final amplifier and the method of modulating it. Existing exciters and/or drivers can be used together with conventional speech equipment. This was one of the reasons for using a surplus command transmitter as the heart of the mobile rig to be described. The other reason is that the oscillator circuit in the command transmitter, when suitably isolated, takes a back seat to none in terms of stability. As in SSB, this feature is essential if the station at the other end is going to decipher your carrier-less sidebands.

Circuit Details

The command transmitter we used originally tuned 4.0 to 5.3 mc and this range can easily be padded down to cover the 75 meter phone band (as well as the c-w band if desired) by



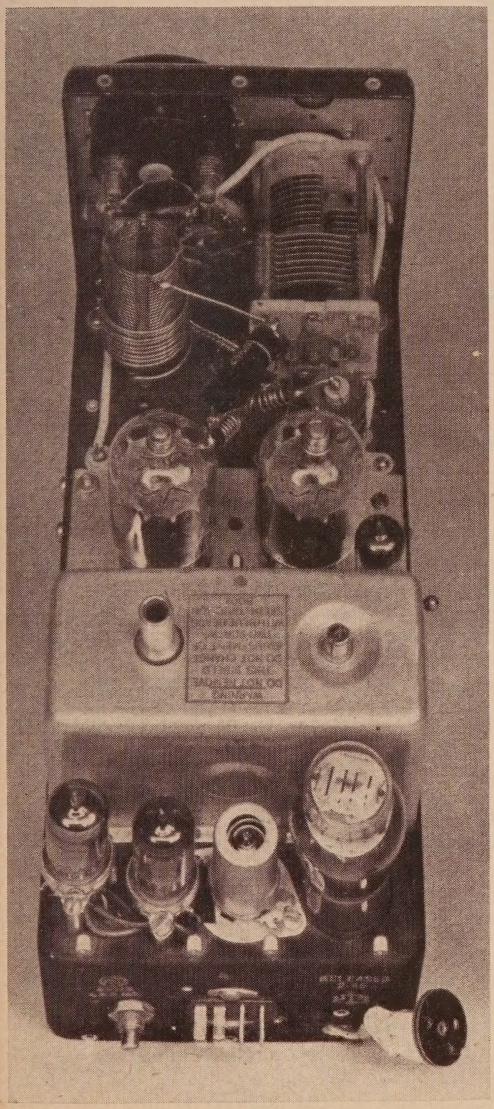
The completed Transmitter

adroit manipulation of the oscillator coil slug and padder capacitor. Using this range command rig has the added advantage of a higher "C" oscillator tank than would be the case if the 3.0 to 4.0 mc transmitter is used. This means better oscillator stability. The original 1626 oscillator is followed by a 6AK6 buffer. It should be emphasized that some form of isolation between the oscillator and final is essential—otherwise the final will pull the oscillator frequency and you will have a novel system of FM plus double sideband less carrier which will not endear you to the fellow at the other end. Since ours was a 12 volt system, the 6AK6 heater is wired in series with the front panel No. 47 pilot lamp thereby conserving .945 watts of d-c. power (You think like this after years of mobiling).

The 6AK6 develops its drive across a low "Q" slug-tuned coil. A look at the schematic will show you how to get away from the nasty chore of center tapping this coil while still ending up with push-pull drive to the final grids. The small mica trimmer at the lower end of the coil compensates for the 6AK6 capacity across the top side of this coil so you will end up with equal grid drive to each final tube. If you want to be different, you can drive the grids in parallel and operate

the plates in push-pull and come out with the same results. In case you hadn't recognized it, this final is nothing more than our old friend, the push-push doubler—except that in this application it is operated straight through. The result is carrier cancellation.

Separate grid RFC's and grid resistors are needed with this arrangement but this is desirable because we want to be able to look at the grid current for each final tube in the initial tune-up. This scheme of push-pull input can be considered self-balancing and should therefore give us better carrier cancellation, although this is apparently not a problem. At any rate, none of the stations worked to date has been able to find the carrier so it must be pretty well buried.

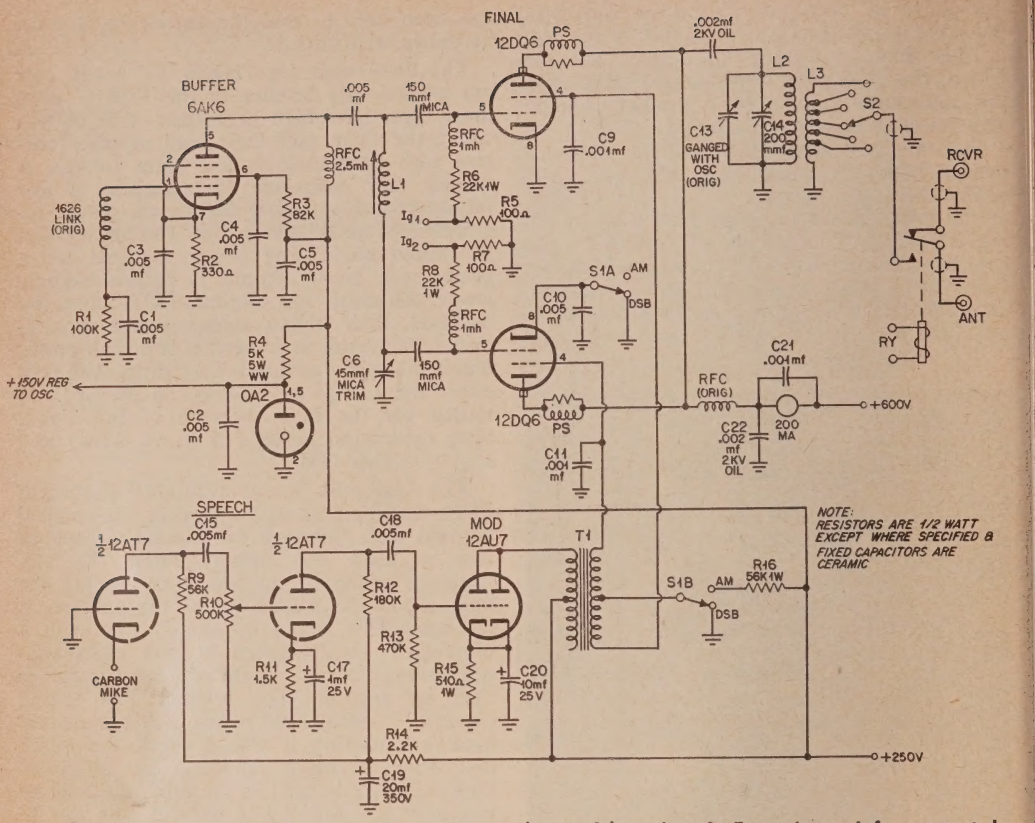


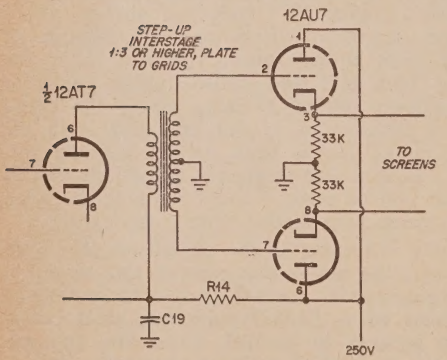
Top view of Transmitter

The final tubes are 12DQ6 TV sweep output bottles—big brother to the 12BQ6. Both these types have high perveance—that is, you can make them pull their load of plate current with comparatively low plate voltage. A second very desireable characteristic of this family of tubes is that the screen power requirements are relatively low. This means that the audio modulating power required for a given peak power output is correspondingly lower. Although the original 1625 tubes can be used, their higher screen power requirements may result in somewhat less peak power unless the audio section is beefed up. Although either the 12BQ6 or 12DQ6 can be used, we settled for the latter because of the higher plate dissipation rating (15 w. vs. 11w.) and slightly higher GM.

The final tank is a conventional shunt-fed, single-ended circuit with a tapped, link-coupled antenna coil. Although the popular pi-network can be used, the author prefers the link coupling system for mobile work because the final cannot be loaded unless the antenna is resonant. This is not necessarily true with a pi-network as evidenced by the hams who unknowingly load a length of coax line rather than an antenna. The original final tuning capacitor is left ganged to the oscillator merely because removing it would wreck the entire dial drive assembly. Although an additional tank capacitor is used in the final, the original capacitor is connected in parallel with this to build a higher "C" tank and also to afford some degree of oscillator-final tracking. If you want to be fancy, you can tailor the final tank coil and added tuning capacitor to achieve perfect tracking across the entire band. Since most of our operation is in the top 50 kc of the band perfect tracking was not essential and frequency excursions of this order can be made without retuning the final. (Provided your loaded whip is resonant!)

Now we come to the pay-off on this DSB system: the audio requirement. Or, to put it more concisely, the lack of it. The modulator consists of a 12AU7 miniature dual triode with sections in parallel. (Yes, you can use 12SN7 or 12BH7 with no changes). This is driven by a resistance-coupled 12AT7 speech amplifier. The carbon mike input circuit is the familiar grounded-grid method which does away with the need for a mike current supply and mike transformer. Notice one important point in connection with the modulator. We must have *push-pull* audio output to modulate the screens. (By the same token, don't try to use tubes like 829B, 815, 832, etc. which have a common screen!) As the schematic will show, the screens are effectively at d-c ground for DSB emission. When audio is applied, one screen is driven positive and this tube will conduct. The second tube's screen,





Above, Schematic of Transmitter. Left, suggested Cathode follower modulator circuit for DSB.

Parts List

L1—80 turns #28 enam. scramble-wound on ½" dia. slug-tuned coil form.

L2—30 turns #18 tinned, 1" dia. 2½" long. Air-wound with plastic ribs.

L3—10 turns #14 tinned, wound around bottom of L2. Space diameter of wire and cement to L2 with 1/16" concentric clearance from L3. Tap every turn.

S1—DPDT toggle switch.

S2—Ten position rotary switch.

T1—Interstage transformer. Turns step-up at least 1:2 modulator plate to screens. See text.

PS—5 turns #22 tinned wound on 100 ohm 1 watt resistor.

RY1—12 volt d.c. SPDT relay.

at the same time, is driven negative, so it just sits there and coasts. On the other half of the audio cycle, the second tube works and the first tube rests. In other words, at any given instant, only one final tube is working. The idle tube is still hanging in the circuit, however, and its internal capacity acts as a neutralizing capacitor for the working tube. Eureeeka!! True automatic neutralization!

Obviously, with no audio applied and with zero screen voltage, application of plate voltage will produce very little plate current flow. With the antenna properly coupled, however, modulation will kick the plate current up to a high value. How, then, does one resonate and load the final of this rig, especially in an automobile? Although this question would normally be answered later in the tune-up details, it is mentioned now in order to show the reason for inclusion of the DSB-AM switch. More elaborate versions of this type of transmitter include a built-in tone generator to supply a steady audio modulating signal so the final can be resonated and loaded. This is not for us mobileers! So, you say, how about a steady whistle into the mike?

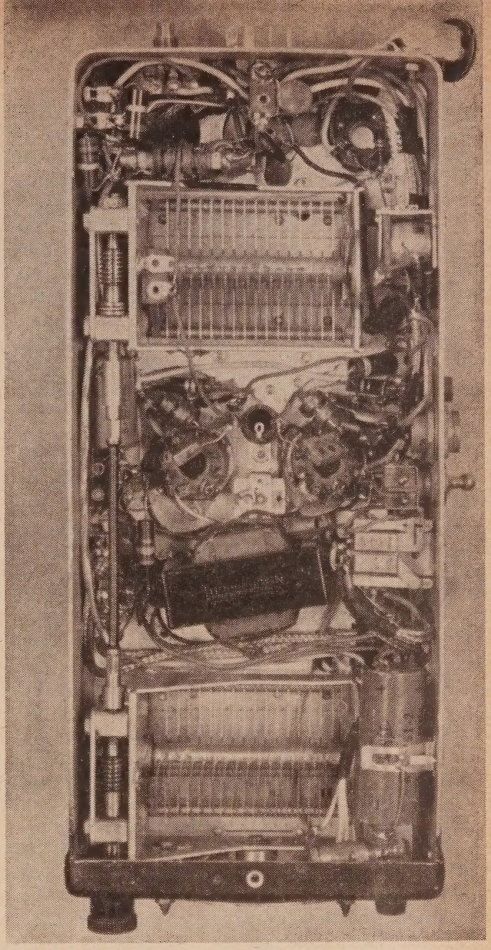
Fine! But unless your whistler is a lot steadier than ours, you'll never find the plate current dip because small variations in whistle level will vary the plate current too much. The answer is the AM-DSB switch which provides two nice features. In the AM position you have a conventional rig with carrier and two sidebands. This you can resonate and load in the usual fashion. You can also use this position to talk to other mobileers or die-hards who refuse to insert carrier for you. Once the rig is tuned up in the AM position, flip the switch to DSB and you are tuned and ready to go with lots of talk power. To put it another way, once you tune up properly on AM, no retuning is necessary when switching to DSB.

In the AM position, the switch performs two functions. First, the cathode of one of the final tubes is opened. This leaves us with a conventional, single-ended class C amplifier. Second, B+ is applied to the remaining tube's screen through the center-tap of the modulation transformer. End result: a screen modulated final! Throwing the switch to the other position restores the rig to DSB. A few minutes with the schematic will make this clear.

The modulation transformer required in this application is not critical except that it should provide a step-up in impedance between the modulator and final screens. A turns ratio step-up of at least one to two (full primary to full secondary) is needed and a step-up of one to four or one to six is much more desireable. With the lower ratios of transformation, more audio power will be needed for a given peak power output. Our transformer was dug out of the junk box and happened to be an interstage push-pull plates to push-pull grids. This was connected in reverse, with the modulator connected to one half of the grid winding to give a step-up of one to two. In general, class "B" driver transformers are not suitable because they step down. However if you can find a class B driver with push-pull plates to push-pull grids, you are in business. Connect it in *reverse*, that is, modulator connected to half the grid winding and screens connected to the plate winding. In our experiments we even tried a small 60 cycle power transformer with modulator connected to the 115 v. primary and screens connected to the center-tapped H.V. secondary. It worked almost as well as the interstage job, too, so don't be afraid to experiment!

Construction

The original 1626 oscillator circuit is left intact and the output coupling link feeding the 1625 grids is reconnected to the buffer grid. The 6AK6 buffer, 12AT7 speech amplifier and 12AU7 are squeezed into the rear apron space formerly occupied by the crystal socket and indicator tube. The OA2 voltage regulator sits just behind one of the 12DQ6's. No special precautions in construction are required other than the usual one of shielding long audio leads to prevent RF and/or audio feedback. Power is supplied at the rear via a Jones plug while phono connectors are used to antenna connections. The original oscillator dial can be covered with paper and new calibrations inked in, or, it can be replaced with a disc of thin aluminum suitably marked.



Bottom view

Octal sockets are needed for the 12DQ6's, these being secured to a sheet of aluminum which covers the area formerly occupied by the 1625's. Removal of the final padder condenser leaves room for the modulation transformer underneath. As can be seen from the photographs, the original tank coil and antenna roller coil assembly are removed to make room for the meter, antenna coupling switch and final tank tuning capacitor. Naturally, it is not necessary to follow this exact order of construction. Just make your own parts fit the available space! Note also that control circuits are not shown. Your pet ideas are probably better than mine so why complicate the schematic?

With the 250 volts applied (hold off with the 600 volts) and the oscillator perking at 3.9 mc, peak the buffer coil while measuring grid current at either of the final grid jacks. A check of both grid currents will probably show that one is higher than the other. Observe the higher current and adjust the mica grid trimmer to reduce this to a value approximately equal to the lower current. Repeak the buffer coil for maximum and again check both currents. If they are still not equal, repeat the above juggling process until they are. Once this is done, no further adjustment of drive is required to cover the phone band. With the values of grid resistors shown, the grid current should run between 1½ to 2½ ma. per tube when the final is loaded. Somewhat better cross-over characteristics are obtained on a bow-tie scope pattern with the lower value grid current but this is not a really critical parameter. The amount of grid drive can be adjusted by selecting various 6AK6 screen dropping resistors. If the drive is adjusted for 2½ ma. with the buffer coil peaked at 3.9 mc a drop of about ½ ma. will occur at the band ends. If the grid currents drop off much more than this, the "Q" of the buffer coil is probably too high and this can be corrected by resistance loading with a one watt resistor of the order of 10K to 68K.

With grid drive adjusted and balanced, apply 600 volts to the final and throw the DSB-AM switch to AM. Resonate and load the final in the usual manner. 80 ma. in this position is plenty and this represents 48 watts input to the single screen modulated final. Flipping the switch to DSB should drop the plate current to around 20 ma. and speech should kick this up to around 150 ma. or more. When the audio gain control is set to produce this amount of peak current on DSB you will find that changing over to the AM position will result in over-modulation. This can be corrected, naturally, by backing off audio gain, or, if you are as lazy as the average mobileer, you can just back away from the mike slightly.

Operation

DSB is used in the same manner as SSB, so by all means arrange things for push-to-talk so the voice-controlled stations don't have to wait for you to fumble around with switches. Instant receiver recovery is necessary and you may need an extra set of relay contacts to short out the B+ that lingers in the filter condensers of the exciter when the button is released.

In the QSO's we have had with SSB stations, none realized that both sidebands were being transmitted until we spilled the beans. Reports on speech quality were uniformly good and some glowing comments were received on the stability of the signal under mobile conditions. Signal strength reports were generally one or two "S" units higher than we used to get with the 60 watt AM rig. Perhaps the one frustrating feature of DSB or SSB mobile is the round-table with three, four, or more stations involved. This requires a prodigious memory for calls and handles plus log-keeping ability, while still maintaining the car on an even keel!

Receiving

If you are using a converter-BC receiver combination in the car, SSB and DSB can be copied by using the transmitter VFO for carrier insertion. This method has several important advantages. First, no modification of the existing receiving arrangement is needed. Second, the front-end stability of the receiver is not important because the demodulation process depends only on the stability of the transmitted signal you are receiving plus the stability of the local injection signal. This is not the case when an internal BFO at i.f. frequency is used to supply carrier. Finally, the scheme guarantees that you will always be on frequency with the other station. The level of injection signal supplied by the transmitter VFO will depend on many factors such as the amount of coupling between receiver and transmitter, nature of antenna changeover relay, etc. We run both VFO and buffer to supply sufficient injection signal to the receiver. If there is a choice, use the higher level of injection. You may have to crank the receiver volume control up higher than in normal AM operation but you will end up with almost distortionless demodulation.

Circuit Variations

Because of the simplicity of the basic DSB system, many variations are possible, both in the r.f. and audio sections. One suggested audio variation is the use of cathode followers as modulators, thus eliminating the need for a modulation transformer. Unfortunately, cathode followers have a voltage gain of less than unity, therefore, in order to obtain sufficient voltage swing at the cathodes, high driving voltages are required at the grid. This calls for a step-up input transformer of the same characteristics as needed at the modulator so you're back at the starting point. The other disadvantage of the cathode follower scheme is that a small positive voltage appears at the screens of the final tubes which raises the resting current to around 45 ma. This is on the ragged edge of the plate dissipation rating for the final tubes. Nevertheless, our experiments indicated that cathode followers have distinct possibilities.

Triodes with grid modulation can also be used in the final. Or, if desired, the DSB signal can be generated at low level and followed by a high power linear, as in SSB. Go to it . . . the possibilities are endless! ■

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Q-Multiplier for Your Frequency

When *CQ* of Jan. '55 brought the Q-multiplier again to the attention of hams, many a technician put the circuit to work. The general acceptance forced its inclusion in several commercial receivers. It has since appeared in several kit forms. The *CQ* of June 56 emphasizes the recognition of its ability to boost signal strength and to increase selectivity. Letters published in *CQ* of March and April '55 show that some hams need to use it for frequencies other than standard.

The *Heath QF-1*, with controlled plus or minus regeneration giving a Q of over 4,000 is a very satisfying control for i.f. selectivity. The tuned circuit consists of a 120 to 150 microhenry slug-tuned choke paralleled by 3300 and 1100$\mu\mu$f. silver mica condensers in series. Fine frequency control is given by a 100 $\mu\mu$f. variable across the 1100 silver mica. The centre tap of the two fixed capacitors is grounded, so avoiding the awkward effect of hand capacity on the tuning dial. The circuit of the Q-Xer from (Jan. '55) *CQ* required a large non-metallic dial to minimize detuning by the nearness of the hand.

Resonance

The *Heath Co.* designed their QXer to resonate at 450 to 460 kc. To maintain the high Q of the coil, the iron core must be kept well up into the windings on the form. At less than 140 microhenries, the ratio of inductance to the constant resistance drops down appreciably. A reactance slide rule shows that 140 microhenries and 880 $\mu\mu$f. resonate at 450 kc. With the variable at midrange, the capacity mathematically is 850 $\mu\mu$f. A stray capacity of about 30 mmfd exists in the *Heath* Q-Xer.

The working frequency of the *Heath* QF-1 may be changed while maintaining its efficiency. Two points must be considered. The 120 to 150 microhenry coil must keep its high Q at the intermediate frequency of your receiver. The Heath Q meter reads its Q as 210 at 450 kc and 205 at 560 kc. If, in testing for the Q at an i.f. frequency of 260 kc or 1100 kc, you find that the Q does drop below 150 or 130, then a different coil must be used. Where no Q meter is available, a rough check may be made with your grid-dip oscillator. Before the coil is assembled in the unit, short circuit its leads and test with the g. d. o. for a resonance dip at, or near, your i.f. frequency. There should be no dip at this frequency.

Secondly, the silver micas in the tuned circuit must resonate with this 120 to 150 microhenry coil to produce the i.f. frequency of your receiver. In calculations, the 100 $\mu\mu$f. variable should be considered to be at midscale of 50 $\mu\mu$f. Approximately 30 $\mu\mu$f. of stray capacity must be added to the final calculated capacity. In the *Heath* circuit, an 1100 $\mu\mu$f. and a 3300 $\mu\mu$f. are paralleled. Considering the tuning capacitor, and the stray circuit capacity, the formula is:

$$C_{\text{circuit}} = \frac{C_1 \times C_2}{C_1 + C_2}$$

$$= \left(\frac{(1100 + 50) \times 3300}{1100 + 50 + 3300} \right) + 30$$

The *Heath* Q-Xer did tune to 445 kc without circuit change for a surplus receiver. It tuned to 560 kc when the 1100 $\mu\mu$f. was replaced by a 750 $\mu\mu$f. and the 1100 $\mu\mu$f. was replaced by a 2400 $\mu\mu$f. Care should be taken to maintain a three to one ratio in these capacities.

While putting Q-Xers into six different receivers, this accurate system of alignment was born of necessity. Put the low frequency coil in your grid dip oscillator and tune the g. d. o. to zero beat against the i.f. frequency of your receiver. The receiver's local oscillator should be shorted to ground and the receiver's b.f.o. is turned on. Lay the uncovered Q-Xer on its

[*Continued on page 114*]

Antarctica,

part 1

Frozen Jim Morrissett, K2OLK/BRR
4N Correspondent, CQ Magazine

This is the 1st of Jim's accounts of his trip to Antarctica. The final objective is to report on the Navy use of Ham Radio there. As of press time Jim still does not have Navy permission to operate the Ham rig he has aboard.

It's summer, and the Christmas vacation is just ending. The air smells sweet, the flowers are brighter than any I've ever seen, the beaches are beautiful. The gals are summery-fresh, and gee, they look good! Maybe this is the standard reaction to a fortnight's voyage on the Pacific without sight of land. I don't know. It's too bad we won't be here longer. It's a beautiful country. Next stop, McMurdo Sound. It's summer there, too, of course. The other day it hit a sweltering 19°.

How did I get here? I said,

• • •

"Sure! I'm always ready for something like *that.*" Wayne was calling from New York.

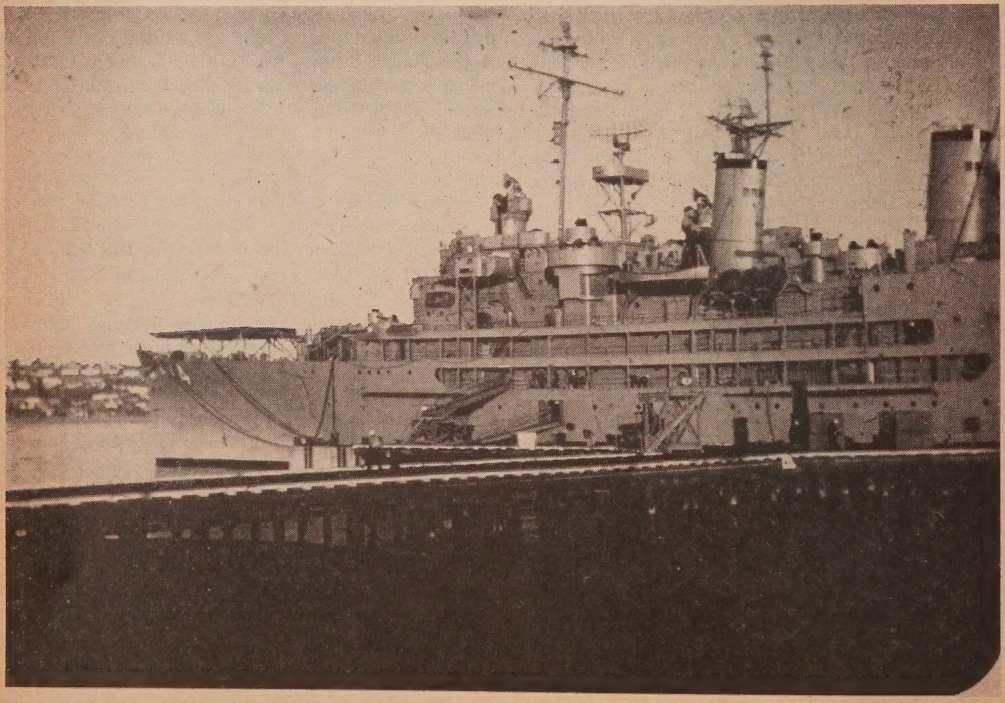
"When do we leave?" Sometime in January.

"How?" Ice-breaker. OK, but that sounds like a small boat for such a large ocean. They roll like washtubs.

"Where?" San Diego. Good. I'd already planned to be there around that time to escape the winter in Ohio. Some winter. Some escape . . . to the South Pole instead!

October, November. By the middle of November, the car was packed up with the bare necessities, and the back springs were resting on the nubs again. Mobile rig, plus a 2-meter Communicator, folding bicycle, tent, sleeping bag, typewriter, ski parka, one box of books, a bed board stretching across the backs of the seats. Leather pants, 2-meter beam, guitar, tools, monkey suit, lineman's belt (never know when that might come in handy), extra *Bassett* coils for the mobile antenna, and a box of Indiana apples. My bucket of old cigar butts I left at home. You see, I don't smoke.

We're off, and making a bee line for California. First stop Purdue University in Lafayette, Indiana. (I'd decided not to take the Florida route, just not enough time.) Brother Bud teaches there. He showed me around the IBM room where the card-hungry electronic marvel is computing statistics for an enormous problem in economics involving a whole city, one of the major industrial areas of the United States. What a fascination those machines have! Absolutely no intelligence,



but enormous ability. High-speed morons. The operator's time is spent figuring out how to ask the right question. Then, brr-r-rrp! out comes the answer, a fraction of a second after the card is inserted. It takes hundreds of cards to keep the rascals blinking and chewing for just a few minutes. I was all set to pitch my tent there for a week, but they didn't want stakes driven in their nice new linoleum floor, and, wraith-like in the distance, the South Pole was calling.

I said bee line, because I've watched bees and never seen one make a straight line yet, though I understand they do when they're headed back for the hive. I wasn't bee-hiving this trip, so Texas seemed the next logical stop on the way to California.

Good contacts on 75 from the car, early in the morning, around sunrise. Ten was open later in the morning, and really hot with stations in the west and south. Getting far enough away now that I'm working a few New Englanders, too.

Good old 66, and on into St. Louis. Saturday night, and not a soul on Ten or Two. CQ's to no avail. Oh well, on thru the night 'til I get too sleepy to drive, pull off, climb up on the bed board and into my sleeping bag.

Oklahoma. Little warmer, leaves still turning.

Dallas around midnight. Same story. Can't raise anybody on Ten, nobody on Two.

Chilly night in Dallas, but turning warm at last, heading straight south for San Antonio. Sun beating down and finally making itself felt. Off with the shirt, and a gradual strip act begins which culminates in a week of sunbathing in warm, sunny San Antonio.

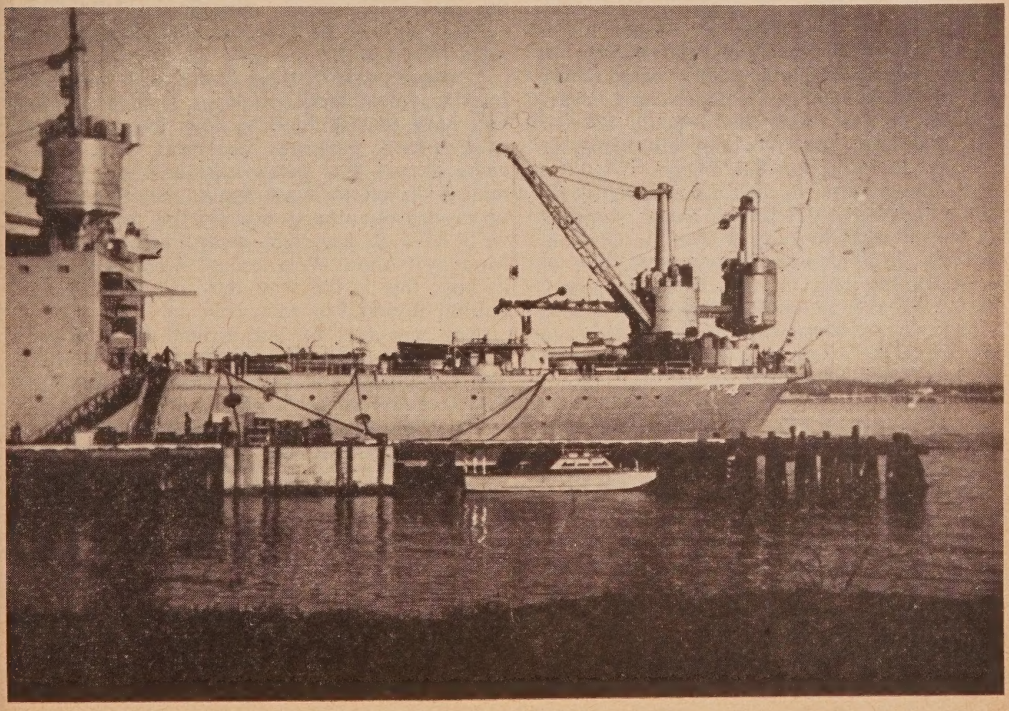
Where are all these Texas hams? I hear them by the thousands back east. But a ground-wave contact is difficult to come by. Meanwhile I'm working all the rest of the states, mobiles in Ohio and New Jersey, three-ways with east and west coast. Finally caught my first local, a mobile just outside San Antonio—after penetrating 400 miles south into this vast domain. Next day, up with the tent, and a week feasting on sunlight and sweet Texas grapefruit. Gas up on vitamin D and whatever else may be in short supply in Antarctica. Don't be half safe! Plenty of contacts on Ten Meters. These Texans have it made. Practically anywhere in Texas seems to be a hot radio location.

Seems a shame not to run down to Mexico City now that I'm this close, but time's growing short. It's December now, and I want to be in California for Christmas.

Across to Big Bend National Park, and a day winding thru weird beauty, canyons and rugged peaks, and desert with bright purple cactus.

Broke in on the New Mexico net on 75 this morning, passed along word to Louisa (W5RZJ) in Santa Fe and my sister in Albuquerque that they should have time to leave town before I descend on them for a visit.

Next day El Paso, calling CQ frantically



on 10. I know there are hams here. Old W5 Just-In-Fun ought to be on. Who calls? Akron, Ohio, S9 double-plus both ways. Oh, well.

A quick trip across to Juarez, to see what it feels like to be in Mexico, and to give my sales resistance a little workout. Great shape. Only bought a coconut, some cherimoyas, a papaya, and a switch-blade knife. Figure that'd be something to have. Never know when I might want to become a juvenile delinquent.

Across the bridge, into the car, and head north into the eerie flat country of New Mexico.

QST Jim

Up thru Alamagordo and into Mescalero Apache Indian Country, where I parked and slept again. Plenty cold up there, used both sleeping bags. What will I need in Antarctica? About six, at this rate. Called in on the 75 phone net in the morning, learned that Wayne has been trying to get in touch with me regarding South Pole trip, and wants me to call him. OK, will go straight to Albuquerque and call from there. So, winding thru the beautiful pines of the Lincoln National Forest and down into the desert, I made for AlbeQQ, and my bewildered sister, who proffered stacks of mail, radio and phone messages with a "What's all this about the South Pole?" look on her. The news from Wayne was that the ship leaves Dec. 27 (only 2 days after Christmas!), and the Navy is frantic for a medical report on me. Well, the doctors in Albuquerque didn't know exactly what would be required beyond a regular chest x-ray, blood test, etc. Looked like I could have it done faster and more economically (free) at the Navy dispensary in San Diego.

Not enough time to visit Louisa, darn! I'll have to high-tail it out to San Diego, stopping only long enough to leave a note for Gordon, W7MWZ in Phoenix, and trying to talk to the rest of the gang on Ten. What happened, again? Had a great contact,—with St. Louis. I'd have to go back where I came from to work Phoenix. I never called CQ Phoenix that long from Ohio without gettnig an answer.

On to Yuma, across the desert, thru the mountains and down to San Diego. CQ's on 2 and 10 yielded, behold!, a call on Ten from the engineering college club station, which led me up to 29.5, the San Diego mobile net frequency, and a contact with Ralph, W1ZHU/6, over on Coronado, my destination. Ralph called in over at the Naval Air Station for information, then guided me on over to the ferry and across to Coronado. Stopped for a short visit with Ralph. Well, he'd been on the Curtiss the day before, and it was no ice-breaker. This I'd begun to suspect a while back. Thank Goodness. She's a big ship, an AV-4, plenty seaworthy. He was surprised at our plans to install an amateur station aboard. It seems this is definitely not done on Naval vessels, not at all. Well, I'd heard that the wheels were moving in Washington and that authorization would come thru with no difficulty. Blissful me.

Up bright and early and over to the Naval Air Station. Couldn't figure out just how to get thru the gate, but a call to the Public Information Officer worked like magic. A jeep arrived in just a few minutes, I left my heap outside and assumed the role of visiting royalty. PIO fixed me up an appointment with the Dispensary, and over we went for the check-up and shots.

Blood sample for tests, chest x-ray, fill out a history (I hate those. I can't remember what happened when I was 4, was it whooping cough or mumps?) After inventing a plausible past, I stripped my shirt off for the shots. The directive says take the shots at different times, or in so many words you can get the double whammy from smallpox vaccination and other shots at the same time. They do that here? Nah, they say. Smallpox left arm, Tetanus right arm, typhoid left arm, at this rate I have a few arms and several legs left.

To the ship

Best to meet the ship's doctor and run the rest of the checks over there, since he'll be the Doc along on the trip. So into the jeep again and over to Pier G. Hey, is that my ship? Wow! Big.

Checked aboard, then down thru the dark interior, down ladderish steps, thru doorways you have to step high to keep from tripping over. Blood pressure, heartbeat, etc. guess we're all set. For pete's sake let's get an air mail letter off to Washington, they're holding up my travel authorization for this report. OK, we'll have it out right away. Tomorrow, or Monday? About Wednesday! Grin and bear it, boy, this is the way they operate here, I remind myself.

Any messages for me around here? Guess not. Oh yes, about the amateur radio station. The Commander is very anxious to meet me. OK, let's do that for a while.

The Commander is all enthused about the ham station, but a little worried because of a letter the Captain sent out just yesterday. He shows me a copy. It's a lettter to Art, back at CQ, saying the captain has reviewed the situation with the electronics officer and maintaining such a station looks like too much extra work and he won't recommend it. And a copy of this has gone out to one of the men at CNO (Commander Naval Operations) in Washington. These guys are picturing a lumbering big BC610-like thing with a couple of steel towers,

a crew of maintenance engineers and headaches furnishing spare parts. And here I am with a sleek little Pacemaker and an NC-300. Oh, irony! Trouble now is, the skipper will have to appear to reverse his position if he gives us the recommendation. Do I want to meet the Captain now? No, I'll see him tomorrow, after I talk to New York.

That night Wayne is right in there with the hopeful information that a precedent has actually been established. A naval vessel on a similar unclassified mission to the arctic had a ham station aboard. Hope springs eternal! Navy really goes for precedents and all that jazz, you know. And, of course, General Curt LeMay is flying Globemasters on world tours with KWS-1's aboard, testing SSB. But that's Air Force. Navy's the traditionally *traditional* branch. We still have a bit of a tussle on our hands.

Next day I meet the Captain. He and the exec and I review the situation. The Captain plainly takes the position that it's just not his place to recommend such action (lifting the ban for this special IGY cruise), while it's my understanding that, according to Navy tradition, the ship's captain has to be the one to initiate such a request. The Captain's a nice fellow, but I can see easily enough we're not going to get anywhere. But I do get him to agree to send out a letter today, or at least by Monday, saying he's talked with me, that the equipment will not require Navy personnel, maintenance or spares, won't require a lot of space, and generally won't get in anybody's hair at all.

In the meantime I can see my sales talk has really hit home with the exec. He's itching at least as much as I am to get this station on the air. Afterwards he tells me he was with the Curtiss at the a-bomb tests at Bikini, and they set up a station on the rock there, not being able to operate aboard ship. The captain they had then was an enthusiastic ham, and handled traffic into the wee hours for all hands aboard —a somewhat startling phenomena for, say, a seaman 1/c to behold! Naturally they all thought he was nuts, but a great guy.

So why not us?

Bikini was a highly classified operation, though, and if they could swing permission to operate on shore, an utterly *un*classified operation like ours should stand a pretty good chance of securing the permission we desired. It looked like a situation where the captain could swing it, if the captan were a ham. Well, El Tuffo. I've converted people to ham radio, but a 24-hour rush job on the captain was out of the question. It would take real brain-washing equipment. Like a KW, a 50-element beam, wide-open band and maybe a little sodium pentothal. No got. I'll report the situation to Wayne, see what can be done on the east coast. Apparently the outfit to work on is the IGY Committee itself, and the COMNAVSUPFOR, Commander Naval Support Force Antarctica.

After doing everything I could to grease the wheels in San Diego, I crossed my fingers and headed up for Fresno and my long-delayed visit with K6RVX. John expected me to come for skiing, old-timesing and a nice long visit. New itnerary allowed 3 days. My arctic gear was to be sent to me there, and Wayne was shipping his camera there by air mail. Neither were there when I arrived, and I got the sinking feeling they might not come before I left, due to the delay in pre-Christmas mails. I pictured myself braving the Antarctic winds with nothing but jeans and a ski parka, barefoot no doubt, with nothing but my old Mercury II to snap pictures of the penguins, seals, and KC4-USA.

John agreed to forward the stuff to San Diego as quickly as possible if it should come before Christmas Day, and with feeble hope, I soon lit out for L.A.

It's nice

I was all set to hate L. A., have been for years. Everyone's told me what a grim place it was, even without the smog. So I was pleasantly surprised. I didn't even halfway despise the place. In fact, I kind of liked it, what I saw of it. Sunny, warm, fabulous freeways, beautiful homes decorated and lighted for the holiday season, and no smog that I could see.

Buzzed Wayne in New York and he says Danny's in town!—he'd flown back to 'Frisco after losing the Yasme, and, nearly, his skin, and was presently staying in L. A. at Bill Guimont's (W6YMD). It's impossible to get phone numbers of L.A. hams, so I drove out to Pacific Palisades to Bill's, only to find that Danny'd just been "transferred" to the QTH of W6VUP. Visited a spell with Bill, saw the now-famous controversial tower and his rig (my, they make large KW's out here!), then got on the phone to try to locate Danny. He and VUP were over at the TV station in Hollywood, so I buzzed on up there, stopping for a short short visit with Bill Orr, W6SAI on the way. After a Hello, Merry Christmas, darn! wish I could stay longer, sign the visitors' log, anl Goodbye, I rushed on up to the TV station and actually caught up with our famed world traveler Danny, looking fit as a fiddle, brown, and boat-hungry. Learned quickly enough that the one thing he wants more than anything else is to get another ship and get on his way again.

"Want to come along to the South Pole, Danny?"

Nope. Apparently Danny's willing to risk his neck 7 days a week, but reserves the right to do it in a tropical climate.

We all sat around for a couple of hours trying to figure out how to get Danny installed and on his way again. Anybody out there with

a glass-bottom sloop they want tested on a round-the-world cruise?

Midst brewing plans for TV appearances and Important Contacts, I left Danny and the S. Calif. DX Club and rushed back down to San Diego to move aboard the Curtiss, see what gear had arrived, and to see if the license situation had cleared any.

• • •

Dec. 24. Moved aboard. Hey, nice quarters! Sharing a stateroom with a mysterious brown suitcase whose owner hasn't put in his appearance yet. Plenty of room, so I'll bring my tape recorder and color slides.

The NC-300 has arrived! Lovingly I cart it up to my room, unwrap it, look it over, then plug it into a likely-looking receptacle. Sure enough, we have 115 volts, 60 cycles a.c.! It lights, but it doesn't play. However, stringing the antenna out the porthole and dangling it over the rail fixes that, and signals are heard on all bands. Feeling the itch a little stronger now. Where's that transmitter?

Clever questioning reveals evidence that the transmitter is aboard, in a storage room below. I enlist a little help to find the place. Yep! There she is, a bee-yootiful Johnson Pacemaker with a giant box of spare parts. Santa, you old rascal, you, we're in business! That is, if—

Well, if. Ugh. The situation regarding the license has become, if anything, a little murkier. What's holding things up in Washington? Everybody I've talked with thinks having a station aboard is a terrific idea. They're all for it. IGY people are for it. Naval personnel are for it, though the Captain has already committed himself to a neutral position.

"Dear Santa: Please bring us a ham license. KC5USN will be just fine. Hopefully, Jim, K2OLK." "P.S.—I've been a good boy."

Well, I've done everything I can. Now let's see what we can recapture of the Christmas spirit. Hop in the car and head for Encinitas. There, that wasn't too hard. Lots of Christmas carols on the radio, and brightly lighted homes and evergreens along the way. Soon I'm singing along with the carolers, looking forward to a wonderful Christmas away from home, with friends in Encinitas.

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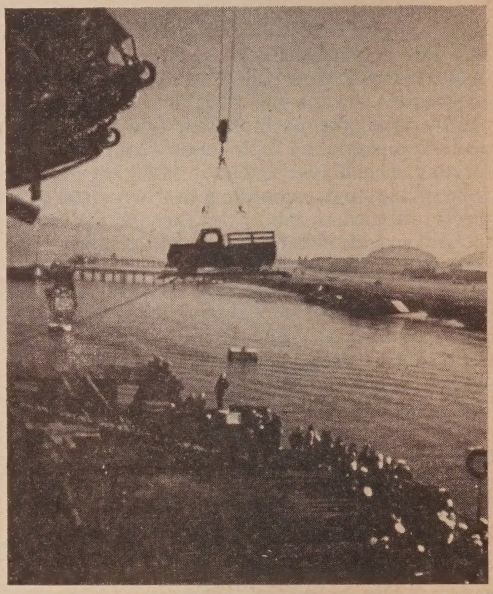
DEC. 26. Down to San Diego again, this time for good, that is til sometime in March or April, '57. Got to pick up a few odds and ends, antenna wire and insulators, long underwear, ski cap and sox, then secure my auto for a long siege of inaction. I'll park it in the compound at the Air Station.

I drop by Western Radio and meet some of the gang, even talk with Herb Becker, W6QD, who reps for National on the phone. I assure Herb that the 300 works fine, and best wishes are passed to and fro.

Over to the Island and my first night's sleep in my new home. In the morning, a last-minute stop while I've still got the car, at Safeway, to pick up some persimmons, the main item I've been eating since I hit California. Wish I had some now. I should have brought along some seeds to plant in Antarctica. And a blow-torch, to keep them warm.

I drop by Security next, park and hand over my keys. Well, there goes my car. I arrange for a taxi over to the Curtiss. I am now a permanent resident. Shortly we'll be severing our land-ties, disconnecting our phone line, water lines, mooring lines, hey! we're really gonna leave! I'll be darned.

And we do. A few speeches on the deck aft,



Loading a truck on the Curtis

the band plays, civilians who don't want to go to Antarctica are invited ashore. Soon, up come the gangplanks, the tugs hitch up, people wave while a few crying young 'uns cling to their mother's skirts, they recede from view and we shuffle around a bit, and suddenly here we are, living with this new thing, movement, a gentle throbbing of engines somewhere far below, and the gentle undulation of the sea.

Eventually that coastline gets to look pretty monotonous, so we decide to try the inside of the crittur for a while. These complex motions take a bit of getting used to, but I find that lying down and thinking the whole thing over seems to resolve whatever problems may have been developing.

After this, each hour gets to look pretty much like the next, and later, the days do the same. The ocean and the sky are pleasing, but they don't hold one's interest for long, so attention turns inward, and we discover that

our world has shrunk to the size of a city block, with a backdrop of pretty scenery around.

I look my roommate over. Earl Beck, expert on cold-weather machinery, Bureau of Ships & Yards. He's a nice guy, and we get into some interesting discussions right off the bat.

We have quite an interesting group. Two other correspondents, all the rest are scientists and Navy personnel. But surprisingly like human beings anywhere else. Even the scientists. Even the correspondents.

My dreams of a tropical vacation along the way were abruptly squelched when I learned we were headed straight for Port Lyttlton, New Zealand, non-stop. Our route wouldn't even bring us within sight of land, though we'd be passing thru some of the most beautiful islands in the world. Nuku Hiva, Tahiti, Samoa. No Pearl Harbor, no South Pacific paradises, nothing but lovely deep blue water for us.

My last understanding (now referred to as "fond delusion") when leaving San Diego was that permission had been cleared for the license, and that official word would arrive by wire either before we left Dec. 27 or on board within the first couple of days. So I set up the receiver in one of the spare radio rooms, hitched up to a spare antenna, and proceeded to listen.

Oh, brother! Ham Heaven! A 33′ vertical, the most perfect ground sheet in the world, and not an obstacle in sight as far out as the horizon in all directions. Ho hum. This delicate state of shortwavus reservatus stretched out to two days, three, four. Something happened, rather didn't happen, I could feel it with an ominous foreboding.

I was right. FCC wired "Navy advises operation is not approved," and so on to the effect that I can operate portable in Antarctica provided authority is granted by the Naval Officer in charge of communications there.

Well,—well, well, well, fooey. A disappointment, but maybe they'll change their minds. Maybe FCC asked them before they'd made a final decision, in which case the license would still be along any day now. Nevertheless, the more I thought about it, the more I fumed.

There was no reason at all why we should not be granted permission, and all the reasons why we should. Only very dogged inertia could explain our failure, in my mind, and apparently that's what we got, an enormous incalculable dead-heavy massive gluey-thick sure enough immovable object, and us without an irresistible force. Well, tough!

Had a very pleasant chat with Dr. Gould, director of IGY operations for Antarctica, and he was surely all for the ham station idea. Hoped for a while that a wire of recommendation from him might help things along, and he was quite willing to send one, being just as enthusiastic as anyone else aboard about our having a ham station. So he had dinner with the Captain and reviewed the correspondence on the subject.

When I saw him next day first thing he said was, "I've decided not to wire a recommendation," etc. to the effect that he felt it might be undiplomatic, that the Navy had done such a fine job of logistics and support of the IGY program, he didn't want to endanger relationships. Well, I stuck around for a few minutes indulging in desultory conversation covering this and that. I said that I personally didn't feel too bad about the refusal, but I felt it was a darn shame I couldn't be on the air sharing this really unique experience with amateurs and SWL's all over the world—for this reason I felt I should do everything possible to secure the license. Heck, no, I didn't care so much personally, I was having a good time.

But I felt disappointed when I walked out on the deck. I felt downright depressed. Depurposed. Sure, I'm aboard as a correspondent, and I can still get the story and tell it when I get back. But the idea of a mobile ham station that would be on the air every day of this long journey to the Antarctic possesses an excitement that just can't be matched. Kaput. I thought about jumping over the side, but that didn't seem like a real solution.

Having a fine time, wish you were here, fellow amateurs. Wish I could at least talk to you.

QRT

I was *off the air!* by golly, and for the first time I couldn't fix it with a soldering iron or a new tube. Is there no justice? Grrrrr. Best thing I could think of was to send a wire to Wayne, in case he didn't know of the predicament already, and tell him I'd try to get in touch with him via ham radio from New Zealand. New Zealand, way the heck down in the Southern Hemisphere.

Rumors were circulating aboard about some strange kind of initiation which was impending. The words, "Shellback"* and "Pollywog"** figured largely in these whisperings. Would the civilians be initiated, too? some wondered. Speculation was rife. Probably the civilians could be initiated on a voluntary basis, the hands figured. Came the day for the initiation, the Day We Crossed the Equator, there weren't any civilians aboard. No civilians, no officers, just Shivering Pollywogs and Gloating Shellbacks, with King Neptune and his Royal Court presiding over all.

• • •

It's Jan. 1. Some curious devices are being erected on the main deck aft. Several enclosures, one of which is lined with canvas and contains several feet of water. A runway, a platform with a number of chairs, two of which

---

* them as has
** them as hasn't
} crossed the Equator.

are turned backwards and placed precariously close to the platform's edge, backs toward the pool. Large vats of foul-smelling substances have been set out to marinate. A few old-fashioned stocks are in evidence, as well as leg chains, and an occasional thwack! is heard in the distance as a sailor lazily slaps the palm of his hand with a bat-like canvas device. Strange, all this, aboard a ship that was so official and business-like 'til today.

Mutiny! Groups of Pollywogs have banded together and nearly every Shellback has been dunked. The Shellbacks, outnumbered at about 600 to 55, are quietly taking down names and awaiting tomorrow's session of the Royal Court.



Capt. Fritter and Jim on board the Curtiss

Tension mounts. (What a production!) After dark, searchlights switch on and scan the sea. Suddenly Old Neptune Himself appears over the edge of the flight deck, in full regalia, trailed by his Royal Crew. 'Midst the popping of many flashbulbs, he presents the Captain with a document charging all Pollywogs aboard with various heinous crimes against the Denizens of the Deep, and demanding a Trial and Just Retribution. The Captain promises to carry out his wishes, to subpoena all Pollywogs and present them to the Royal Court in the morning.

Morning comes and a sure-enough official-looking summons is served each Pollywog. I'm among the lucky (?) ones to be summoned first, in fact a little sooner than I'd expected. I beg a moment to change my shirt, drop off my shoes on the way by my stateroom. I've been clued. Most of the sailors are wearing ripped up jeans, holey T shirts and old socks without shoes. My, my, what could possibly happen to require such drastic preparations?

Har de har, har! Just what happened is what could happen, that's what could happen.

To spare you the sadistic enjoyment of our sufferings, suffice it to say we were corraled, brought before the Court one by one, charged, found guilty (some wise guy pleaded "nolo contendere" but he didn't get off either), then systematically basted, smeared, anointed, clipped, dunked, heaved out and soundly paddled. And I've left out numerous details that none of you landlubbers and Pollywogs will ever learn 'til *your* time comes. Secrets of the Deep. I am now a Trusty Shellback. You should see my Certificate.

The days take on a sameness again. We're approaching the sun. It's still lurking at about 20° South, just beginning its trip northward.

A few days later and the sun is directly over head. Looks funny, lying flat on my back on the flight deck. Like a bright ceiling light in some enormous room. I've never seen it straight up before.

Stranger things are in store. Where we're going, it's daytime all the time, 'til April or so.

It gets colder right away now. Temperatures are even a little lower than when we first left California. But it'll be warm in New Zealand, they tell us. Won't be long.

• • •

Jan. 12. Arrived Saturday a.m. on schedule. First land we've seen since leaving the California coast, though you couldn't say we've suffered in our 15 days at sea. Unless, of course, we pine over all the beautiful south sea islands where we didn't stop. Movies every night, service none of us civilians are used to, and plenty of decks to walk, people to visit with, etc. The really interesting movies, though, are in the morning, when we generally gather for a film on "Cold Weather Living Aboard Ship," Survival in such-and-such frigid zone, in various emergencies, documentaries such as "The Secret Land" (on previous Antarctic Exploration). That's a pretty hoary land down there. A few statistics:

The Antarctic Continent is a land mass approximately the size of North America, covered with ice and snow up to several miles thick. If melted, this ice would raise the level of the seas of all the world about 140 to 200′, perhaps more. Don't panic New York, though, it would take a long time to melt. Antarctica is the "other" continent of the world. You could reach any point in the known world from any other point, without having to cross more than 60 miles of relatively shallow water. Ant-

[*Continued on page 126*]

Donald L. Stoner, W6TNS
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SURPLUS

A Command Set Six Meter Transceiver

Every so often I really get enthused with a surplus conversion, and this particular unit is one of them. As the expression goes, I have been having a "pigs picnic" operating low power on the Six meter band. The Command Set Transceiver represents one way of getting on this band with a minimum of cost.

We do not hear much about transceivers these days. For the un-initiated, a transceiver is a device that uses part of the receiver while transmitting or vice-versa. In the Command Set Transceiver, the 12A6 audio amplifier is also used as a modulator, hence the term transceiver is applied. This combining of functions simplifies the device without sacrificing performance. The unit was designed so that it may be used as a home station or a mobile rig with equal efficiency.

Why use the Command Set receiver as the basis for the transceiver? Well, you do not really have to, the converter and transmitter could be used in conjunction with the station receiver. However, the Command Set receiver lends itself nicely to this operation without much trouble. As you probably know, the Command Set receivers have been converted to just about everything but an automatic dishwasher and I am willing to concede that someone might even be working on that! Herb Brier wrote an excellent article (CQ, Feb. 1954), The Command Set Roundup, that was intended as a final-final conversion article on this "dying" piece of surplus. Not so, say I. The Command Sets may be down and kicking, but they are not dead yet! A check of the local surplus emporiums showed that each one had both the BC-454 and the BC-455 receivers in stock. Prices ran between four and seven dollars, depending on the condition. Most hams admit that they have one or two tucked away for use someday.

About Six Meters

I was amazed at the activity on Six meters. Morning, noon and night there is always someone to talk with around here. No less amazing are the East coast band openings. One morning about 10 o'clock, the stations started rolling in from Connecticut to Kentucky. It was rough copy at times, but when the QSB peaked the signals really made the speaker rock and roll. Antenna polarization (always good for an argument in Southern California) did not appear to make much difference on the DX stations. Either vertical or horizontal provided about the same signal strength. However, it was a different story on the local stations. Vertical polarization was used, or no Q5 contacts were made.

Circuit Description

As stated earlier, the basis for the Six meter transceiver was the BC-454 (3-6 mc) Command Set receiver. This particular unit was used because of the more selective i-f amplifiers and the broader tuning range. With only the three mc bandspread, the 53 to 54 mc portion of the band was lost. However, the author has never heard anything on these frequencies, except Channel 2's sideband and therefore, the missing mc have not been missed.

On receive, the BC-454 acts as a tunable i-f amplifier in conjunction with the International Crystals FCV-1 crystal-controlled converter. An incoming station, on say 50 mc, beats with the 47 mc crystal in the FCV-1 and the resultant frequency of three mc is amplified in the BC-454. When the receiver is tuned to receive four mc, it has the ability to receive a station on 51 mc, and so on. In this manner, the dial of the BC-454 can be calibrated for the Six meter band. Admittedly, the image rejection would be somewhat better if the 6-9.1 mc Command Set receiver (BC-455) had been used. However, the additional selectivity of the lower frequency model more than made up for this slight disadvantage. If you have a BC-455 on hand and wish to use it instead,

the following conversion instructions still apply, but it will be necessary to use a 43 mc crystal in the FCV-1 rather than the 47 mc crystal specified.

On transmit, B plus voltage is removed from all the receiver tubes except the 12A6. It is applied to the FO-6 Six meter oscillator-driver unit and to the screen grid of the 5763 final amplifier. The transmit-receive switch also changes over the antenna to the transmitter and connects the microphone transformer to the grid of the 12A6, converting it to a modulator tube. The final amplifier draws current only when transmitting because its screen voltage is removed while receiving.

Mobile use was contemplated for the Command Set Transceiver and therefore, a noise limiter was added to the original circuit. This noise limiter is novel in that it uses only two components, a 1N34 crystal diode and a single pole, single throw slide switch. These two parts are connected in series from the grid of the audio amplifier to ground, with the cathode end of the 1N34 connected to the grid. Note that the diode is removed on transmit to prevent any audio distortion of the transmitted signal. The limiter appears to be as effective as the usual detector connected arangement and a lot simpler to install. It should be switched out of the circuit when not in use, for as with most limiters, it introduces audio distortion. Incidentally, this circuit may be used to an advantage in the ASB-5 and the BC-645, 420 mc units.

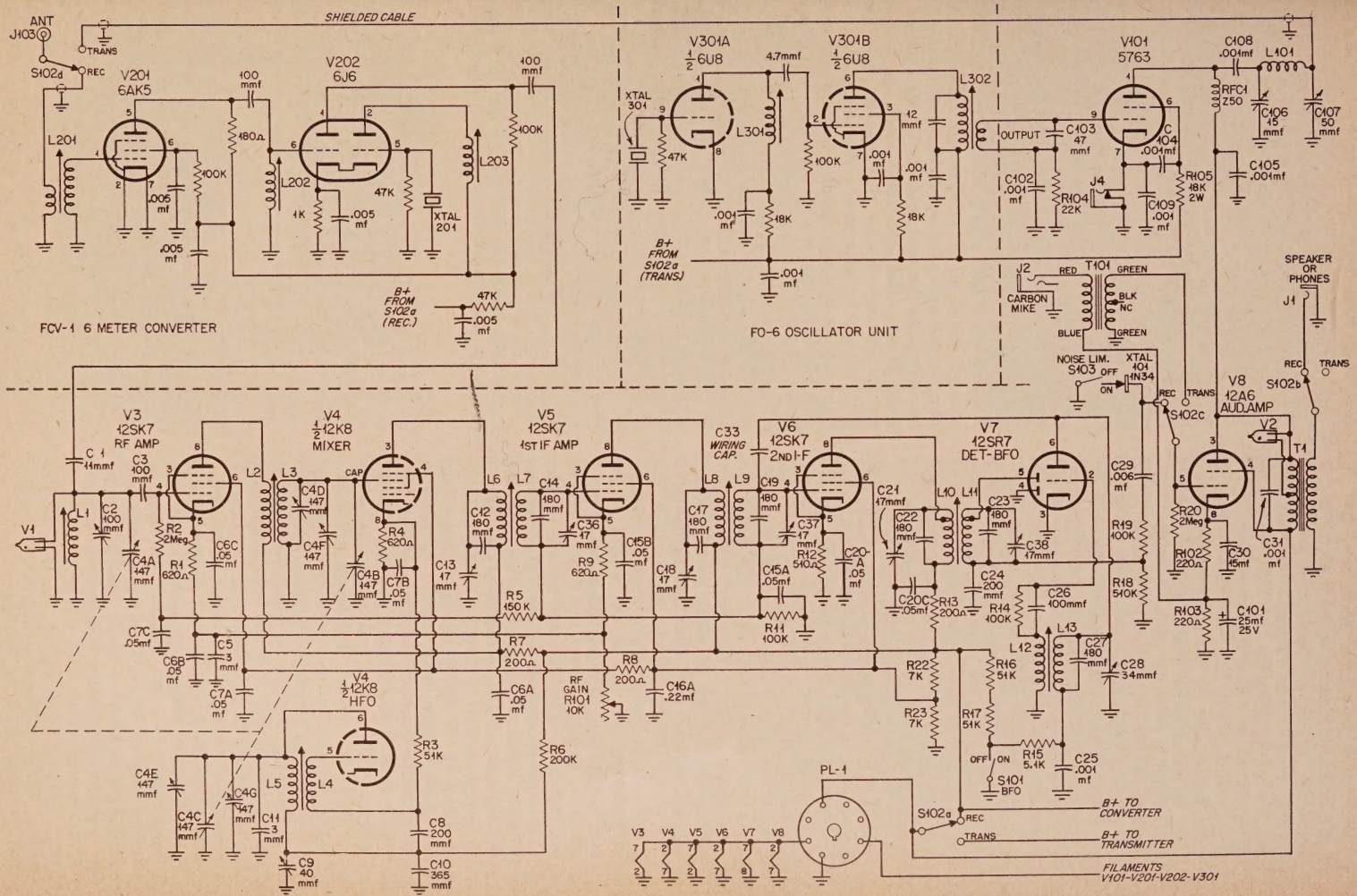
Converting the Command Set

Just so you do not get lost, better get the receiver working first. Wire the filament circuit as shown on page 67. With a little thought, you can find the shortest path to connect the various tubes. Pins 2 and 7 (or 7 and 8 in the case of V7) can be reversed if necessary, but in general the pin numbers shown will provide the most direct path. Locate the wire to the rear socket for the filaments and label it such. Next, clip the wires on the front adapter and remove this assembly, but retain the front plate. Remove the choke, 3 x .5 mfd capacitor, the dynamotor plug and the rear socket. Remove any wires with both ends disconnected as you go along. Drill, file, or punch out the rear socket hole to 1-3/16 inches and install an 8 pin Amphenol male plug. Connect the filament wire to pin 2, the B plus wire to pin 3 and connect a ground wire to pin 1. Locate the wire that comes from pin 6 of V6 and connect it to the junction of R22 and R23. Drill the pillars off the front panel. In the center hole, install a single pole, single throw toggle switch. Drill the right and left holes to ⅜ inch, install a gain control potentiometer in the left hole and the Centralab wafer switch in the right hole. Locate the wire from R1 and R9 and connect it to the center lug of the pot, and ground the right lug. Locate the wire from the junction of R-15 and R-17 and connect it to one lug of the BFO switch (in the center of the front panel). Ground the other lug of the BFO switch. Locate the wire from T-1 and temporarily connect a pair of headphones from it to ground. Locate the wire from C31 that hangs free and connect it to the ungrounded end of the two wire wound resistors (R22 and R23). This is a temporary connection. Apply power from a suitable power supply, such as that shown in *fig 6*. Advancing the gain control should produce a sizzling sound in the phones. If not, make a check of the plate and screen voltages of each tube. Also, feel the tubes to see if they are hot (this will allow you to double check your filament wiring job). Assuming the Command Set receiver works, connect an antenna to the antenna post and see if you can tune in stations on the 75 meter band (or 40 meter band if you have a BC-455). There should be plenty of headphone volume when the gain control is advanced. Switching on the BFO control should put a "whistle" on all the stations. Turning the transmit-receive switch will not do

Right—Schematic diagram and parts list for the Six Meter transceiver. At first glance the conversion may seem quite complicated, but most of the additional components are part of the International printed circuit subassemblies.

Parts List for the 6 Meter Command Set Transceiver

C101—25 mfd., 25 volt electrolytic capacitor.
C102, C104, C105, C108, C109—.001 mfd., 600 volt disc ceramic.
C103—47 mmfd N.P.O. disc ceramic.
C106—15 mmfd variable capacitor (Johnson 15S8).
C107—50 mmfd variable capacitor (Johnson 50S8).
J1—Open circuit headphone jack.
J2—three connector microphone jack.
J3—UHF style antenna connector (Amphenol 83-1R).
J4—Closed circuit headphone jack.
L101—9 turns #20 wire, ¾ inch diameter (Airdux 610).
L201—FCV-1 antenna coil (resonant at 50.5 mc).
L202—FVC-1 mixer coil (resonant at 50.1 mc).
L203—FVC-1 local oscillator coil (resonant at 46 mc).
L301—FO-6 oscillator coil (resonant at xtal frequency).
L302—FO-6 buffer coil (resonant at xtal frequency).
PL-1—8 pin male connector (Amphenol 86 CP-8).
R101—10K linear taper potentiometer (Centralab B-14).
R102, R103—220 ohm, 1 watt.
R104—22K, ½ watt.
R105—18K, 2 watt.
S101—single pole, single throw toggle switch (Spemco 1135).
S102—4 pole, 2 position rotary switch (Centralab PA-1011).
S103—single pole, single throw slide switch (Carling S60A).
T101—Carbon mike to p. p. grid transformer (Triad A-5X).
V3, V5, V6—12SK7 or 6SK7 for 6 volt operation.
V4—12K8 or 6K8 for 6 volt operation.
V7—12SR7 or 6SR7 for 6 volt operation.
V8—12A6 or 6F6 for 6 volt operation.
V101—5763
V201—6AK5
V202—6J6
V301—6U8
XTAL 1—1N34 crystal diode.
XTAL 2—47.0 mc International Xtals for BC-454 or 43.0 mc for BC-455.
XTAL 3—Crystal cut to 6 meter operating frequency.
Miscellaneous components required: — International FCV-1, 6 meter converter; International FO-6 crystal oscillator unit, 7-45 mmfd rotary trimmer, (see text); 9 pin porcelain tube socket, two 2½ inch metal pillars (see text).


ANT J103
SHIELDED CABLE
TRANS
S102d
REC
V201 6AK5
V202 6J6
L201
L202
L203
XTAL 204
FCV-1 6 METER CONVERTER
B+ FROM S102a (REC.)
V301A ½ 6U8
V301B ½ 6U8
XTAL 301
L301
L302
B+ FROM S102a (TRANS)
FO-6 OSCILLATOR UNIT
V401 5763
OUTPUT
RFC1 Z50
L401
J2
CARBON MIKE
T101
RED
GREEN
BLK NC
BLUE
SPEAKER OR PHONES
J1
NOISE LIM. S103
XTAL DIODE 1N34
V8 12A6 AUD. AMP
S102b
S102c
V2
T1
V3 12SK7 RF AMP
V4 ½ 12K8 MIXER
V4 ½ 12K8 HFO
V5 12SK7 1ST IF AMP
V6 12SK7 2ND I-F
V7 12SR7 DET-BFO
WIRING CAP.
S101 BFO
PL-1
B+ TO CONVERTER
B+ TO TRANSMITTER
FILAMENTS V101-V201-V202-V301

anything at this time. Assuming everything is satisfactory to this point, let's proceed with the conversion.

In order to mount the microphone and headphone jacks it is necessary to move the antenna trimmer capacitor. This capacitor was moved to the left side of the chassis, directly behind these jacks. If you do not want any protruding shafts, you can replace the capacitor with a 7-45 rotary ceramic trimmer. After you get the capacitor out of the way, install the two jacks. Install a 9 pin ceramic tube socket in the left rear dynamotor mount hole, with the key facing the center of the chassis. Install the two variable capacitors, C106 and C107, in the space formerly occupied by the triple section filter capacitor and the filter choke. Next to the capacitor C107, mount a close circuit headphone jack (J104). Mount a two lug terminal strip below the front left dynamotor mount hole. Install an Amphenol UHF style antenna connector on the rear apron opposite of transformer T-1. Install the SPST slide switch in the area directly to the left of the transmit receive switch.

Now, it is necessary to undo some of the connections that were made when converting the BC-454. Connect pin 4 of V8 to transformer T1 and then on to the proper terminal of the transmit-receive switch. Also connect pin 4 of V8 to pin 3 of the power socket (the wire connected here earlier is now removed). Connect the proper terminal of S102a to R22. Mount the FCV-1 printed circuit converter upright on pillars next to the last i-f can and the two rear tubes. Mount the FO-6 printed circuit oscillator-driver on the right side of the chassis as close to the edge as possible. Connect the filament lug on the FCV-1 to the filament lug on the FO-6 and then on to pin 7 of the power socket. Connect the B plus terminal of the FCV-1 to R22. Connect the osc B plus and the B plus terminals of the FO-6 together and then to S102a. Connect a length of shielded cable from the antenna terminals of the FCV-1 to the proper terminal of S102d. Connect the output terminal of the FCV-1 to the antenna post of the receiver (the other output terminal is grounded to the chassis). On this particular conversion, I removed the antenna post and brought the antenna wire out the rear of the tuning capacitor shield, but this is a refinement. Connect a 47 mmfd capacitor across the output terminals of the FO-6 and connect C102 and R104 from one terminal to ground. From the other terminal connect a wire to pin 9 of the 5763. Disconnect the wire between C29 and pin 5 of V8. Connect these two points to the proper terminals of S102c. From the remaining connection, connect a wire back to the terminal strip (below J4) and then on to transformer T101. Connect the 1N34 as shown on page 67. Remove the original R21 and replace it with a 220 ohm 1 watt resistor. Clip the wire between this resistor and ground. Connect another 220 ohm resistor from this point to ground (R103) and bypass it with a 25 mfd, 25 volt capacitor (C101). Connect the remaining wires of T101. Wire the 5763 circuitry also. Connect any remaining wires that you have not crossed out on your schematic. For a reference schematic of the receiver before modification see page 48 of the New CQ Mobile Handbook.

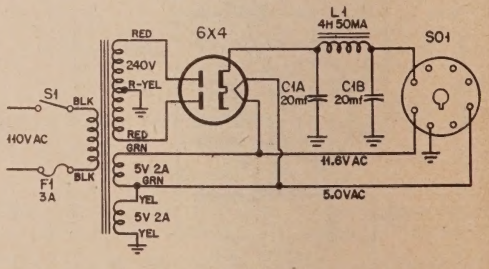
Testing

Your transceiver should now be ready to test. Connect an ohmmeter between pin 2 of the power socket and pin 4 of V8. Change the transmit-receive switch, you should have continuity all the time. Now check between pin 3 of the power socket and R22. You should only have continuity on receive. Moving the ohmmeter wire from R22 to the B plus connection on the FCV-1 should produce the same results. Now check between pin 3 of the power socket and the B plus connections on the FO-6. You should have continuity only on transmit. As a final check, connect the ohmmeter between pin 3 of the power socket and ground. The meter should read about 14,000 ohms. If the preceding checks are satisfactory, it is safe to apply power. After a 1 minute warm up, plug in the phones and connect the antenna. Since the FCV-1 needs no adjustments you should immediately receive 6 meter signals. Tune in a station and adjust the antenna trimmer that was moved to the side of the chassis for maximum volume.

Now, place the transmit-receive switch on transmit. Connect a VTVM across R104 and adjust L302 for maximum voltage, it should be between 15 and 22 volts. Next, connect a #47 pilot light across the antenna jack and adjust C106 and C107 for maximum brilliancy of the lamp. As a check of modulation, insert a microphone into J2 and talk into it, with a normal speaking voice. The lamp should get noticeably brighter.

Additional Notes

Once the conversion has been completed, it is a good idea to "touch up" the r-f and i-f adjustments for maximum volume on an incoming sta-

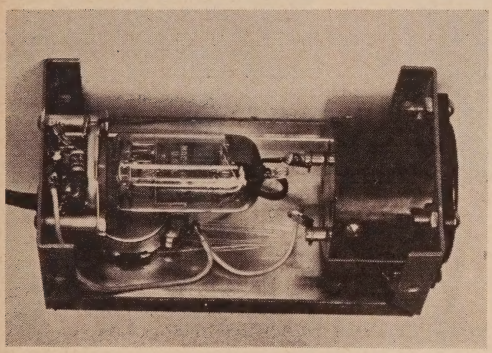


Power Supply and Parts List

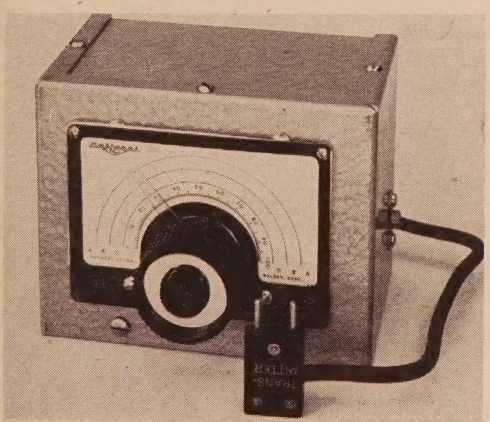
C1a, C1b—Dual 20 mfd electrolytic capacitor
F1—3 amp fuse and fuse holder
L1—4 henry, 50 ma. filter choke (Triad C-4X)
SO-1—8 pin male connector (Amphenol 77-MIP-8)
S1—Single pole single throw toggleswitch
T1—480 volt center tapped, 50 ma. power transformer 5 volts, 2 amps, 6 volts at 2 amps (Triad R-6A)
Miscellaneous parts required—6x4 tube, 7 pin tube socket, 4 conductor cable, line cord, chassis and cable connectors



"Operator's eye view" of the plug in "S" meter as attached to a Gonset Communicator. The box is secured to the cabinet by a small screw through the ventilating grill.



Inside view of the plug in "S" meter. Note the method of mounting the 12AU7 socket on spacers



Front view of the tubeless Communicator VFO. Note the use of a surplus crystal holder for making connections to the crystal socket.

tion. There will be more than enough volume for headphones and plenty to operate a speaker. A speaker up to 12 inches may be used by connecting the primary of a standard audio output transformer to a headphone plug. Naturally the secondary is connected to the speaker. The plug is inserted in place of the headphones for speaker operation. A Triad S-12X is an ideal transformer for the job.

The antenna system is up to the individual, as the pi-network will match any impedance from 50 to 300 ohms. Several excellent 6 meter antennas are described in past issues of CQ. I use a ground plane antenna (vertically polarized) that will be described at a later date in the Novice section of CQ.

Since the transceiver draws only 60 milliamperes on receive and 50 ma. on transmit, the *Heath* VP-1 should make an excellent power supply for mobile use. To use the Command Set Transceiver on 6 volts, it is necessary to replace all 12 volt tubes with their 6 volt equivalents and jumper pins 2 and 7 of the power plug. For 12 volt mobile operation, the original tubes are fine, but it will be necessary to insert a 6 ohm wirewound resistor in series with pin 7 of the power plug.

The closed circuit jack is for metering the plate current of the 5763 final amplifier during tune up. Under normal antenna loads the plate and grid currents will be around 30 ma. on a 250 volt power supply. Once the initial tuneup has been completed it is not necessary to retune any of the adjustments over any one mc portion of the Six meter band.

Letters to the Surplus Editor

Didn't have room for the photographs of the Communicator accessories last month (sob), so here they are this month. Hope the delay did not inconvenience anyone. Received a nice letter from W3FKJ and he wanted to know how to receive c-w on his 6 meter Communicator. The same trick can be used on this model of the Communicator but the crystal should be selected for the particular i-f frequency. I believe it is 1500 kc, but I'm not sure.

Here's one from Jack Baldwin, K2QVG.

"Boy, do I have a surplus problem! I've tried all over but can't locate a TU-75A to convert to 6 meters as Walt Burdine of CQ suggested. Can you help me? How is an SCR-522 on 6, or is there any other surplus item which can be converted?"

. . . Well, I couldn't locate one for Jack, so possibly one of the readers might have one for sale. How about it you surplus salesmen?

W1DFS and K6CNM indirectly sent some conversion information on the TBY transceiver (Wayne Green's (W2NSD) "boatanchor"). Is anybody interested in a conversion of this unit?

"Dear Don:

"I have a surplus receiver, and I thought maybe you could help me on it. It is a National Receiver similar to the NC-240C. It is an a-c/d-c 13 tube receiver and the Model number is R115. I need the tube line-up. It tunes

[*Continued on page 106*]

Long Time YL's



W1HUH, Sister Emiliana shown at her present station.

Louisa B. Sando, W5RZJ
U. S. Indian School
Santa Fe, N. M.

By 1933 YL activity was fairly booming. Better than a dozen YLs who received their licenses in that year still retain them, with most call areas represented.

In the first district, Sister Emiliana, of the Religious Sisters of Mercy, became W1HUH at Providence, R.I. in Oct. *1933* after taking the exam at the Custom House in Boston. An industrial arts teacher at the Tyler Junior High School in Providence, her work was entirely with boys, teaching woodwork and drafting. After meeting a director of the school who was W1BBA, it was decided to introduce the boys to the field of electronics. Sister Emiliana then became the first religious Sister to receive an amateur license in the U.S., and as far as they can determine, in the world. She also was the first YL in Rhode Island. A number of W1HUH's students have become amateurs and some have chosen it for their life work. During World War II Sister Emiliana was a member of the Providence Police Radio Patrol, W1HUH has been on 40, 20, 10, 75, 2 and old 5 meters. At present she is mostly on 75 with a Viking II and an SX-71.



W2FHJ, Viola Kapp

Viola Kapp became interested in amateur radio in 1930 through a boy friend and in *1933* obtained her license and call W2FHJ. Her first rig, which she helped build, was an MOPA CW and phone rig which she used on 160 meters, and another homebuilt rig which she used for 5-meter phone. Intrigued by the DX on 20 she got her Class A in '34 and two years later put together, with help of other Hams, a 200-watt rig which she operated on 20, along with 5-meter phone, till 1940, receiving her pre-war DXCC and WAC certificates. After WW II she went to 2½, 6 and 10 meters, using 300 watts and a 4-element beam. To date she has worked 45 States plus Mexico, Canada and Bermuda on 6 meters using 90 watts. Since '49 she has operated almost exclusively on 50 and 144 mc phone, having worked 15 States, plus VE1 and VE3 on 2-meter phone, using 50 watts input, and won nine VHF contests for the N.Y.-Long Island section. She also has some new gear for 432 mc partially completed. Viola goes to business, is an ardent photographer, especially doing enlarging, enjoys horseback riding, swimming, ice skating, surf casting, salt water fishing and playing the piano.

Katherine LePine first went on the air as W2FKA in New Jersey in April *1933* and she comments that her very first contact has been a good friend over all these years. Kitty, who taught herself code, started out with a Perryman 210, a breadboard affair, and her first receiver was an SW-3. She says her log lists reports of RAC, near PDC

and sometimes PDC. When she went crystal control she used a Tri-tet with 3-59's, a 46 buffer and a pair of PP 210's, and with this rig Kitty says she started to get out of her own back yard, working 40 c.w. For a time she had a transceiver on 5 meters which radiated a better signal *receiving* than transmitting and caused plenty of BCI. In 1949 Kitty and her OM moved to Florida where they have their home at Miami. With the call W4PPQ (her OM is W4PQR), Kitty now uses a Stancor rig, HQ-140X receiver, and a 3-elment vest pocket beam which she uses on 20, phone occasionally but usually on c.w.

One of the best known YL operators is Clara Reger, W2RUF, of Buffalo, N.Y. Clara earned her license in Oct. *1933* and went on the air with the call W8KYR, and a 50-watt rig, increasing it to 225 watts. Clara was in the AARS and was WLNU, a net designated to her. She worked with the Red Cross and became EC in 1940. A charter member of NYS emergency and traffic net, she holds numerous certificates of merit for work during floods and hurricane. A member of YLRL since 1940, Clara originated the official "33" signature, and also served as editor.



Clara Reger, licensed in 1933, shown operating as W8KYR in 1934, and as W2RUF, 1956





W4PPQ, Kitty LePine, first went on the air in 1933 as W2FKA



W4CQL, Elsie Hermanson

Following World War II Clara's call was changed to W2RUF and as her OM (not a Ham) had promised when she helped in his shop when their son was in service, her rig was rebuilt to increase power to 800 watts input, all-band switching, phone and c.w. To this Clara added an HQ-129X. W2RUF likes to operate phone for ragchews and c.w. for traffic. She holds ORS, A1 op, 35 CPC, RM; has been manager of the New York State C-w net for the past 7 years; representative to 2RN and EAN, also a member of the UTL traffic net. In 1954 Clara was nominated for the Edison award. She has been on several BC and TV programs. Every Christmas season Clara has an article in her local newspaper offering to send radiograms to servicemen overseas and adds that she will do this service just so long as she "can wiggle a key." Clara has three granddaughters, likes to play the piano, swim, dance, paint, sew, and garden.

Elsie Reich went on the air as W4CQL in West Palm Beach, Fla. in *1933,* after being helped into the art by her future OM, then W4ASA. Floyd says it took him till 1938 to sign her up as Mrs. Hermanson. Early in WW II El put the YLs in high-speed wireless for the first time by becoming Press Wireless' first woman operator. She also worked in WERS. Following the war El and Floyd operated as AR1YL and AR1OM under-cover in Syria. After their return to the States in '48 El divided he rtime between Florida and New York, keeping skeds with her OM W2BFS, on 20 c.w. when she was in Fla. Since then El helped

[*Continued on page 116*]

DX

R. C. "Dick" Spenceley, KV4AA
Box 403, St. Thomas, Virgin Islands.

Our heartiest congratulations to the following station upon his achievement of WAZ!

JA1CR TAKEO KUWAHARA 40-160

He is the first JA to make the grade.

We also welcome as newcomers to the HONOR ROLL:

W2BBS (Bill) 39-212
W9WKU (Dewitt) 39-188
K2OEA (Pete) 37-154
WØAGO (Hoff) 36-139
W8JRB (Jay) 36-137
W4TAJ (John) 36-135
CO8DL (Alberto) 35-112
W4EEE (George) 35-170 A3

DX Notes

With the advent of the Aland Islands as a new country, Finnish hams seem determined to see that this spot is well represented. OH2HG/Ø and OH3RA/Ø were there for four days around January 13th and OH1ST/Ø was due to be on January 26th and 27th. Other trips to OHØ are planned in June and July . . . VO calls will undergo revision on April 1st. Newfoundland will be VO1 and Labrador will be VO2 (VO3X will become VO1DX) . . . ZL5AA and ZL5AB should be on by now from the New Zealand Antarctic Base. ZL5AA will be the base station while ZL5AB will be used by mobile parties . . . The Saarland was incorporated back into Germany on January 1st but 9S4 calls were still being used up to January 15th . . . Via W5BNO and FB8BR we learn that a permanent ham station will start up from the Comoro Islands in February. It will be located at Anjouan and operated by the resident director of a big plant there. Operation will be on both phone and c.w. . . . Other good news is that the British are activating a military base on the island of Gan in the Maldive group. This should certainly result in some ham activity from this rare spot . . . From TIME magazine we see that two Mexican navy frigates sailed to Socorro Island in January to establish a garrison and weather station in the desolate Revilla Gigedo Group as the start of a governmental plan to settle 160 colonists there. Henceforth navy ships will make bi-monthly calls on Socorro Island. This should eventually result in ham activity from this group for those who missed XE4A . . . UM8KAA has been putting on an appearance rather consistently from 0500 to 0700 GMT. Operator Walerij (Valerie) is behind the T8 chirpy signal which drifts up 3 kc during each QSO. QRG 1402/026 calls should be made 5 kc lower . . . ST2NG (Sudan) will now have moved to Aden as VS9NG and advises that ST-land will probably be very hard to get as licenses will only be issued



SV1AD, Akis Lianos, Athens, Greece, is an entirely self-constructed station. Transmitter runs a single 811-A at 150 watts input on 21 mcs. Receiver is a CR-100. Antenna: Half-wave dipole.

to natives and there are no hams among them . . . Dave, YJ1DL, will probably be back in YJ-land in March . . . We are advised that 4X5RE/Sinai was due to be on between January 18 and 23rd . . . Chas, VR1A, recently broke two years of inactivity and has been heard on 14065 around 0500 GMT . . . LA6QB says no licenses have been issued to LA9LF/P or LA9LG/P as per recent activity claiming Jan Mayen as QTH . . . Sakalas, UP2AS, says there has been no recent activity from Franz Josef Land or Tannu Tuva. Nothing is known about UA1KTO/FJ etc. UP2AS reiterates that Larry, UA1KAI, and himself will journey to Tannu Tuva this Summer. Equipment is already in hand and consists of a 100 watt mobile



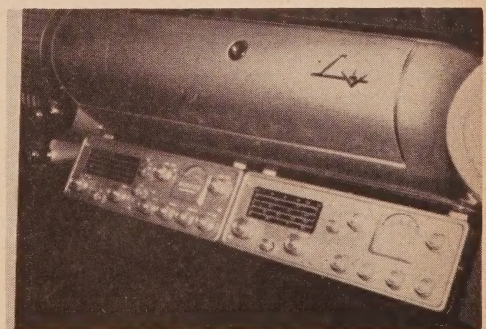
W6TI, Horace Greer, Oakland, Calif. is well known for his DX prowess and his position as W6 QSL Manager. He was first licensed in 1920 when a half KW rotary spark rig was used. The present transmitter, according to Horace, incorporates everything known to modern science excluding key clicks! W6TI holds WAZ No. 14, first post-war WAZ in Northern Calif. and DXCC No. 77. His present country total is 254. Since W2SN retired Horace holds the distinction of being the oldest ARRL QSL Manager in terms of service. He has handled this considerable chore for over 20 years! (Photo courtesy No. Calif. DX Bulletin and W6ELW)

rig, all bands, phone and c.w. plus a HRO-5T receiver . . . Good news (bad for some) comes from Chhawna, AC5PN, who states, in a letter to SWL Jim Moore: "I have received huge quantities of QSL cards from all parts of the globe covering contacts I have never had. There are many pirate stations using my call, I know one is in Italy and another in Cyprus. I left BHUTAN the FIRST WEEK IN OCTOBER and came down here to India to get new gear. I was running 25 watts but now I have a BC-610 and hope to get into the USA with a much better signal. I am going to AC3SQ in SIKKIM and there I will marry a SIKKIMESE girl. From there I will go back to BHUTAN and hope to be on the air again in February. I was not on the air either July 22nd

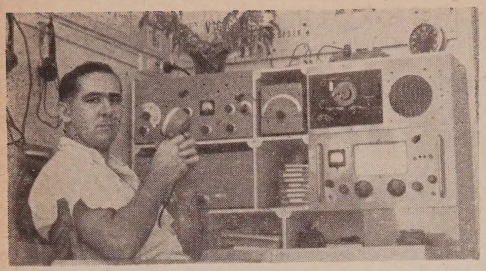


W1RB, Earle Hewinson of Springfield, Mass. runs a 32V3. He joins CQ's HONOR ROLL in April with a 37-174 total.

nor December 22nd" . . . Dave, W6VX, aboard RMS Caronia was scheduled to spend a day at VQ1 on February 23rd and at VQ9 on February 26th. License problems may be tough but if they are resolved he will be found on 21018 kc shifting to 21075 if QRM'ed. Calls should be 10 kc off frequency . . . The Raft TAHITI NUI, FO8AP/MM, was worked on January 8th giving a position of 33 degrees S. and 143 degrees 17 minutes W. which is not too far Southeast of Rapa Island. Time was 0644 GMT and frequency 14335 c.w. He was 579 in KV4-land and skeds FO8AD at 0630 GMT . . . Via VK4YP we have this year's locations of the new VKØ calls as follow: Macquarie Island VKØAA and VKØCJ, Mawson Antarctic Base VKØAC, VKØAS, VKØDC, VKØDJ, VKØJP, VKØPK, VKØRR and VKØZM, Vestfold Hills Princess Elizabethland VKØAB (ex-VK1AC). VK2EG (ex-VK1BS) wil handle QSL's for VKØAB and VKØPK. Others should go via VK3RJ. The Vestfold Hills station is a new base in Antarctica . . . VQ6LQ says newcomer VQ6AB is on 7 mc only with QRP. Chas. also advises that FL8AB has been QRT due to QRL, FL8AB will visit VQ6LQ and Chas. will give him a pep talk . . . YA1AM continues activity and was heard on 14043 at 0400 GMT . . . W3TPT will be signing /VO6 shortly while ex-VP5DC should be heard with a KP4 call . . . HI8WL was due to leave for Tulsa, Okla. on January 27th for new assignment (Might

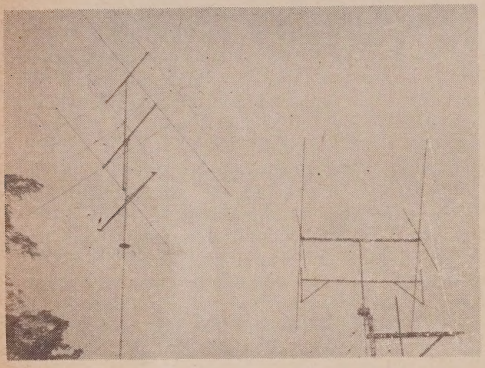


What could be neater than this W6MJB/M set-up using Morrow gear.



VK9BS, Rabaul, New Guinea, runs 35 watts to an 807 modulated by 6V6's.

An 80 watt rig is in the offing. Suth is a Quad enthusiast as may be seen from the antenna photo and the QSL's bear out its effectiveness.



be 4 more years in Hi-land) . . . Seems that FW8AA (Wallis Island) has lapsed into silence 14340, 14140 c.w. phone 0600 to 0800 GMT . . . Larry, W3JTC, is stationed in Greece and soon should be heard with a SVØ call. Says he gets a big kick outa hearing the DX gang pound in there. Best time for USA in SV-land is on 28 mc from 1400 to 1700 GMT then 14 or 21 mc from 2100 to 0500 GMT . . . Notes from John, W6YY, state that ZS7C is still active on 14048. Carl, OX3CP, may be found on 14158 kc phone while OX3LD, Dennis, holds forth on c.w. 14030. FB8BR departs for Paris in March where he will be F9AE. Vince, SVØWT, says there is no present activity on Crete. He hopes to go there sometime this Spring. ET3AF is on occasionally, 14055 c.w. . . . VP8BO is the British Antarctic station at the Shackleton Base. 78 Deg. S. 35 Deg. W. QSL via RSGB . . . Victor, FB8BC, 14140, phone, at 0300 GMT. He is running a Viking Ranger . . . VP9BM, who is now KP4AIO, says he does not know VP2AH nor his QTH. QSL's sent to him, as instructed by this character, are causing him quite a headache . . . TA1YI has been QSO'ing a few and gives his QTH as Box 120, Tekirdag, Turkey. Name is Aref . . . Rumors have it that EA9AP appeared from IFNI some time in January. We have been unable to confirm these as yet . . . A mysterious TTØKAB showed up on January 8th working a few W6's and claiming to be in Tannu Tuva (???) . . . Again, in the rumor department, we hear that HK3AB may appear on San Andres as HKØAB (January) . . . ZL3JA worked VU5AB on 14035, 1700 GMT (Hope good) . . . Vince, PJ2ME (St. Martin), has been augmenting his 14 mc activity with appearances on 21 and 28 mc . . . KX6AF may be found on 14075 most days around 1130 GMT . . . In the Bahamas, W4VPD reports, W4LQN is awaiting a VP7 call on Eleutheria Island and same goes for W4BTM who is on San Salvador.

Addresses

AP2AD—Chit, Box 204, Saidma, Pakistan.
AP2Q—Aslam, 204 Napier Road, Rawalpindi, Pakistan.
EA6AZ—Lorenzo Munar, Provisional, Hotel Suizo, Palma de Mallorca, Balearic Is.
ET2MZ—P.O. Box 35, Massawa, Eritrea.
ET3AF—Gunnar Ensjo, I.E.R.F. Amateur Radio Club, Box 1636, Addis, Ababa.
FG7XD—(New) Serge Gaydu, Faubourg Victor Hugo Pointe-a-Pitre, Guadeloupe, F.W.I.
K4AW—(ex-W2YW) Reve Strock, 132 Rutledge Dr., Hendersonville, N.C.
KP4AIO—(ex-VP9BM) Jules Wenglare, 1938th AACS, APO 844, N.Y.
SP6BZ—Wieslaw Ziolkowski, P.O. Box 7, Wroclaw 18, Poland.
SP9KAD/SP9FR—P.O. Box 654, Dubno, Poland.
TA1YI—Aref, Box 120, Tekirdag, Turkey.
VQ3SS—(ex-VQ4SS) P.O. Box 97, Dar-es-Salaam, Tanganyika, East Africa.
VU2DR—2 Park Lane, Calcutta, India.
ZC3AA—Jack Mortland, Phosphate Co, Christmas Island, via Singapore, Malaya.

Thanks to the FOC Bulletin, W9MES, W7IQI.

DX'ploits

Frank, W6AOA, adds OH1ST/Ø for an imposing 270 while Dick, KV4AA, hit 266 with UM8KAA, VP2VA and OH2ZE/Ø . . . Jock, ZL2GX, also goes to 266 with YVØAA, ZS8I, AC5PN, SVØWN, OY7ML, ZS2MI, VK9TW, XE4A, FS7RT, PJ2MC,



YV4AU, Maracay, Venezuela, has a potent signal on 14 CW. Divo used to be 11ARA.



I1SXZ, Como, Italy with op Emilio, runs 150 watts input. (Courtesy W9MES)

HONOR ROLL ENDORSEMENTS

WAZ TOP FIFTY

W1FH	271	W6CUQ	263	W6SAI	255
W6AM	271	PY2CK	262	W7GUV	255
W6AOA	270	W9VND	262	W6TI	254
W6ENV	269	W6VFR	261	WØYXO	252
W6SYG	268	W9NDA	261	CE3AG	252
W6MX	267	W6VE	260	W8HGW	251
W8KIA	266	W6ADP	260	W8BRA	251
KV4AA	266	W8BHW	260	W6GFE	251
ZL2GX	266	W6MEK	259	VK2DI	250
W6DZZ	265	W3KT	259	W9HUZ	250
W3GHD	265	W3EVW	259	GM3DHD	250
W8PQQ	265	W2BXA	258	W8NBK	250
W2AGW	264	W6EBG	258	WIGKK	248
W7VY	264	W6TS	258	W6NNV	248
W3JNN	263	G6ZO	256	G6RH	247
W8JIN	263	W3KUC	256	W6BUD	247
W6SN	263	W7AMX	255		

250 PLUS

W5ASG	39-266	W2WZ	39-253	W8JBI	39-250
W9RBI	39-257	W3EPV	39-252	WICLX	39-250
W5ADZ	39-254	W9LNM	39-252		

WAZ TOP PHONE (200 PLUS)

PY2CK	40-244	W3LTU	39-206	W3JNN	37-234
VQ4ERR	40-241	W9RBI	38-240	G3DO	37-200
G8IG	40-199	W9NDA	38-225	WINWO	36-224
W6DI	39-230	CE3AB	38-214	WIMCW	36-223
XE1AC	39-217	W2BXA	38-211	W4HA	36-214
W8KML	39-216	W3GHD	38-209	CO2BL	35-210
W6AM	39-215	W6KQY	38-207		

Endorsements (TO JAN. 15th 1957)

W6AOA	40-270	K6ENX	39-211	W8JRB	36-137
KV4AA	40-266	W9UXO	39-210	W4TAJ	36-135
ZL2GX	40-266	W9WKU	39-188	CO8DL	35-112
G3DO	40-223	W8YIN	38-219	PHONE ONLY	
W6MJB	40-221	K6ENL	38-145	W8KML	39-216
JAICR	40-160	I1ER	38-124	G3DO	37-200
W2NSZ	39-247	K2OEA	37-154	W4EEE	35-170
W2BBS	39-212	WØAGO	36-139		

Last complete HONOR ROLL appeared in the January issue.

Next complete HONOR ROLL will appear in the May issue.

ZD1FG, LU2ZY, SM8KV/LA/P, IT1AGA and OQØDZ . . . Doug, G3DO, made it 223 on c.w. and 200 on phone thanks to phone contacts with BV1US, SM8KV/LA/P, VP8BR, VR4AA, IT1CLP and OQØDZ as Paul, W6MJB, submitted new list jumping him from 210 to 221 . . . Weldon, W2NSZ, goes to 247 with new list while Otto, K6ENX, upped to 211 with such as W4EMF/KS4, UP2KBC, UO5KBR, UL7KBK, UG6AB, UD6BM, I5RAM, ZD1FG, ZK2AB and ZM6AF . . . Frank, W9UXO, nabbed LA9LF/P and SG2DF for 210 as new list from Mickey, W8YIN, put him on 219 . . . Aleta, K6ENL, nabbed zone 19, thanks to UAØKJA, for 38 zones while Mario, I1ER, nabbed VP7NG, MP4BBD, ZB2R, VK9XK and UO5RO for a 124 total . . . Alan, VK3CX, rose to 226 with UF6KAF, UH8KAA, UL7KBA, ZC3AA and UD6BM as Rod, W3ZWA, made it 62 with such as LZ1WD, YV4AU, ZS5U, HP1BR, HH3DL, CR7BS, OY1R, ZB2I, XW8AB, UC2AA and UB5KBA . . . Norm, DL4RI (W1WIQ), hit 130 with VP2DJ, UA9CM, KG1BF, ZE3JG, DU6IV, F9UC/FC, LX1AJ etc. while Jim, W9WWJ, went to 93 with VQ4RF, VP2GN, DL1CR/LX, UC2KAB, KR6LJ and GW3KWB. His phone total, thanks to ZK1BS, HH2DB, KX6AF, KW6BS, CP5EQ/6, GC6FQ and VP6BE, is 51 . . . Mike, K6ICS, A3'ed to 36 of 21 mc with HC1FN, VP6LT, CE3DY, HH4MV and HI8WL as George, W3CMN, added EA1BC on 14 and KZ5PH on 21 cw . . .

Here and There

W8JBI visited F3NB, I1BDV, I1RB, I1MT, I1TIS and HV-land in December . . . KH6BES is now back with his old call of W4BBF . . . YV4AO and VS1EW visited W6GVM . . . In December W6KEK was re-elected Pres. of the Northern California DX Club with W6TXL as VP and W6EJA as Sec'y/Treas . . . New officers of the Frankford Radio Club (effective February 1st) are: W3ALB President, W3KT VP, W3CGS Secretary and W3LEZ Treasurer . . . IT1AGA seeks So. Dak. contact and is QRV daily, 7 or 14 mc, from 2200 to 0100 GMT . . . Dick, W6TKX, moved to a swell QTH (for DX'ing) in Mountain View, Calif . . . Lacy, of HA5KBA, crossed into Austria on November 29th with his YL. They were married in Vienna and have come to Camp Kilmer. Latest word is that Lacy is taking a job with Uncle Dave, W2APF. Op. Bandi, also of HA5KBA, crossed to OE-land on December 10th (see letter) . . . Jack, W8EKK, was due to undergo brain surgery on Feb. 3rd to relieve a paralyzed condition. Our best wishes are with him . . . DL7DF now keys from Pforzheim, Germany . . . KV4AA was happy to log visits from K2OLS, W2OHF, W6TSV, W2BZG, W2DAK, W2GKP, K2AAA,

K2ECY (ex-OX3BI), W9DSO, W2DRG, W2KJT and W2PAG (I'll have to start charging admission -hi!) . . .

New Award "WLA"

The Liverpool and District Amateur Radio Society offers the "WLA" (Worked all Liverpool) certificate to those stations, outside of Europe, submitting proof of contact with ten stations in the Liverpool area. QSO's must have taken place on or after January 1st 1956. Applications should be sent to: G3BHT, Hove to, Sandy Lane, Hightown (Nr. Liverpool), England. 6 IRC's should accompany application to cover registered return of QSL's etc. There are about 70 licensed stations in this area. Same rules apply to a "HLA" award for SWL's.

Letter from Bandi, HA5KBA

Vienna, Dec. 18th 1956

Dear Dick,

It's possible you will be surprised when receiving this letter from me even in Vienna in OE-land. There is the sorrowful situation that I had to refugee from Hungary when I was born and have lived leaving all my friends and all my things there.

Quite sure you must know about the happenings of last two months in Hungary. Just so as the HA5KBA story. At last we took part in the W.W. DX Contest, making about 145,800 points in the phone section but afterwards the revolution broke out on October 23rd, there were fights, so we couldn't go on the air at the cw contest period days.

During the few free days of revolution we made again QRV the station. When the second Soviet invasion began, at morning 4th November I used HA5KBA for asking for help from the West, even from the UNO, via the ham emergency service in the 14 mc phone band. Personally I was operating then, transmitting the message of help to F9GL, DL4ME, ON4TX, SM5YR and so on. Afterwards when we have seen no help was coming I was living in illegality during 5 weeks because I sure should have been hanged for this. Once I was captured by the Russions but, at last, I succeeded in crossing the HA-OE frontier on 10th December. Since that time I have been living in Vienna searching for any possibility to go to the USA. I should like to live in peace and freedom, to work without any horror. I guess to find these in the USA.

There is no HA5KBA anymore. We hope the amateurs who had us acquainted during our two year activity will not forget us now.

Many HA hams we have lost during that time. Well-known phone ham HA5BB emigrated into PY-land. HA5AV (ex-HA4H, HA5X) is already employed in TV at Zurich, Switzerland. Many young boys, as Lacy, have disappeared during last week, you will remember Lacy as being a fine operator at HA5KBA.

Coming through into OE-land I have brought nothing with myself but three log books and a few QSL cards of HA5KBA. If somebody still needs a QSL I can send via W3AXT.

Excuse me for this sorrow letter and for my bad english. Although I do not see any way now I hope we can meet once upon a time on the air again. Please join me to all hams with kindest regards, 73's

Bandi, ex-HA5BM/HA5KBA

Last Minute Items

Cesar, EA9DF (Rio de Oro), indicates, via letter, that he will go to IFNI in the near future. He first must obtain a suitable transmitter as his gear in Rio de Oro cannot be transported. We shall attempt to provide him with this transmitter, on a loan basis, and one which will transmit on SSB in which he is especially interested. Should this come to pass Cesar, an excellent CW op, intends to make everyone happy by dispensing plenty of contacts on SSB, AM and CW . . . W6AM advises that LU3ZS, Half Moon Bay, South Shetland Islands is available on phone, 14100 kc, for those needing that QTH on A3. Don made contact at 0930 GMT . . . Possibilities look good regarding a missile tracking base on the Brazilian island of Fernando de Noronha, some 225 miles off the Northeast coast of Brazil. This should qualify as a very nice little "new one" with a possible PYØ handle . . . Via West Gulf Bulletin we hear that JZØPC will be active each Sat. and Sun. on 21200 kc, 0300 to 0500 GMT . . . Egon, 4X5RE/Sinai, showed up from January 26th to 31st. Cards go via 4X4RE. This is not a new country but comes in handy as a new prefix for WPX . . . K4IGS, reports contact with Russian Antarctic USFA at 0400 GMT near 14025 . . . ZD9AF has been quite active on 14 CW. QSL's go via ZS Bureau, Box 3037, Capetown . . . W2BXS received QSL from YA3BN! . . . VS4JT has been heard on phone, 14125, 1100 GMT . . . VK9AT, 14 CW, is located at Lae, New Guinea . . . HP1EH, Hatian Ambassador to Panama, is giving many a new SSB country. Louis is also quite active on CW. QSL's go to Box 189, Panama City . . . K2JTS wants it known that delay on EL2S cards are due to non-receipt of logs from him . . . OQ5FT is active near 14085, 2000 GMT . . . YK1DF was heard on 14066, 1300 GMT . . . K6JQJ got his LX1ML card back labeled "unknown" . . . Beda, OK1MB, reports UN1AA on daily 28 Mc., UN1AB on daily, 21 Mc., VK9RH, phone, 21260, and that UI8AG is a new station, good op, and active around 14050 . . . VEØND puts a good signal across from the Mediterranean area. Don is on the HMCS MAGNIFICENT and home station is VE1KW . . . OH1ST/Ø and OH1RT/Ø were active, as scheduled, January 26th and 27th giving many a "new one" from the Aland Islands . . . We regret to report the passing of Mark, W6PFD, holder of WAZ No. 3, on January 28th . . . Via W1CWX and SVØWT we are advised that a license has been issued to SVØWD/CRETE. QTH is Willis T. Bird, 6938th RSM, APO 291, N.Y. . . . Ted, ex-SVØWL, now keys from K1ASW. He may soon have another overseas as-

signment . . . Martin, OH3RA/Ø, writes as follows: Upon hearing of the acceptance of OHØ as a separate country OH2HG and myself made all haste in getting over there. We had to make the journey in very fast time as my vacation from school is now at an end and therefore had no time to procure a suitable transmitter. The one we used was a little 20 watt portable rig (plus NBFM) borrowed from OH2OJ (SSB Sam). From January 12th to 14th we made about 200 contacts with most of them being W's as the Europeans apparently did not have the information that we were a new country as yet. The first W worked was W3VOS. We also met the only ham on the island, OHØNB, and I think he will be a little more active now. He has only 25 watts and one xtl. OHØNB may be found near 7020, 14040 or 21060. It is very easy to visit OHØ-land via daily flights from Turku in OH1-land and further trips to Åland are planned for this Summer, 73, Martin/OH3RA/Ø . . . ZD2GWS still operating from Buea in Southern Cameroons (British). As this is a Trust Territory, similar to FE8, RSGB could easily designate it as a new one if they wanted to . . . We noted a QSL from CR8AC confirming phone QSO with W6ITH which gives QTH as: Joao Serpa, Rua 121 de Janeiro, Nova-Goa, Portuguese India. Joao runs QRP phone and is not very active . . . GM3EYP, ex-VP8AP, arrived in NYC in January enroute to W6EFV. John will take up permanent residence in W6-land . . . Jake, W8FGX, is now spending three weeks in KV4-land and, as this is read, may have been heard as VP2VG (British Virgin Is.) . . . Leny, VQ8AB ex-VQ8CB, plans QSY to VQ4 . . . Appearance of Danny Weil, VR1B etc., on the Groucho Marx show should take place two to three weeks after its filming on February 20th. Watch for it. It is estimated that Danny will head East in March and he will appear at the Dayton Hamvention in April. Nothing concrete has been heard from possible sponsors of YASME II as yet and we are still open to ideas in this direction . . . W9DSO reports that Bill Long, HI8WL, was due to return stateside on Feb. 1st. He may be reached, for missing QSL's, at 5308 So. Delaware Pl., Tulsa, Okla. . . . ZK2AB, in a letter to W9DSO, dated December 12th, advises that he has NOT been on the air to that date but hopes to be on in the near future. Thus contacts after Dec. 12th, 1956 MAY be OK.

73, Dick, KV4AA

Contest Calendar

Frank Anzalone, W1WY
14 Sherwood Road
Stamford, Conn.

March 2-3 REF-DX-CW
March 8-10 ARRL-DX-Phone (Last Half)
March 22-24 ARRL-DX-CW (Last Half)
April 6-7 DARC-WAEDC-CW (Last Half)
April 13-14 REF-DX-Phone

REF

Dates—CW-1200 GMT March 2nd to 2400 GMT March 3rd.
Phone-1200 GMT April 13th to 2400 GMT April 14th.

Serial Nrs.—Serial numbers will consist of the usual RS or RST report plus a progressive 3 digit number starting with .001.

Calls—From French stations: de F9ZZ/9/BG, in which 9 is number of the REF section and BG (Bourgogne) is the province for DUF award. Algeria: de FA9XX/OR, Oran is the REF section.

POINTS—Points vary according to the continental location of the French Union station. However for the USA and other North and South American countries, each completed QSO on each band counts as follows.

Europe	- 4 points.
FA-CN-3V	- 4 points.
Rest of Africa	- 4 points.
N. & S. America	- 4 points.
Asia	- 5 points.
Oceania	-10 points.

Multiplier—The total points on all bands is multiplied by the total REF sections and countries of the French Union. This is your final score.

Logs—Send logs to the Reseau des Emetteurs Francais, B.P. 42-01, Paris—RP, France, not later than 3 weeks after each part of contest.

Primarily it's the French Union working stations outside the French domains. There will also be inter-union QSO's for the DUF award.

In the past we have not known too much about the REF Contest. This year we are grateful to Abbe Charles Saniez, F9RS who sent us a condensed translation of the rules. In our mail there was also a copy of Radio REF, in French of course, from F9AA, President of the REF. With the help of a dictionary and Jr's High School French, we came up with the above. I hope we are correct in the translation of the pertinent details.

This is the end of the DX contest season fellows, so make the most of it.

73, Frank W1WY

NOVICE

Donald L. Stoner, W6TNS
Engineering Consultant
P. O. Box 137
Ontario, California

There is no question that the most active column in CQ as far as the volume of mail is concerned is the Novice Shack. The editors of CQ and the readers of the Novice Shack want to express at this time their gratitude to Walt Burdine, W8ZCV, for the wonderful job he has done in conducting the column and to extend our best wishes to Don Stoner, W6TNS, as he steps into a really difficult job as the new Editor of the Novice Shack.

January 29, 1951 was a pretty important date to most of us, for this was the "birthday" of Novices and Technicians. On that day, the Federal Communications Commission formally established an amended set of rules which provided a special amateur license for beginners. This docket laid down a set of rules governing the new amateurs. It said, in part, "The Novice license applicant must pass a 5 word a minute code test and pass a written examination, to be known as Element 3A, on Basic Law. No license will be good for more than one year and will not be renewable." The docket also established a band of frequencies and set the legal power limit at 75 watts. It further stated, "The Technician class applicant must also pass a 5 word per minute code test, and must pass written examinations on Basic Amateur Practice, Element 2, and General Regulations, Element 3B. The Technician licensee will have all amateur privileges in the bands above 220 mc, with a renewable five year license. Later, the Technicians were given the 6 meter band (50-54 mc) when it appeared that we might lose it because of in-activity. The Novice was given phone privileges on the 2 meter band (145-147 Novice band) to acquaint them with phone band techniques.

The new license classes quickly swelled the Amateur ranks with myriads of new operators. Here, at last, was a system whereby a person with or without technical experience could "get on the air," learn the telegraph code, and enjoy it too!

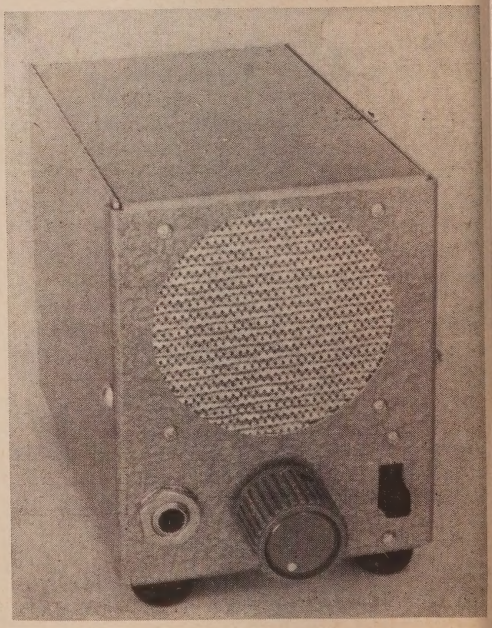


Fig. 2, Snortin' Morten is a transistorized, r-f powered keying monitor and code practice oscillator.

Quite frankly, if it had not been for the Novice license, I probably would not be an amateur today. I, and others like me, owe a lot to the amateur groups that promoted the Novice class license. I must admit that I detested c-w operation because it represented an obstacle that I thought I could never overcome. I did just about everything I could to get my General class license except practice the code diligently. But because of conflicting interests, many projects (such as building exotic transmitters and testing them on dummy antennas) and outright laziness, I did not knuckle down and get my ticket until after the Novice class license was issued (some five years after being bitten by the ham radio bug). Finally, on October 17, 1952, that coveted Novice ticket arrived (I celebrate this day each year by burning a telegraph key!). All kidding aside, I enjoy c-w operation and can usually be found on 3700 kc or 7175 working Novice stations.

According to the available information, some 45 per cent of the Novices *do* obtain their General class licenses before the one year time limit expires. But what happens to the other 55 per cent? Some lose interest, or were only curious in the first place, others drop out for financial reasons and so on. The two meter band has been a large contributing factor for the 55 percenters. All too many Novices spend excessive amounts of time on two meter phone and completely lose sight of the original purpose of the Novice license, that is, as a stepping stone to the General class ranks.

It is the fervent hope of this author to improve these percentages through the pages of *CQ* magazine. Through future articles, I shall do my best to help you obtain your Novice *and* your General class license. Should any questions arise during the course of studying for your license, do not hesitate to drop me a line to P. O. Box 137 in Ontario, California and I will try to provide an understandable answer. Do not forget to write telling me of your activities, accomplishments and progress.

Some of you may remember the Novice Q5'er (January 56, *CQ*). This was a highly selective receiver that was designed to help the Novice improve his ability to separate stations on our two crowded bands. This month's column features a construction project on a c-w monitor to improve your ability to send code. As you probably know, The Heath Company started this type of construction project and it has been universally accepted. It is more complete than the usual construction article and features a step-by-step check off list that makes it possible for anyone to construct the monitor.

Miscellaneous Nothings

Nothing is right! So far this month, the mailman has not brought me any letters from Novices, Net information and only a couple of help wanteds. Please bear with me until the mail starts coming through.

I had the pleasure of working KN6TVT quite some time ago on 40 meter c-w. Chuck is running 65 watts to a Globe Scout transmitter, and his hearing aid is a Hallicrafters S-20R. My fist got so tired that I had to switch over to phone to finish out the QSO. I would like to brag about my 5-9-9 report, but then, Chuck is only 20 miles away in Arlington, California. Had a nice, but short lived, QSO with KN8BSL in Dayton, Ohio. Howard was coming on like "gang busters" when he called CQ, but he fell into that fiery sea of heterodynes after a few transmissions. Howard's QSL card advised me that he is inhaling with an NC-98 and his exhaler is a Viking Adventurer. It was sure good while it lasted, OM.

As you may have noticed from the Surplus Column, I finally fired up on six meters. I never realized how much activity there was on the band. Almost everytime that I fired up the transceiver, there was someone to ragchew with. During most of the mornings there was a good band opening to

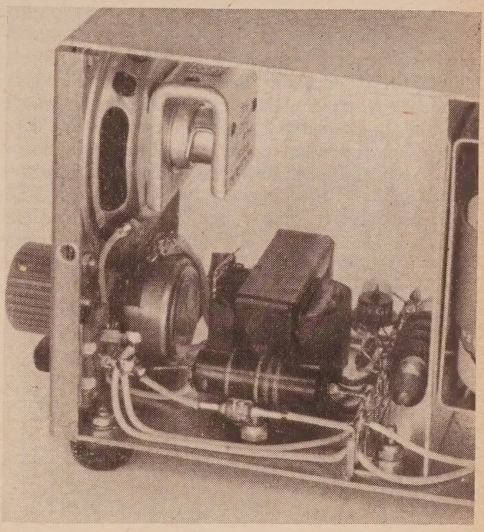


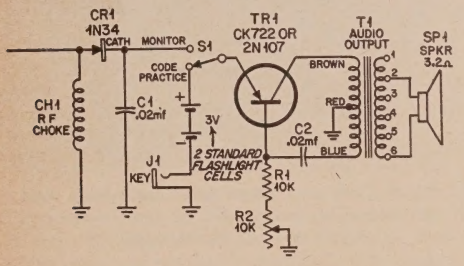
Fig. 4. Closeup of parts layout and wiring. Note the capacitor and crystal in the foreground, this is the r-f "power supply."

the east with strong but QSB signals. The TVI situation was not as rough as I thought it would be either. A high pass filter on my RCA Color receiver got rid of the cyan color strips right away.

Speaking of TVI, I had quite a rash of it on ten meters last week. I had just received a new three element beam and was real anxious to try it out. Since my rig never produced any TVI before I fired up on 28.9 and started picking off the stations without checking my own set (you foolish boy!). After I had been on the air for almost an hour, the local gendarmes stopped by to inform me that I was wiping out the Santa Anita races on Channel 2 (was I ever!). They provided me with the name and phone number of the lady who had complained and I phoned her up, post haste! She told me that I was only interfering with Channel 2 and a check of my own set showed me what she meant. I have a high pass filter on my TV set, but since I

was radiating Second harmonic energy, no amount of filtering could eliminate the interference. Here's what I found wrong. My beam was not tuned up correctly and consequently would not load properly. When I forced more power into the antenna (by reducing the capacity on the pi-network adjustment) I allowed more second harmonic energy to escape. The second harmonic of 29 mc is right smack in the picture band of Channel 2! The antenna was tuned properly, the transmitter readjusted, and a quick call to the neighbor confirmed the fact that the interference had ceased. A few well placed apologies smoothed the crisis over very nicely.

I made three observations from my escapade. One, the amount of second harmonic radiation is inversely proportional to the capacity of the pi-network output capacitor. In other words, the less the capacity, the more second harmonic radiation. This is true on 80 meter c-w and can be very serious because the second harmonic radiation falls outside of the ham band (3.7 mc X 2 equals 7.4 me). My second observation was that it was pretty stupid to go on the air without even checking for potential television interference. The amount of time wasted on the telephone could have been applied to better advantage, tuning up the beam. My third, and probably most important, observation was that a little courtesy goes a long way! The lady was very forgiving and the word is around the neighborhood about what a polite young man I am (har-har de har). Before I break my arm patting myself on the back, let's get into the construction project.



Parts List for Snortin' Morten

C1, C2—.02 200 volt capacitor
CH-1 —2.5 millihenry R-F choke (National R-100)
CR-1 —Germanium Diode IN34
J1 —Open circuit headphone jack (ICA #1870 or Birnbach #257)
R1 —10K ½ watt resistor
R2 —10K potentiometer (Centralab B-14)
S1 —Single pole double throw slide switch (ICA #1259 or Switchcraft SW-15)
SP-1 —2½ inch, 3.2 ohm speaker (Quam 25A07 or Lafayette radio SK65)
T1 —Universal speaker transformer (Triad S-51X)
TR-1 —CK722 or 2N107 Transistor

Miscellaneous parts

Chassis 3x4x5 inches (LMB #140), battery holder (Lafayette Radio MS-167), 4 rubber feet, knob (National HR), 2½ square decorative grill, 8 point terminal strip (Cinch Jones 56C), 8- 6/32 nuts and bolts and washers, 8- 4/40 nuts, bolts and washers.

Introducing "Snortin' Morten"

Technically, Snortin' Morten is a transistorized, r-f powered keying monitor and code practice oscillator. Practically speaking, it is a little gizmo that lets out a "snort" each time you press the telegraph key, when transmitting. Many beginning amateurs have trouble sending c-w unless they can hear their own c-w note (I still do). The beginner will usually stick right around his own frequency so that his bfo note is still audible. Naturally, a lot of contacts are missed this way. Not only that, but it involves complications when resetting the receiver r-f gain control on transmit and receive. It also gives an indication of power output and can be used by the sightless amateur for tuning up. The pitch will change as the power increases. By switching in the batteries, Morten makes a dandy code practice oscillator.

Morten obtains the operating power from your transmitter. A short pick-up wire couples the transmitter energy to a 1N34 crystal diode. This diode rectifier converts the r-f energy into direct current, necessary to power the transistor. A slide switch is connected at this point in the circuit and switches the transistor to operate from the batteries, when the key is depressed. A CK-722 or 2N107 transistor is connected in a feedback circuit so that when voltage is applied to it, an oscillation occurs. Potentiometer R2 controls the frequency of the oscillation and consequently the pitch of the note that you hear in the speaker. Therefore, each time you press the key, Morten "snorts." *Fig. 1* is the schematic diagram for the keying monitor and code practice oscillator. The parts list contains a complete bill of materials and everything is available at your local distributor. If you have a "well heeled" junk box, the cost should be less than five dollars.

Construction

Snortin' Morten was conceived in a 3 X 4 X 5 chassis box (L.M.B. #140 or equivalent). As you can see from the photographs, the assembly is compact, but not crowded. If you follow the steps carefully and use the check-off, the odds are in your favor that it will work the first time you try it. Here goes. . . .

( ) Using the paper wrapper as a template, lay out the holes as shown in *fig. 3*. Be very careful to centerpunch each hole, to avoid scratching the cabinet.
( ) Drill all the holes and file out the rectangle for the slide switch (D).
( ) Cut the speaker hole (A) to fit the speaker you are using, if you did not obtain the one suggested on the parts list.
( ) Cut out and drill a battery bracket as shown also in *fig. 3*.
( ) Mount an open circuit key jack in hole B.
( ) Mount the pitch control (10K pot.) in hole C.
( ) Mount the slide switch in hole D, using 4/40 hardware, in holes I and J.
( ) Install the speaker in hole A, using 4/40 hardware in holes E, F, G, and H.

( ) Determine by observation, or with an ohmmeter, which terminal of jack B is grounded (connected to the chassis). Connect a short wire from this point (solder) to the center terminal of control C. (solder)
( ) Connect a 6 inch length of wire to the other (ungrounded) key terminal (solder).
( ) Connect a 4 inch length of hookup wire to the righthand terminal of control C. (solder) Leave the other end free temporarily.
( ) Connect a 3 inch length of hookup wire to terminal 2, and a 3 inch piece of hookup wire to terminal 6 of the universal output transformer, T1. (solder)
( ) Mount transformer T1 in holes O and P, using 6/32 hardware, with the two 3 inch leads pointing towards the front of the case.
( ) Connect either of the two 3 inch leads to either terminal of the speaker. (solder)
( ) Connect the remaining 3 inch lead to the remaining speaker terminal. (solder)
( ) Mount the 8 point terminal strip in holes M and N, with the terminals forward of the mounting holes. Use 6/32 hardware, but do not tighten securely because the battery bracket is also mounted on these bolts, later.
( ) Looking at the terminal strip from the rear, number the terminals one through eight, from left to right.
( ) From the middle switch terminal, connect a short piece of wire to terminal strip lug #3. (Do not solder)
( ) Connect a 6 inch piece of wire to the upper switch terminal and leave the other end free. (solder)
( ) Connect an .02 mfd capacitor from the lower switch terminal (no solder) to terminal lug #2 (solder).
( ) Connect the cathode end of the 1N34 crystal to the lower switch terminal (solder) and the plate end to terminal lug #1 (no solder).
( ) Connect the brown transformer lead to terminal lug #5 (no solder).
( ) Connect the red transformer lead to terminal lug #7 (no solder).
( ) Connect the blue transformer lead to terminal lug #8 (no solder).
( ) Connect one end of the 2.5 mh r-f choke (CH-1) to terminal lug #1 (no solder) and the other end to terminal lug #7 (solder).
( ) Connect one end of a .02 mfd capacitor to terminal lug #8 (solder) and the other end to terminal lug #4 (no solder).
( ) Connect one end of a 10K resistor to terminal lug #4 (no solder) and the other end to terminal lug #6 (no solder)
( ) Connect the free end of the wire from pot. C to terminal lug #6 (solder).
( ) Prepare the transistor for installation by clipping the three leads to 1 inch. When soldering the wires, be sure to grasp them with a pair of long nose pliers to conduct the heat away. The basing connections for the transistor are shown in *fig. 1.*
( ) Connect the transistor collector lead to terminal lug #5 (solder).

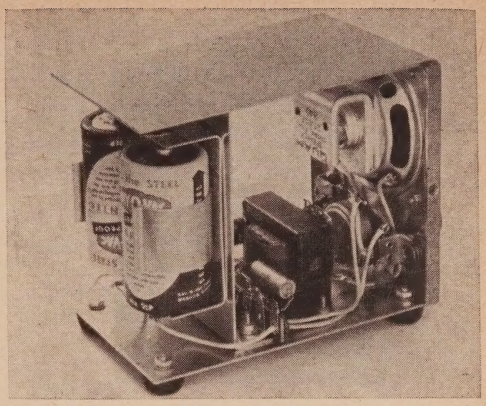


Fig. 5 Right side view of Snortin' Morten. Note that no screws were used to secure the battery bracket to the top of the case. These could be used if desired, although not necessary.

( ) Connect the transistor base lead to terminal lug #4 (solder).
( ) Connect the transistor emitter lead to terminal lug #3 (solder).
( ) Mount the battery bracket using the hardware already installed in holes M and N.
( ) Install the battery holder on the bracket. (Note: To avoid marring the top of the cabinet, no bolts are used to secure the top of the battery bracket.)
( ) Connect the 6 inch wire from switch D to the *positive* battery terminal. (solder)
( ) Connect the 6 inch wire from key jack B to the *negative* battery terminal. (solder)
( ) Connect a length of hookup wire long enough to reach to the antenna or transmitter as described later (solder).

This completes the wiring of the Snortin' Mortgen keying monitor. Scan the work you have just completed for errors, shorts, opens, wrong parts, spider webs, etc. If all looks ok, double check the transistor connections. If it is incorrectly connected, it could ruin the transistor.

( ) Install the batteries. Be sure that the positive terminal goes to the switch and the negative terminal goes to the key jack.
( ) Place the slide switch in the up position and insert a key plug in the jack, and depress same. Morten should instantly let go with a snort that sounds like a Wurlitzer Pipe Organ, gone berserk. The volume will not be ear shattering, but it should be more than satisfactory at normal room noise levels. If you desire, the volume can be increased by adding more batteries, up to 15 volts. With a 15 volt hearing aid battery, Morten really lets go with a blast that is more than adequate. Changing the setting of the pot should change the pitch.

Several transistors of each type were tried and all worked right off the bat. Some had a higher pitch than others, but this can be varied to suit the constructor by changing the size of R1, C2

[*Continued on page 98*]

RTTY

Byron H. Kretzman, W2JTP
16 Ridge Drive, High Hills,
Huntington Station, N. Y.

Complicated, this RTTY business, say some people. Nonsense! Look up those block diagrams on pages 90 and 91 of the January issue of *CQ*. Frequency-shifting a VFO for FSK or an audio oscillator for AFSK is easy (p68, Nov. '56 CQ; and p76, Nov. '55 *CQ*, respectively). Building a converter or terminal unit (TU) *seems* more complicated, mostly because the tuned audio filters used to separate the 2125 cycle and 2975 cycle tones are a little strange to the usual hamming. But, they *can* be really simple; much more so than the i-f amplifier of your receiver.

Let's look at the set-up in a converter: The object is to take the audio tones coming from the receiver, separate them, rectify them, and use the resulting d.c. to operate a keyer tube or tubes which in turn operates the receiving selector magnet in the teleprinter machine. Simple, yes?

Since someone said that the tuned audio filters are the most difficult part to designing or building a converter, let's examine this part in detail. The inductance, naturally, has to be pretty high in order to tune to 2125 or 2975 *cycles*. It's not practical

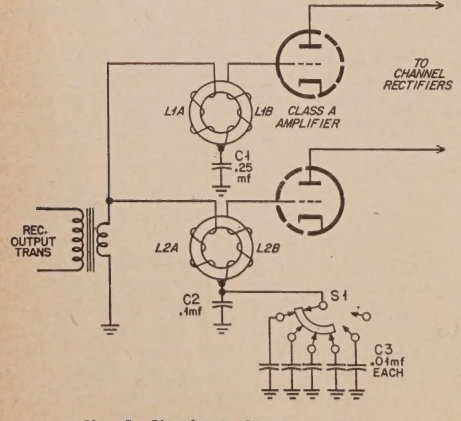


Fig. 1—Simple Audio Tone Filters

AMATEUR RADIOTELETYPE CHANNELS

National, FSK	3620, 7140, 27,200, 29,160, 52,600 kc.
National, AFSK	2712, 147.96, 144.198 Mc.
Area Nets:	
California	147.85 mc. AFSK on AM
Chicago	147.50 mc. AFSK on FM
Detroit	147.30 mc. AFSK on FM
Washington, D.C.	147.960 Mc. AFSK on AM 147.495 mc. AFSK on AM
New York City	147.960 mc. AFSK on AM
Buffalo/Niagara	147.50 mc. AFSK (space) on AM
Boston	147.96 mc. AFSK on AM
Seattle	147.00 mc. AFSK on AM

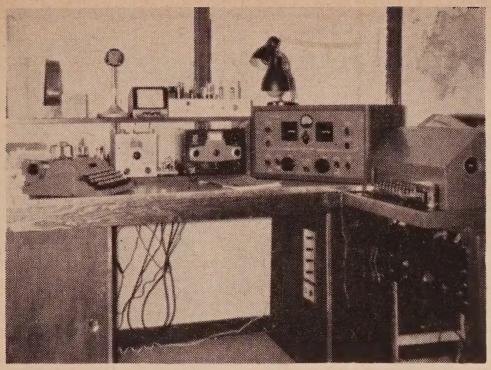
for the amateur RTTYer to try and wind these, so we have to look around for some other source, keeping in mind that a high-Q coil is most desirable. Small filter chokes can be used; however their Q is rather low for this purpose. The answer is to use toroids.

Toroids can be purchased from most transformer manufacturers, but the tariff is a bit high for the amateur. The surplus (yes, there *still* is some left!) market, particularly in the west, is an exceptionally good source of toroids very useful to the RTTYer. These are in the form of C-114A telephone loading coils. They are potted and encased in small rounded bakelite or aluminum boxes with hinged covers. Unpotting the coils is a lead-pipe cinch in the XYL's kitchen stove, preferably when she is away for the day. (It smells. Don't forget to open the kitchen windows.) If you can't find any of these coils in your local surplus emporium, contact W6CLW, W7HRC, or W8DLT.

There are two coils on each toroidal core. When connected in series-aiding, they give an inductance of about 88 mh with a Q of 100 measured at 1000 cycles. Mounting is accomplished by using two large flat plastic washers and a screw through the hole in the "doughnut." Don't mount toroids close against the chassis, however.

Now, for a real simple filter circuit, look at *fig 1*. These filters operate directly from the voice-coil circuit of your receiver. Note that the capacitor tuning the filter is connected to the junction of the two coils on each toroid. The combination of *L1A* and *C1* tunes to the *mark* frequency of 2125 cycles. This is fixed. The combination of *L2A* and *C2* tunes to the *space* frequency of 2975 cycles for the standard 850-cycle shift, or by switching in capacitor bank *C3*, to any one of five other lower audio frequencies, depending upon how many of the capacitors are paralleled by the shorting-type switch *S1*. (This provides for the reception of narrow shift down to about 40 cycles.) The output of the filters, at high impedance, from *L1B* and *L2B*, then feeds the grids of ordinary Class-A audio stages, which in turn feed the channel signal rectifiers.

We are much indebted to Roger Wixson, W6FDJ, for the above dope on these simple tone filters. Roger reports rather extensive use of the above circuit around the Bay area in California.



Charles Walker, K2IAZ, Union, New Jersey; on 80-meter RTTY. Equipment includes a Model 12, Heathkit VF-1, Viking Adventurer, and a ½-wave doublet antenna.



Mort Swingler, K6LFK, North Hollywood, California on 2, 6, and 40-meter RTTY. From right to left: Model 26, TU, NC-183, Mort, VFO, Communicator, and Linear Amplifier.

If you have been regularly reading the RTTY column for the past year, or back to the January '56 issue, you will have noticed that a section called "RTTY Principles & Practice" has appeared monthly. This section, of course, was devoted to the newcomer, or potential RTTYer, and we have covered just about everything from specific machines to operating practice. (A complete index to this information appears in the Jan. '57 column. Back issues may be readily obtained from *CQ* for 50¢, each.) The $64,000 question now, is, what have we missed? What, exactly, would you newcomers like to see in the way of RTTY technical information that hasn't appeared in *CQ* since January 1956? Or, perhaps some of you old-timers would like to suggest something that would help the other fellows get started on this "last frontier" of amateur radio. Drop us a line, will you, and let us know your thoughts?

RTTY Frequencies

W2PEE, of Glen Head, Long Island, has a suggestion for RTTY frequencies which is worthy of your careful thought and consideration. Elston says, "Most of the more advanced-type amateurs who would be likely to work in RTTY have 100 kc frequency standards in their receivers. Most of these standards have some provision for zeroing with WWV and tend to remain very close to the exact 100 kc intervals. It would simplify the receiver drift problem and allow operation similar to our AFSK operation if standard shift (*space* lower than *mark*) utilized a frequency whereby their *mark* frequency were 2125 cycles below the 100 kc points. On 80-meters this would give 3597.875 kc, 3697.875 kc, and 3797.875 kc as standard operating frequencies. Those fellows who use "up-side-down" keying (*space* higher in frequency than *mark*) could, by the same token, use the 100 kc points plus 2125 cycles for their *mark*, or 3502.125 kc, 3602.125 kc, 3702.125 kc, and 3702.125 kc.

"I feel that if such operation as this were adopted, it would simplify the development of autostart devices for low-frequency work.

"Although I have been operating FSK but a short time, and am having a good time of it, there are some aspects of our 2-meter AFSK which I miss. The short-start type operation where we shut our printers on and off during operations is appealing for a fellow like myself who doesn't sit glued to a chair while the other fellow is sending, but is likely to be in the next room finishing up a project. Secondly, my type of operation is more convenient for the fellows who use 'make-break' keying of the *mark* frequency to send their c-w identifier. In this way, the printer does not run open with consequent misprinting during the Morse clause at the beginning and end of transmissions."

Let us have your comments, fellows. Both Elston and myself may be contacted on 3620 kc or on the 147.96 mc autostart channel, or drop either of us a line via Uncle's post.

Across the Nation

K2IAZ, in Union, New Jersey, now has his Model 12 on 80-meters, and is keying a Heathkit VFO (p76, Nov.'56, *CQ*) to drive a Viking Adventurer. Charlie's antenna is a ½-wave doublet, and he built a converter of the W2PAT type.

W7JFU, in St. Helens, Oregon, is having a bit of difficulty running his Model 26 from a surplus FRA converter. Might be that your selector magnets should be in *parallel* for the standard 60-ma loop, Walt. See page 76 of the April 1956 *CQ*.

CN8FD, in Casablanca, has an R-5B/FR exciter and is in the process of getting his hands on some surplus *Teletype* equipment. Lots of luck, Dave. We sure would like a Morocco RTTY contact.

WØFWD, in Omaha, Nebraska, has acquired a Model 26 and a *WE* 255-A polar relay and is anxious to get on RTTY. Can any nearby RTTYer give Russ a hand? (His QTH is 4544 Charles St.)

W1EFF, in Gray, Maine, has been having so much fun with his Model 26, obtained through the kind offices of W1FGL, that he is now getting set for tape perforation and transmission.

W6AEE/6 is now in his new home at 372 West Warren Way, Arcadia, California. Merrill says (in December) that ". . . . we have the furniture in place, but not the radio gear." The local gang helped W6AEE put up a 66-foot pipe mast. That should help, a little!

K6LFK, in North Hollywood, California, is adding a *B & W* transmitter and kw amplifier. In

[*Continued on page 104*]

SSB

COUNTRIES WORKED
(Two-way SSB)

W2KR	68	W4INL	58
W3ZP	68	W2GG	58
K2DW	67	W6IAL	58
DL4SV	61	W5HHT	57
VE4NI	61	W2CFT	57
ZL3PJ	61	OH2OJ	56
ZS6KD	61	ZL3IA	55
W2JXH	61	PAØIF	55
G6LX	61	HR2WC	55
VK3AEE	61	W3BXI	50
G3MY	60	OZ3EA	50
K2AAA	58	W9JJC	50

Bob Adams, K2DW
245 Revere Road
Roslyn Heights, N.Y.

Our SSB DX Contest seems to have been a huge success. At exactly 1800 GMT on Saturday January 12th every SSB station in the World, or so it seemed, started calling "DX Contest", and all through out the night the twenty meter band sounded like a Sunday afternoon in the States. CN8GD, CN8JD, HR2WC and CN8MM were working stations as fast as they could write the identification numbers in their logs. TG9AD had a field day and was logged all night. Howard, BV1US must have received a new frequency and was going strong on 14308. The gang in "Honeybucket Hollow," KA2YA were handing out numbers all night long. VK3AAE, ZL3IA, ZL3PJ and VK2VA were all going strong. Paul, VQ4EO must have been exhausted on Sunday judging by the way he was working the boys. Sam OH2OJ, SM6SA, ZB1CZ, OZ3EA, VE2GQ, G2MA, GM3CIX, SVØWA, ZE6JB, YU1AD and XE1A when last heard were having a big time.

Fifteen meters was just as lively and many of the gang went to 21 after working every thing they heard on twenty.

We will have all the contest story in the next issue along with the unofficial winners. What a job we will have in checking the logs! As far as



I1LOV

I could determine every one thoroughly enjoyed themselves, and many asked to have another one real soon.

Your editor missed the second half of the contest, but managed to make 162 contacts during the first twenty-four hour period. This included thirty-four countries, in spite of having to entertain some out of town company. I am writing this month's column from sunny Florida, and just finished talking to Alan, W3ZP by telephone. My vacation here was slightly soured as I learned that W3ZP worked HZ1AB in Saudi Arabia to go ahead of me in total countries worked SSB. Allan now leads with 68. Congrats! I sure hope he decides to take a vacation soon so I can catch up again.

Several new stations appeared during the contest including ET3RL, LA6J, LA8WE and HZ1AB. Welcome fellows to the ranks. According to W3ZP a new country made its debut in OE3BB. We are also happy to have YU1AD, TF2WOK, VE6EN, VK6MK, VP7NQ, VP9HH, XE2JK, and ZD4CE with us. The Spanish authorities have recently approved SSB and EA4CX, EA4BF and EA4DY joined EA9AR on the air. Several other Spanish stations are buiding exciters and we will soon have activity from EA6 and EA8.

Reg, W6ITH reports that HA5BB had a sideband transmitter all ready to fire up when the recent events forced him to leave Budapest with his family. He is now in France awaiting permission to come to the USA. Also from the "East" we hear that the authorities are encouraging SSB activity and the following Russian stations are now on SSB: UB5KFG, UF6KA and UAØKBD.

W9MOW visited VU2RX in Bombay and left him a 20A exciter. W6KUY/MM tried to deliver a sideband transmitter to DU7SV but the customs refused permission to take the equipment ashore. He is due to arrive in the Phillipines again this month and has the neccessary import documents. We should soon have Manila on SSB.

KX6BU is looking for Europeans on 15SSB each day around 1000 GMT on the high end. KM6AX is on 20 and 75 with a converted BC610. ZL3LE an old timer has converted to SSB and is active on 15 and 20. KA7EG on 28490 and JA1AEA on 7100 have both been working into Europe. Jim, DL4SV reports that YA1AA has a SSB rig and will soon be on.

Paul, VQ4EO is building a transistor exciter and will install SSB in his private Auster aircraft. Another A/M expedition is scheduled soon by Arthur Godfrey, K4LIB and Curt LeMay, KØGRL to Africa where they will hunt big game. A fixed SSB station will be set up in the jungle.

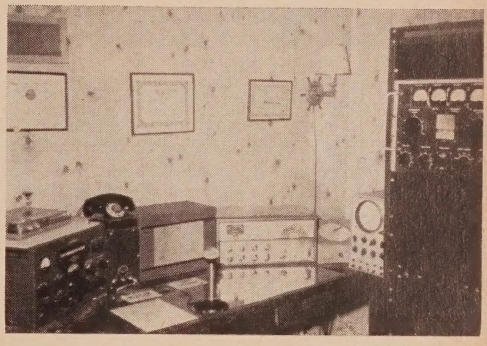
VQ4ERR the big AM DXer has a Viking Pacemaster on order and will soon be on SSB. VQ5EK and VQ4BP are awaiting suitable crystals to heterodyne to 14 mc. VQ5JJ is doing wonderful with only an exciter. He hopes to have his linear amplifier perking soon. Other African stations on SSB are VQ3AC, VQ4EO, VQ4EU, KT1DD, KT1LU, KT1LS, CN8GD, CN8JD, 5A2TP, CN8MM, EAØAC, EA9AR, ELØA, ZD4BF, ZD4CF, ZE6JB, ZS3E and ZS3BC in addition to all the ZS.

ZL3IA is looking for SSB contacts on 28650 every Sunday morning. VR2CG returned to New Zealand and is working G stations with eight watts PEP into a curtain rod antenna on twenty. His new call is ZL3DX.

Received a note from the gang at KA2YA, (Ray, Bob, Al, Dave and Jim) saying that they are now on forty meters and looking for contacts from 1000 to 1300 GMT. They operate on the low end at 7020 and 7090 kc with a BC610 feeding a rhombic antenna. On twenty KA2YA uses a five element beam. They QSL 100% on receipt of cards.

In the January issue we showed a picture of I1LOV's fine beam antenna. We are pleased to show a photograph of Augusta's well equipped station which puts such a fine signal around the world. Incidentally he is quite a handsome chap. The transmitter is a Hallicrafters HT-30 and HT-31 and the receiver is a Hallicrafters SX-100.

Also shown is a photograph of your editor's rig.



K2DW

The transmitter consists of a new Hallicrafter HT-32 exciter driving a pair of 4-400As to a full KW DC input. The antenna is a Telrex 3 element beam fifty feet high. The receiver is a Collins 75A4. A scope, phone-patch, beam indicator and tape recorder completes the station which is located in an acoustical room built in the basement. I have been on side-band for five years. Previous calls held were W3SM, W9SM and NY1AA. Ham activity started in 1915. The transmitter is shown in detail in Eitel-McCullough's SSB tube catalogue, is band-switched, with vacuum condensers in the plate and pi-output. Well regulated grid and screen supplies are utilized. K2DW will shortly be located in the Washington area where the call W3SW will be used.

We again ask you to send interesting information, photographs etc. to the SSB editor so that we can continue to make this column as informative and interesting as possible. We wish to thank Ron, Editor of Short Wave Magazine's SSB column, Reg, W6ITH and Allan, W3ZP for much of the above information.

73, Bob, K2DW

V H F

Sam Harris, W1FZJ
P. O. Box 2502, Medfield, Mass.

Moon Bounce

Not all the news on the moon bounce projects is good as witness the following:

Obituary Notice
San Fernando, California
October 24th 1956

At approximately 3:00 A.M. this morning the 206 element Moonbeam at San Fernando, California was struck with a severe attack of violent air pressure and was mortally stricken. She fought bravely up until 7:00 A.M. when the end finally came. Her loss is felt deeply by all concerned with Project "Jersey Bounce." Services will be held at the home of K6EYN on October 27. Burial will be handled by the V.H.F. Rubbish Removal Co. Please omit flowers. Hammers, saws, wrecking bars and muscle will be appreciated.

Pallbearers are: K6EYN, K6OUK, K6IVO, W6ZAT, W6QKI, W6QED, W9QEP/6, W9QXP/6 and W2YPY/6. Pallbearer in absentia: W2NLY.

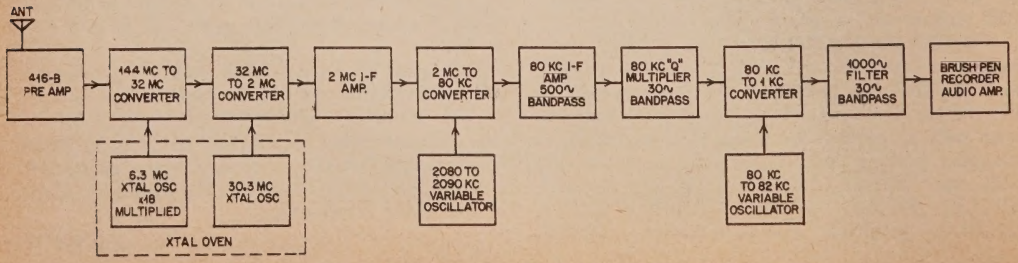
This is sad news but we hope that project "Jersey Bounce" will be continued.

KH6NS says he has a pair of WE-357A's grounded grid driven by a pair of 4-125's, driving the antenna shown in the last issue. Anyone for schedules?

Our own efforts have been confined to equipment improvement. In line for scrutiny are receiver noise figure, bandwidth and stability. Feedline efficiency and antenna aiming.

The transmitter efficiency problem is pretty well licked. A measured power output, using reliable equipment, of 720 watts from a pair of 4-125's with 2500 volts and 400 ma is about as good as can be expected. Primary improvement in efficiency comes from enclosing the tubes and plate lines in a suitable shield container (minimizing radiation loss). Other items of importance are silver-plating of tank circuit, using a tank circuit of adequate dimensions to handle the high r-f circuits involved without excessive heating. Complete isolation of the grid and plate circuits. Making sure all the grid drive is on 144 mc (most easily done by using a "straight through" driver with hi "Q" grid and plate circuit). 4-125 tube sockets should be mounted on the underside and tight against the chassis. *Under no circumstances should the tube sockets be mounted above the chassis.*

Stability is another problem. Efforts to get the short term stability which we feel is necessary have not been too successful. Transmitter frequency at present moves 10 cycles between key up and key down. With a receiver bandwidth of 30 cycles this is far too much shift. Under construction is a separate master oscillator which will be housed remote from the field of the transmitter. Usual voltage regulation, d-c filament supply and two-stage xtal oven will be employed. Actual transmitter frequency has not been determined. It is expected that it will be in the range between 144,240 and 144,250. This frequency range has been chosen as the "most likely to be clear" spot within range of the average big beams and trans-



mitters. Lower frequencies are pretty well occupied with regular activity and the likelihood of interference is much higher. I strongly urge anyone making moon-bounce attempts to keep their frequency within this range. 144,240 to 144,250.

Naturally the same stability problems found in the transmitter are present in the receiver. The crystal for the crystal controlled converter is housed in the same box as the transmitter. The multiplier stages are also mounted there and the injection signal is fed to the converter through coax. The converter while presently located about half-way between the receiver and the antenna, will be mounted at the antenna.

The stability and tuning rate of the i-f receiver is next on the list. With a receiver bandwidth of 30 cycles it is obvious that a tuning rate considerable better than normal will be required. A few days of tuning with the 30 cycle filter gives us the notion that about 1000 cycles per revolution of the tuning knob with calibration points every twenty cycles would be adequate. Using a good receiver dial (such as a National PWO) this would give a tuning range of 10 kc, just about adequate for tuning the moonbounce frequencies. The exact method by which this will be accomplished has still to be determined. Present plans call for crystal control of the HF oscillator in the i-f receiver and tuning the second conversion oscillator, at about 2 mc.

A block diagram of the receiver is here somewhere.

Actively engaged in worrying and building on the moon bounce project are Gordon Pettingil (W1OUN), Henry Cross (W1OOP), R. Pendleton Rafuse (W1RUD) and myself.

Gordon has prepared some very useful charts for determining the position of the moon (exactly) and pre-determining the doppler shift to be expected. Bolide Bob has come up with a real whinging "Q" multiplier which, in addition to being stable, is capable of giving a bandpass of 10 cycles or less. Henry "Hank" Cross is responsible for the 30-55-100 cycle switchable bandpass filter used in the output of the receiver. Information on these various items will be published from time to time.

Northwest Scanner

The "Northwest Scanner", devoted to news on VHF activity, has been coming to my place now for several months. The brainchild of Russ Miller and Jim Huntington, this little rag is a real bundle of news for VHF'ers. A letter to Northwest Scanner—630 Full View Drive—Eugene, Oregon will bring you a free copy. 1 (one) dollar gives you a year's supply. Try it. It's good.

220/432 mc night

On the night of Friday, March 1st, 1957, the "Amateur VHF Institute" of New York is going to sponsor a 220/432 mc Night. The meeting will be held in the usual place, the transmitter building of WEVD located at 47-01 Maspeth Avenue, Maspeth, Long Island, New York. Meeting begins at 8:30 P.M. Technicians welcomed with open arms.

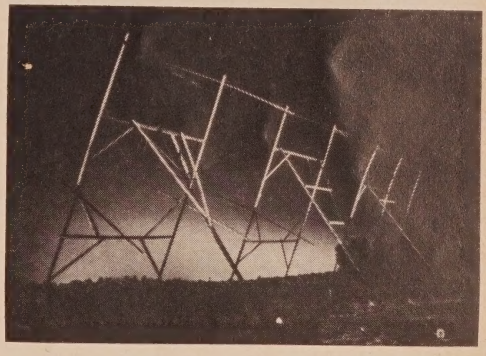
Six Meters

Africa is the big news on six. Leroy (W5AJG) received a card from CN2AO (ex EAR96) who reports Leroy's beacon signal 5 9+ on 12/25/56 at 1605 GMT in Tangiers. No transmitter going in Tangiers yet, but one under construction.

The chances of not working Africa before the summer short skip are very slim. You can improve your chances by never turning your beam to the east, but why bother. Let's point at them and take the consequences.

From "Merry Olde England" and G6FO we get confirmation on the British 4 meter band, 70.2–70.4 mc. This band has been opened for I.G.Y. studies and will be available until December, 1958. Austin (G6FO) managing editor of "Short Wave," says the following better than I can.

"With the promise of a high M.U.F. and the possibility of openings across the Atlantic on 70 mc, it would seem that there should be opportunities for cross-band working, Six/Four, with the U.K. stations on 70 mc and W/VE's on 50



San Fernando moon beam. 16 Yagi's 13 elements each on 24 foot booms. 112 feet wide. See obituary opposite page.

mc. In the same way that many G's have already provided themselves with six meter receivers so as to be able to work W's crossband Six/Ten, we very much hope that these W/VE's keen on VHF exploration and the breaking of new ground will equip with 70 mc receivers, so as to be able to take full advantage of any openings that may develop. As our four meter band is only 200 kc wide, centered on 70.3 mc, it is a relatively simple matter. Anyone building a converter for this frequency might take in 72 mc while he is about it, where the French have always had a band on which several F's are regularly active."

Anyone who is equipped to listen on the four meter band please don't hesitate. Let us know the details asap.

Six meter moon bounce

A number of inquiries have been received

anent six meter moon bounce. We are not making any skeds for six meter moon bounce at this time. It is my feeling that the antenna in use here is marginal at best for this purpose and in addition it is not tiltable. (A serious drawback if the other guy can't tilt either.) A really usable Moon Bounce system on six would take just as much attention to detail as the two meter moon bounce project. We just don't have the time available.

Helen is open for schedules on six meters for any other type of propagation, however.



Paul and DB (W4HHK and W4UDQ) at the entrance to their new home in Collierville, Tennessee



Wayne (W1WID) adjusts the two meter beam for the contest. (Tower by Khune, beam by Radcliff) Snow, by golly, on top of Pack Monadnock, New Hamp.

Contests

The January contest certainly proved that six meters is the band to watch in VHF contests. Helen, operating thirty-three out of the thirty-six available hours, managed to make contact with two hundred and twenty-six stations in twenty ARRL sections. (A year ago in the January contest with comparable equipment from the same location we managed a hundred and sixty contacts on two meters.) Of course the band opening didn't hurt anything although only about ten extra contacts were made (Six extra sections). Incidentally, Helen operated for the Rhododendron Swamp VHF Society using the club call W1BU. Paul Day (W1PYM) operated W1BU on two meters. Unfortunately the two meter converter is mounted next to the six meter final and he was unable to hear anything but Helen when she was on. Net result was only eighty-three contacts in ten sections.

Meanwhile, up on the mountain the W1MHL boys were struggling manfully to beat Mother Nature. With the aid of one large size tractor and loads of ambition and radio parts, they finally managed to get set up on top of Pack Manadnock. Operating only one band at a time they managed in six and a half hours to make one hundred and twenty-three contacts on six and in ten hours made one hundred and eleven contacts on two meters. (See photos of yeomanlike struggles.)

Speaking of contests don't forget the "CQ Spring VHF Contest", April 27th and 28th. Complete information will be in the next issue. Mark your calendar and start making your plans now. We are making arrangements to have some good aurora openings on two and short skip on six, so don't miss it.

Pensacola, Florida A contribution from Florida via Harvey Campbell (W4EQR):

"The rig is home made and consists of a 5763 oscillator, pair of 5763 triplers driving a 5933 final to about fifty watts. The modulators are 5881 in zero bias class B. The receiver is an old VHF-152 into a SP-200 Super Pro. The antenna is a four element wide spaced beam.

"In 1947, 48, 49, and 50, I worked six quite a bit and did my reporting to Vince Dawson up in Gashland, Missouri. In 1950 I gave up on ham radio (*SHAME ON YOU*) and tried TV. Now I'm back on six and hope to be around for a while. I plan to operate mostly on six now and two meters a little later on.

"Have added Mississippi and Alabama to my states worked and confirmed list and this makes a total of forty four confirmed. I still need Wyoming (*who doesn't*), Louisiana, Arkansas and Georgia, and hope to pick these up during the spring openings.

"There are now several others in Pensacola working six meters including W4MS, K4ECP, W4HIZ and K4IVD. There are others talking about it but not on yet." *Fine business Harvey, glad to get some news from your way.*

Pittsburgh, Pennsylvania Certificate news from down Pittsburgh way from Robert Clayton, Secretary, Treasurer of the "Pittsburgh 6 Meter Net."

"I would like to notify you that we have a Pittsburgh 6 Meter Net in full swing. It has been in operation for the past six months, and meets on six meters every Monday night at 7:00 P.M. We have no particular crystal frequency, we tune for the check-in stations.

"We issue a certificate to any amateur radio station working any six of our member stations on six meters. To get a certificate simply send a two cent post card to W3HFE, Frank A. Mihm, 1409 Jefferson Heights Road, Pittsburgh 35, Pa., telling him the six stations you

worked and the date you worked them. You must also certify that you have QSL'd each station.

"We have about forty members, and have had numerous inquiries about it from all over the country." *We're all glad to know of another Six meter net that's going good, Bob, and also to hear about the certificate. There aren't too many six meter certificates floating around.*

Tarpon Springs, Florida Another epistle from Florida, this time from Dick Barry (K4DMB):

"This is to inform you of the first social gathering of the 'Suncoast VHF Club', December 27, 1956. It was held at the residence of K4AVH.

"Except for naming the club, no important business was carried on. We gorged ourselves on good food (*that isn't important business?*) and had a wonderful time getting acquainted.

"Net night for the club is Thursday at 1930 EST on 50.7 mc. As of now, we have eleven members. W4LAW did not attend the gathering. We were happy to have three visiting hams from W8 land, K8ACC, K8HBB and W8BGN.

"We would like to recruit any ham interested in operation about 50 mc." *Three cheers for another VHF Club.*

Muskegon, Michigan Words of wisdom and interest from Stu Bonney (W8JUV):

"Here are a few notes on things happening here in the Great Lakes area. On December 1st we attended the VHF conference at Kalamazoo, Michigan. The main talks were given by Mason Southworth, W1VLH, and John Landeck, W9WOK. Mason gave a very interesting talk on the earth satellite, after a most enjoyable dinner. John presented some illuminating points on VHF circuitry and construction techniques during the afternoon session. He also had a tape recording of some signals during one of the November auroras. One of the more conspicuous ones, pounding in at least S7, was none other than W1FZJ! *Thank you, thank you, thank you.* He also had recorded some rather intriguing moon bounce echoes.

"We had a short aurora here on Christmas night—managed to sneak in a contact with W8LOF before the band went dead. W8URO reported aurora on the 27th and W9JAQ reports some activity on the 23rd, both weak and short-lived.

"W8CPG and W9SEK are both getting ready for two meter single side band. Plans are also being made at this QTH. A new 4x250B final is in the works: class C for CW, and AB, linear for AM and eventually SSB. With that amount of RF we should be able to overload all the TV sets in the neighborhood. *Just keep trying, Stu.*

"If you know of someone who needs a new WE-416B let us know. We'll take a pair of 417A's for ours. Our QTH is too noisy to take advantage of the low noise figure obtainable with the 416B." *Lots of information in that one, thanks Stu.*

Mountaineers assembled. As usual when there is work to be done and problems to solve, Ranger Roy (Finan) is present (center). Right to left: Wayne (W1WID), Southard (W1DDN), Roy Finan (Fire warden), Vern Robertson (less hat and coat which were needed to keep generator warm)



The six meter 5 over 5 used on the Pack. Wayne (as usual) on top. (W1WID).





New Amperex 6907 twin tetrode. Can't tell how it works. Don't have one. (Sob)



Wayne (W1WID) digging out generator on top of Pack Monadnock, New Hampshire. (January Contest)

East Point, Georgia From the deep South, arrives word from John Brewer (K4AFP).

"I have been on two meters in a very small way for about two years now—off and on. The rig now is an old SCR-522 with conversions only to the extent of making it look nice and an antenna relay. It runs about ten watts input to a four element yagi about forty feet high. The receiver is a VHF-152A with a 6BQ7 pre-amp, both in front of an NC-101. I have also used an NC-57 as my i.f.

"I like two meters and I would like to improve my set-up. I am a student at Georgia Tech and funds for this sort of thing are limited, so I am forced to do what I can with surplus equipment that I can get my hands on. I have collected what I need to build a sixteen element collinear but it may be some time until I will have time to work with it and get it together or be able to get it as high as I have my yagi. I am more than pleased, however, with my yagi, it was made from an old television antenna which happened to have a set of four mounting insulators which were excellent for making a very rugged array. And a folded dipole driven element made a close match.

"I can't afford to buy one of the crystal controlled converters that are on the market right now, and I am reading more than I can work. Just what and where have I worked? Well, my best has been 150 miles to W4EW in Montgomery, Alabama. By the way, my QTH is a suburb of Atlanta, Georgia. I have held schedules with W4FEC and W4CAH both in Auburn, Alabama, and I have worked W4VUO and W4EQM in Langdale, Alabama. Of course the local Atlanta boys plus W4DBV in Rome, Georgia about seventy-five miles. I hear Chattanooga, Tennessee stations and North and East Georgia stations that I have great difficulty working.

"So—I have acquired a T23/ARC-5 which I would like to use to drive an 829B final that I have almost completed. Power supplies and modulator I have. The problem is applying the proper voltages and where and how to meter the stages and how to operate the little channel motor and how to successfully key it.

"I will surely appreciate it if you can help me out with my T23/ARC-5." *O.K. you ARC-5 boys,—to the rescue.*

South Ozone Park, New York Bob Cruz (K2IOL) comes through with the following:

"K2MZE and myself finally got on six meters today, January 1, 1957, just to start the year right. The beam was also put up today and we were almost frozen solid up there.

"Our first QSO on six meters was a cross-band type with KN2VIX on two meters. Our six meter receiver had not been turned on yet so Frank, KN2VIX, was used as a six meter receiver with K2VMP being our first unscheduled QSO.

"Joe's (K2MZE) rig is a converted Heath AT1 which works f.b. for six meters. The receiving setup is a S38C fed by a L and W converter. A three element beam does the radiating. The rig at my shack is a Gonset for two meters and by time of printing of this letter we will have an AT1 also for six meters and the lower frequencies. A home brew converter feeding a BC454 does the receiving. A three element beam will do the radiating on six meters and a ground plane for two meters.

"Lately the six meter gang has been piped in onto two meters by KN2VIX and K2MXT, Artie, pipes two meters onto the six meter gang. Nightly round tables are held on 145.62 mc and new comers are always welcome. My thanks to Frank for the extensive checks on six meters." *Nice to know you've made six meters, Bob, welcome.*

Atlanta, Georgia Another interesting letter from Ruddy (W4LNG) in Georgia:

"Here is the latest news from Atlanta and W4LNG.

"I started 144 mc scatter skeds with W2NLY on December 9th. The Geminids seemed to be late, because we got only normal pings and short burst till December 16th, 17th and 18th. Jim got me fine all three days, but I had converter trouble until the 18th, when we swapped calls, reports and rogers on our 0630 to 0655 E.S.T. sked; for the first Georgia, New Jersey 144 mc contact. *CONGRATULATIONS!*

"I am now running skeds with W2CXY and have received one long burst with two call repetitions and about twelve pings, but no contact yet. W8KAY is running me a five minute tape every night at 2345, but I have heard nothing yet.

"I am really interested in Moonbounce, but won't have time to work on it right away. Keep the good reporting coming in 'CQ' on this subject." *O.K., Ruddy, will do. And a very interesting letter you write too, do it more often, Huh!*

Chatham, New Jersey A bit of information from Walt (W2CXY) the old 144 mc, DX man himself:

"I was finally successful in working Walt, W4LTU, on December 2, 1956 at 2345 E.S.T. Bursts ran several at ½ to five seconds, but the best was twenty seconds, all recorded. This was the Geminids shower. Except Walt also worked several others." *Hurrah! One more state on 144mc, eh Walt. Which is the next one to be worked?*

Salt Lake City, Utah From K. Jay Farnsworth (W7WLV) comes this heart-breaking bit:

"Just a line to say I heard W1HOY coming in here at over S9 the other day. I gave her a call but she made a local W1 contact. Hi! *What do you mean, Hi? What you mean is Boo, Hoo.*

"There has been a few DX signals heard here but

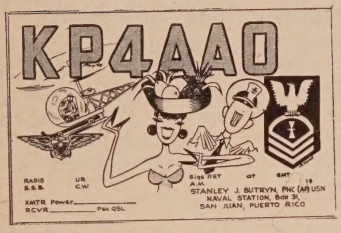
[*Continued on page 102*]

WINNER →



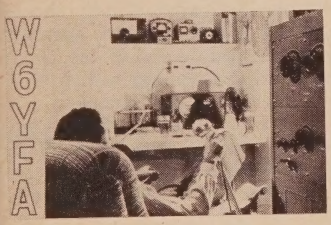


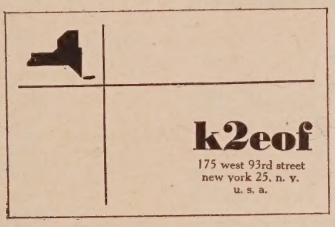
QSL Contest



The winner this month struck our risibilities. Good idea, eh? Runners-up are W6YFA with a nice photographic card, HB9KC, a real Kool Cat named Bopp; Whirlybirder Stan, KP4AAO, the sideband voice of San Juan; KØEHH with a very attractive design; and K2EOF with a simple, but outstanding layout.

Another big contest next month gentlemen . . . have we seen your monstrosity yet? Gives a two year subscription if we succumb and call you a winner.

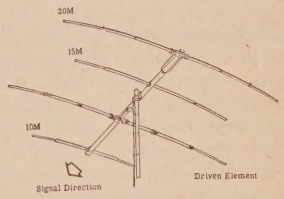






New Products

Telrex has just announced their new three band beam which weighs in at 36 pounds and costs under $120.00. Features are: SWR of 1.3/1 or better on all bands; 18 db F/B or better on each band; fed with one 52 ohm coax cable; 21 foot turning radius. Hound Telrex labs, Asbury Park, N.J. for their specs.



Michigan

Saturday March 9th at the Manger Rowe Hotel in Grand Rapids the Grand Rapids Amateur Radio Association will hold their 10th annual Convention. Everybody is going to be there from all over, how about you? They have a big committee working night and day to provide terrific entertainment. Get more inside scoop from W8AJX, P.O. Box 333, Grand Rapids, Michigan.

Florida

The Orlando Amateur Radio Club, Inc. will hold their annual Hamfest at Rock Springs near Orlando, Florida on Sunday, April 28th. Registration fee, including dinner and prizes is $2.00 in advance, children under 12, $1.00. The closing date for advance registration is April 15th. Send reservations to: The Orlando Amateur Radio Club, Inc., P.O. Box 2067, Orlando, Florida.



March last minute forecast will be found on page 106.

George Jacobs W3ASK
607 Beacon Road,
Silver Spring, Md.

Anniversary

With this month's column I begin my seventh year as Radio Propagation Editor for *CQ*. I want to thank all of you who, during the past six years, have taken the time to drop me a line expressing your interest in radio propagation and this column in particular. I also feel that special recognition is due *CQ* for realizing the importance of propagation forecasts and for leading the field of technical publications in presenting this information in a practical manner, for use by amateur radio operators.

Equinoctial Period

Thoughout the year the earth is traveling in a fixed path about the sun called the *ecliptic*. This celestial journey accounts for the various seasons and the varying lengths of day and night throughout the year. On March 21st an important stage of the ecliptic is reached. This is the day when the sun crosses the equator as it travels towards northern skies. On this date, day and night throughout the world are of equal length. The period is referred to as the spring (Vernal) Equinox. A similar period occurs on September 23rd as the sun moves southward. The spring equinoctial period (from approximately early March to mid-April) has considerable effect on shortwave propagation conditions. In the northern hemisphere maximum usable frequencies during the daylight hours are *decreasing* while higher frequency openings during the night time hours *increase*. Ionospheric absorption, resulting in weaker signals during the daylight hours, and atmospheric noise levels (static) also increase considerably during the period of the spring equinox and continue to increase through the spring and summer months.

Auroral displays are known to occur more often during the equinoctial period than at any other time of year, and coincident with this increase there is a greater tendency for severe and prolonged ionospheric disturbances, or radio storms, to occur. An increase in aurora type openings in the VHF amateur bands is also usually associated with this period.

In the southern hemisphere, however, the opposite effects are taking place. It is autumn "down under" and the shift is from summer to winter propagation conditions. On radio circuits extending from the northern to the southern hemisphere (for example, from the United States to Australia or South America) there is somewhat of a balancing effect during the equinoctial period. On these long circuits *overall* ionospheric absorption and static levels are generally at their lowest values of the year. This tends to result in an *improvement* in shortwave propagation conditions on most amateur bands for these circuits during this period. This improvement is most noticeable on the 40, 80 and possibly the 160-meter bands, with many more openings expected to the southern hemisphere on these bands than occurred during the night time hours of the winter months.

Propagation Conditions—March

The following is an overall picture of band conditions forecast for March, 1957, with a brief discussion of the qualitative changes in each amateur band from month to month. For specific times of band openings for a particular *DX* or *short-skip* circuit, refer to the *CQ Propagation Charts* on the opposite page.

6 Meters:

Despite the seasonal decrease in daytime maximum usable frequencies, exceptionally high solar activity should still permit several 6-meter openings to occur to many areas of the world during March. Openings will however be considerably less numerous, and will occur later in the day, than during the winter months. Several short-skip openings, due to auroral activity, are also expected during March and early April.

10 Meters:

Excellent world-wide propagation conditions are expected to continue through March and early April from shortly after sunrise though the evening hours. Short-skip openings, between 750 and 2400 miles, are also expected to occur daily from before noon until early evening. The peak in signal intensity on 10-meters is expected to occur later in the day than during the winter months, with signals from the east and south peaking a few hours *before* sunset and those from the west and south peaking a few hours *after* sunset. During these peak periods signals should be exceptionally strong, even from low power transmitters. During periods of unusually intense ionization, the 10-meter band may remain open to the south and west until about *mid-night*. Propagation conditions on the 11-meter band

ALL TIMES IN EST

EASTERN USA TO:	6/10 Meters	15 Meters	20 Meters	40/80 Meters
Western Europe	10A-2P (1)**	4A-8A (3)	1P-3P (2)	5P-8P (2)
	5A-7A (2)	8A-1P (2)	3P-8P (5)	8P-2A (3)
	7A-4P (4)	1P-8P (5)	8P-1A (4)	2A-4A (2)
	4P-7P (2)	6P-10P (3)	1A-4A (3)	8P-2A (2)*
		10P-4A (1)	4A-10A (2)	
Central Europe & European USSR	6A-11A (2)	4A-7A (2)	1P-5P (2)	6P-8P (2)
	11A-3P (3)	7A-10A (1)	5P-9P (4)	8P-12M (3)
	3P-5P (2)	10A-1P (2)	9P-1A (3)	12M-3A (2)
		1P-5P (3)	1A-5A (2)	8P-12M (2)*
		5P-9P (2)		
Eastern Mediterranean	5A-10A (2)	4A-6A (2)	1P-3P (2)	7P-10P (2)
	10A-12N (3)	6A-11A (1)	3P-12M (4)	8P-10P (1)*
	12N-3P (2)	11A-3P (3)	12M-3A (2)	
		3P-9P (2)		
North & Central Africa	9A-1P (1)**	4A-6A (2)	12N-2P (1)	6P-8P (2)
	5A-7A (2)	6A-11A (1)	2P-4P (2)	8P-10P (3)
	7A-11A (3)	11A-1P (3)	4P-9P (5)	10P-12M (2)
	11A-3P (4)	1P-5P (4)	9P-1A (4)	10P-12M (1)*
	3P-6P (2)	5P-10P (2)	1A-7A (3)	
South America	10A-1P (1)**	1A-9A (3)	3P-5P (2)	7P-10P (2)
	3P-6P (1)**	9A-3P (1)	5P-7P (3)	10P-4A (3)
	5A-3P (4)	3P-5P (2)	7P-1A (5)	4A-7A (2)
	3P-6P (5)	5P-9P (5)	1A-4A (4)	10P-4A (1)*
	6P-10P (3)	9P-1A (4)	4A-8A (3)	
South East Asia	9A-12A (1)	7A-10A (2)	3P-5P (1)	NIL
	5P-7P (2)	10A-5P (1)	5P-1A (2)	
	7P-9P (1)	5P-8P (3)	1A-7A (1)	
		8P-10P (1)	7A-9A (2)	
Australasia	4P-6P (1)**	8A-10A (2)	4P-1A (2)	3A-8A (3)
	9A-11A (3)	10A-4P (1)	1A-5A (4)	4A-7A (2)*
	11A-1P (2)	4P-9P (2)	4A-7A (3)	
	1P-3P (1)	9P-12M (3)	7A-9A (4)	
	3P-9P (4)	12M-2A (1)	9A-11A (2)	
	9P-11P (2)			
Guam & Pacific	4P-6P (1)**	7A-12N (2)	5P-8P (2)	10P-5A (1)
	10A-2P (1)	12N-3P (1)	8P-12M (3)	
	2P-4P (2)	3P-5P (2)	12M-6A (2)	
	4P-7P (4)	5P-9P (3)		
	7P-10P (2)	9P-12M (2)		
Japan & Far East	3P-5P (2)	7A-10A (1)	3P-5P (1)	4A-8A (1)
	5P-7P (3)	2P-4P (2)	5P-9P (2)	
	7P-9P (2)	4P-9P (3)	9P-7A (3)	
		9P-1A (2)	7A-9A (2)	

ALL TIMES IN CST

CENTRAL USA TO:	6/10 Meters	15 Meters	20 Meters	40/80 Meters
Western & Central Europe	5A-7A (2)	5A-11A (3)	2P-6P (4)	6P-1A (2)
	7A-1P (4)	11A-3P (4)	6P-10P (3)	8P-12M (1)*
	1P-5P (2)	3P-5P (2)	10P-6A (2)	
		5P-9P (1)	6A-11A (1)	
			11A-2P (2)	
Southern Europe & North Africa	10A-1P (1)**	4A-11A (2)	12N-2P (2)	6P-12M (2)
	5A-7A (2)	11A-4P (4)	2P-10P (4)	8P-11P (1)*
	7A-11A (3)	4P-7P (3)	10P-3A (2)	
	11A-1P (4)	7P-9P (2)	3A-6A (1)	
	1P-5P (2)			
Central & South Africa	11A-3P (1)**	10A-1P (2)	12N-3P (2)	6P-10P (1)
	4A-9A (2)	1P-7P (4)	3P-8P (4)	8P-10P (1)*
	9A-12N (3)	7P-10P (3)	8P-11P (3)	
	12N-4P (4)	10P-3A (1)	11P-1A (1)	
	4P-6P (2)			
South America	10A-12N (1)**	2A-9A (3)	2P-4P (2)	7P-10P (2)
	3P-6P (1)**	9A-2P (2)	4P-7P (3)	10P-4A (3)
	5A-2P (4)	2P-4P (3)	7P-12M (5)	4A-6A (2)
	2P-6P (5)	4P-8P (5)	12M-3A (4)	8P-3A (1)*
	6P-10P (3)	8P-2A (4)	3A-8A (3)	
Japan & Far East	1P-3P (2)	7A-9A (2)	6A-8A (3)	12M-7A (1)
	3P-7P (3)	1P-3P (2)	8A-1P (1)	
	7P-9P (2)	3P-9P (3)	1P-6P (2)	
		9P-12M (2)	6P-12M (3)	
			12M-6A (2)	
South East Asia	8A-11A (1)	7A-12N (2)	3P-7P (2)	NIL
	2P-4P (2)	12N-3P (1)	7P-12M (3)	
	4P-6P (3)	3P-9P (3)		
	6P-9P (2)	9P-12M (2)		
Hawaii	2P-4P (1)**	9A-3P (4)	3P-6P (3)	8P-8A (4)
	9A-11A (2)	3P-11P (5)	6P-4A (5)	11P-7A (3)*
	11A-3P (4)	11P-4A (3)	4A-9A (3)	
	3P-7P (5)		9A-3P (2)	
	7P-10P (3)			
Australasia	4P-6P (1)**	7A-9A (3)	5P-8P (2)	1A-8A (3)
	8A-11A (3)	9A-3P (2)	8P-11M (3)	2A-7A (2)*
	11A-2P (2)	3P-7P (3)	12M-8A (4)	
	2P-8P (4)	7P-11P (4)	8A-10A (2)	
	8P-11P (2)	11P-4A (2)	10A-5P (1)	
Antarctica	12N-2P (1)	8A-2P (1)	8A-6P (1)	12M-7A (2)
	2P-8P (3)	2P-7P (2)	6P-9P (2)	1A-6A (1)*
	8P-11P (2)	7P-12M (3)	9P-5A (3)	
		12M-3A (2)	5A-8A (2)	

are expected to be quite similar to those forecast for 10-meters.

ALL TIMES IN PST

WESTERN USA TO:	6/10 Meters	15 Meters	20 Meters	40/80 Meters
European & North Africa	6A-8A (2)	6A-9A (1)	11A-1P (2)	6P-10P (1)
	8A-10A (3)	9A-11A (2)	1P-8P (3)	7P-10P (1)*
	10A-12N (4)	11A-3P (3)	8P-2A (2)	
	12N-2P (2)	3P-7P (2)		
		7P-1A (1)		
Central & South Africa	12N-2P (1)**	6A-10A (1)	12N-2P (1)	6P-10P (2)
	6A-10A (2)	10A-1P (2)	2P-5P (2)	7P-9P (1)*
	10A-1P (3)	1P-3P (3)	5P-10P (4)	
	1P-6P (4)	3P-8P (4)	10P-12M (2)	
	6P-9P (2)	8P-1A (2)		
South America	12N-4P (1)**	1P-3P (3)	2P-4P (2)	6P-10P (2)
	5A-12N (3)	3P-8P (5)	4P-6P (3)	10P-2A (3)
	12N-4P (5)	8P-12M (4)	6P-2A (5)	2A-5A (2)
	4P-7P (3)	12M-8A (3)	2A-4A (4)	8P-1A (1)*
	7P-10P (2)	8A-1P (2)	4A-6A (3)	
Guam & Pacific Islands	1P-5P (1)**	8A-12N (3)	8P-10P (2)	1A-5A (2)
	9A-1P (3)	12N-8P (1)	10P-4A (5)	2A-4A (1)*
	1P-6P (2)	8P-12M (3)	10A-8A (4)	
	6P-8P (4)	12M-3A (2)	8A-10A (2)	
	8P-10P (2)			
Australasia	2P-5P (2)**	7A-12N (3)	10P-12M (2)	1A-4A (2)
	8A-12N (3)	12N-6P (1)	12M-2A (3)	4A-8A (3)
	12N-6P (2)	6P-1A (4)	2A-5A (4)	4A-7A (2)*
	6P-10P (4)	1A-7A (2)	5A-9A (3)	
	10P-12N (2)		9A-12N (2)	
Japan, Okinawa & Far East	3P-6P (1)**	11A-1P (2)	8P-11P (2)	12M-4A (2)
	11A-2P (2)	1P-3P (3)	11P-3A (4)	4A-8A (3)
	2P-8P (4)	3P-8P (2)	3A-7A (3)	1A-5A (1)*
	8P-11P (2)	8P-11P (3)	7A-9A (4)	
		11P-2A (2)	9A-1P (3)	
Philippine Islands & East Indies	1P-4P (1)**	8A-12N (3)	12M-2A (1)	3A-6A (1)
	8A-12N (1)	12N-3P (2)	2A-6A (2)	
	12N-4P (3)	8P-12M (2)	6A-11A (3)	
	4P-10P (2)	12M-4A (1)	11A-2P (1)	
Malaya & South East Asia	8A-12N (3)	7A-1P (3)	12M-3A (1)	4A-7A (1)
	12N-2P (1)	1P-4P (2)	3A-7A (3)	
	2P-7P (2)	4P-9P (1)	7A-12N (2)	
	7P-9P (3)	9P-2A (2)		
	9P-11P (1)			
Hong Kong, Macao & Formosa	12N-8P (3)	7A-9A (3)	10P-12M (2)	2A-6A (2)
	8P-10P (2)	9A-7P (2)	12M-8A (4)	3A-5A (1)*
		7P-12M (3)	8A-11A (2)	
		12M-4A (2)		

CQ PROPAGATION CHART

(SHORT-SKIP)

BAND (METERS)	DISTANCE (MILES) 50-250	250-750	750-1300	1300-2400
10			10A-12N (3)	12N-4P (1)**
			12N-4P (4)	7A-10A (2)
			4P-7P (3)	10A-5P (4)
				5P-9P (3)
15		11A-6P (2)	7A-10A (3)	7A-1P (3)
			10A-4P (5)	1P-8P (4)
			4P-9P (2)	8P-12M (3)
20	9A-11A (2)	7A-10A (2)	5A-7A (2)	4P-11P (5)
	11A-3P (3)	10A-4P (4)	7A-4P (4)	11P-1A (4)
	3P-5P (2)	4P-8P (3)	4P-8P (5)	1A-7A (3)
			8P-3A (2)	7A-9A (4)
				9A-4P (3)
40	2A-6A (2)	6A-10A (5)	6P-8P (4)	7P-6A (4)
	6A-8A (3)	10A-4P (3)	8P-6A (5)	6A-9A (3)
	8A-10P (5)	4P-12M (5)	6A-9A (4)	3P-7P (2)
	10P-2A (3)	12M-6A (3)	9A-4P (1)	
			4P-6P (2)	
80	8A-12N (4)	8A-5P (1)	6P-8P (2)	5P-8P (2)
	12N-5P (3)	5P-7P (3)	8P-6A (4)	8P-4A (4)
	5P-7P (4)	7P-5A (5)	6A-8A (3)	4A-8A (2)
	7P-8A (5)	5A-8A (4)		
160	5P-7P (2)	6P-8P (2)	6P-8P (2)	9P-5A (2)
	7P-7A (5)	8P-5A (5)	8P-4A (3)	
	7A-9A (2)	5A-7A (3)	4A-6A (2)	

SYMBOLS FOR 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

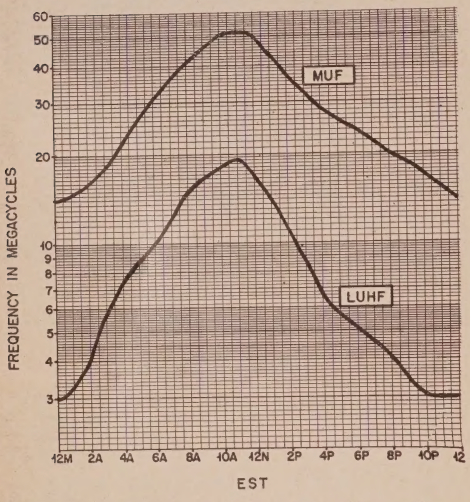
** Indicates possible six-meter openings
* Indicates possible eighty-meter openings

Time Symbols: A - A.M. N - Noon P - P.M. M - Midnight

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. They are valid through April 15, 1957. 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. They are valid through April 30, 1957. All forecasts are based upon ionospheric data published by the Central Radio Propagation Laboratory of the National Bureau of Standards, Boulder, Colorado.

15 Meters:

Excellent world-wide propagation conditions continue for most of the period between sunrise and through the evening hours. On some days the 15-meter band may remain open around the clock. Almost daily short-skip openings are expected between distances of 750 and 2400 miles from a few hours after dawn until about midnight. Because of increased solar absorption, 15-meter signals may be weak, or fade out entirely, during the forenoon period. The peak for 15-meter signals should occur during the late afternoon and early evening hours, following the peak on 10-meters by an hour or two. An improvement in reception of signals from the southern hemisphere is expected.



Circuit analysis curve, East coast USA to West Europe observed during December 1956 for Radiated CW power less than 250 watts.

20 Meters:

With peak sunspot activity and the longer daylight hours of the spring and summer months, 20-meters is expected to be the optimum band for world-wide long distance transmission during the *hours of darkness.* Actually the band will probably remain open around-the-clock on more days during March, but due to high daytime absorption, long distance signals may be weak or fade out completely during the forenoon hours. Short-skip openings, for distances less than 2400 miles, are also expected almost around-the-clock, with the skip as short as a 100 miles or so during the noon period. Signals should peak on 20-meters during the late afternoon and evening hours when ionospheric absorption is lowest. During this period signal levels are expected to be exceptionally strong to almost all areas of the world. Considerable QRM is expected on 20-meters since the band will be optimum for both long and short-skip propagation at the same time.

40 Meters:

Fairly good world-wide propagation conditions are expected to continue on 40-meters during March and early April. The band will open later than it did during the winter months, and atmospheric noise will be somewhat higher, but DX openings to many parts of the world should be possible from shortly before sundown until shortly after sunrise. Short-skip openings are expected around-the-clock. Intense solar absorption will limit range to a few hundred miles at most during the daylight hours, with range increasingly rapidly as the absorption decreases with the approach of darkness. During the equinoctial period, reception of signals from Australasia and other areas of the southern hemisphere generally improve between the hours of midnight and dawn on 40-meters.

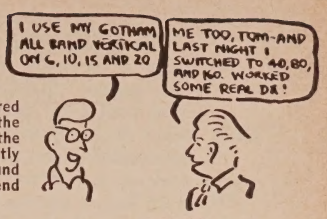
80 Meters:

Despite improved pre-dawn propagation conditions on paths from Australasia and the southern hemisphere, 80-meter DX openings are expected to be generally spotty, with weak signals and high noise levels. On a small percentage of nights during March, from a few hours before midnight until dawn, the band may open to some areas of the world. The continued seasonal increase in ionospheric absorption and static levels will limit short-skip skywave propagation to less than 200 miles during the daylight period, with this range increasing considerably as the hours of darkness approach.

160 Meters:

W 1 BB continues to report several 160-meter openings during January, with USA signals being heard in West Europe, Malta, Liberia and Brazil. With the seasonal increase in absorption and static levels, it is expected that 160-meter propagation will be generally poorer on east-west circuits during March and April than during the winter months. Because of the equinoctial effect however, 160-meter propagation conditions between the

ALL-BAND VERTICAL ANTENNAS

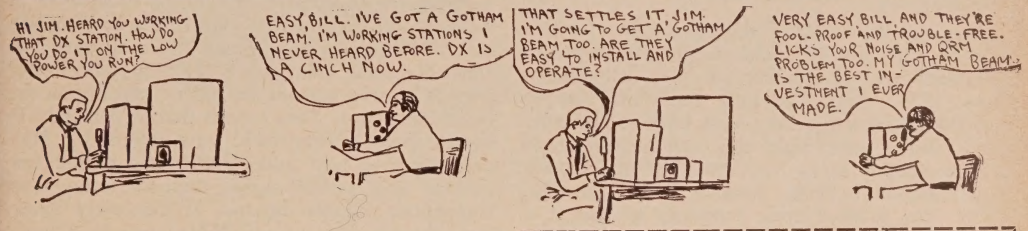


GOTHAM'S sensational new vertical antennas give unsurpassed multi-band performance. Each antenna is absolutely complete, can be assembled in less than two minutes, and requires no special tools or electronic equipment. Radiation is omni-directional, with maximum radiation at very low, DX angles. Perfect multi-band operation is secured through simple, efficient design and superior materials. In the V160, resonance in the 160, 80, 75, and 40 meter bands is secured through use of the proper portion of the loading coil. Yet, when the coil is eliminated or bypassed, the V160 will operate perfectly on 20, 15, 10 and 6 meters! The same idea applies to our V80 and V40 multi-band verticals. No guy wires needed, rugged, occupies little space, proven and tested. Send for your vertical multi-band antenna today!

V160 (for 160, 80, 75, 40, 20, 15, 10 and 6 meters)..... $18.95
V80 (for 80, 75, 40, 20, 15, 10 and 6 meters)..... 16.95
V40 (for 40, 20, 15, 10 and 6 meters)..... 14.95

Complete instructions included with each antenna—literature on request

WORK THE WORLD WITH A GOTHAM BEAM



Study these specifications—compare them—and you too will agree, along with thousands of hams, that GOTHAM beams are best!

TYPE OF BEAM. All Gotham beams are of the full half-wave plumber's delight type; i.e., all metal and grounded at the center. No wood, tuning stubs, baluns, coils, or any other devices are used.

MORE DX CONTACTS WITH GOTHAM

GAIN. Gotham beams give the maximum gain obtainable. Our 2-element beams give a power gain of four (equivalent to 6 db.); our 3-element beams give a power gain of seven (8.1 db.); and our 4-element beams give a power gain of nine (9.6 db.)

THE DESIGN IS PROVEN

FRONT-TO-BACK RATIO. We guarantee a minimum F/B Ratio of 19 db. for any of our 2-element beams; 29 db. for any of our 3-element beams; 35 db. for 4-element beams.

THOUSANDS IN DAILY USE

MATCHING. Matching of the transmission line to the beam is extremely simple and quick. Everything is furnished and the matching is automatic. No electronic equipment or measuring devices are required.

ALCOA QUALITY ALUMINUM

ASSEMBLY AND INSTALLATION. No special tools are required for assembly and installation. Entire job can be done by one man in less than an hour. Full instructions are included with each beam.

CONSISTENT PERFORMANCE

MAST. Any Gotham beam can be mounted on a simple pipe mast. Diameter of the pipe should be between ¾" and 1⅝".

NO FLIMSY WOOD OR INSULATORS

STANDING WAVE RATIO. A very low SWR of approximately 1.5 to 1 will result from following the instruction sheet, depending on the height above ground and the surrounding area. If an SWR indicator is available, Gotham beams can be quickly and easily adjusted to 1.1.

QUICK INSURED DELIVERY

STANDARD AND DELUXE BEAMS. Standard beams in the 6, 10 and 15 meter bands use ⅝" and ¾" tubing elements; the deluxe models for these bands use ⅞" and 1". In 20 meter beams, the standard has a single boom, while the deluxe uses twin booms.

THE PRICE IS RIGHT!

HOW TO ORDER: Send coupon with check or money order directly to GOTHAM or order from your local distributor. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.

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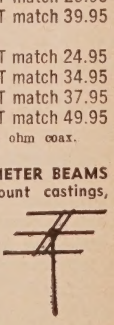
Enclosed find check or money-order for:

2 METER BEAMS			
☐ Deluxe 6-Element	$9.95	☒ 12-El	$16.95
6 METER BEAMS			
☐ Std. 3-El Gamma match	12.95	☐ T match	14.95
☐ Deluxe 3-El Gamma match	21.95	☐ T match	24.95
☐ Std. 4-El Gamma match	16.95	☐ T match	19.95
☐ Deluxe 4-El Gamma match	25.95	☐ T match	28.95
10 METER BEAMS			
☒ Std. 2-El Gamma match	11.95	☐ T match	14.95
☐ Deluxe 2-El Gamma match	18.95	☐ T match	21.95
☐ Std. 3-El Gamma match	16.95	☐ T match	18.95
☐ Deluxe 3-El Gamma match	22.95	☐ T match	28.95
☐ Std. 4-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 4-El Gamma match	27.95	☐ T match	30.95
15 METER BEAMS			
☐ Std. 2-El Gamma match	19.95	☐ T match	22.95
☐ Deluxe 2-El Gamma match	29.95	☐ T match	32.95
☐ Std. 3-El Gamma match	26.95	☐ T match	29.95
☐ Deluxe 3-El Gamma match	36.95	☐ T match	39.95
20 METER BEAMS			
☐ Std. 2-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 2-El Gamma match	31.95	☐ T match	34.95
☐ Std. 3-El Gamma match	34.95	☐ T match	37.95
☐ Deluxe 3-El Gamma match	46.95	☐ T match	49.95

(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

NEW! RUGGEDIZED Hi-GAIN 6, 10, 15 METER BEAMS

Each has a TWIN boom, extra beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.



☐ Beam #R6 (6 Meters, 4-El)..... $38.95
☐ Beam #R10 (10 Meters, 4-El)..... 40.95
☐ Beam #R15 (15 Meters, 3-El)..... 49.95

Name .....
Address .....
City .....Zone.....State.....

USA and Australasia, and other areas of the southern hemisphere, should show a tendency to improve during this period. Short-skip openings up to at least 1300 miles are expected to occur on many nights from after sundown until dawn. Conditions generally peak on 160-meters between an hour or so *before* sunrise and about a half-hour *after* the sun has risen. Because of intense ionospheric absorption no skip possible during the daylight hours and propagation is limited to a few miles from the transmitter (groundwave).

Sunspot Cycle

The Zurich provisional sunspot number for December, 1956 was 186. This results in a 12-month *smoothed* sunspot number of 137 centered on June, 1956. This 12-month *smoothed* sunspot number indicates the long term trend in the solar cycle, and is based upon the running average of all the monthly sunspot numbers observed for the yearly period between January and December, 1956. The sunspot cycle continues to rise at a rate faster than ever recorded previously. This month's forecast is based upon a predicted smoothed sunspot number of 176 centered on March, 1957.

December 1956

The smoothed sunspot number for December, 1956 can not be calculated until the monthly numbers through June, 1957 are known. However all indications are that sunspot activity during December exceeded a smoothed number of 160, and probably went above 170. In any event we are certain that it went higher than recorded during any previous December. Since seasonal peak maximum usable frequencies also occur during the daylight hours of December, it might be interesting to see just how high MUF's went this past December. *Figure 1* is an actual circuit analysis curve based on continuous daily observations made between the East Coast of the United States and Western Europe. The MUF contour shows the highest frequency received across the Atlantic, at the time shown, for at least half the days of the month. The LUHF, or lowest usable high frequency, shows the lower limiting frequency received on at least half the days of December. Between the limiting contours of the MUF and LUHF lies the range of frequencies useful for communications across the North Atlantic during the month of December, 1956. Between 9 AM and 12 Noon, EST, the MUF rose above 50 mc, while the 10-meter amateur band was open from 5:30 AM through 4 PM EST. Fifteen-meters remained open for a considerably longer period, while 20-meters remained open almost around-the-clock, except for a fade-out between 8 AM and 1 PM EST. Note also the rather early opening of the 40-meter band at 3:30 PM EST and the fact that 80-meters also opened quite often during the month between 9 PM and 12 Midnight, EST. Such a dynamic range of usable frequencies has never before been possible over this circuit, and once the peak of the present sunspot cycle has passed, it may be a considerable period of time before it is again possible.

Sunspots and Pigeons

After publication of Parts 1 and 2 of "The Sunspot Story; Cycle 19" in the March and June, 1956 issues of *CQ*, we received many interesting letters concerning the possible influence of the sunspot cycle upon many other things. In the September, 1956 issue of *CQ* we discussed the possibility of a correlation between sunspots and weather and between the sunspot cycle and the occurrence of volcanic eruptions. Now Gene Black, W2ESO, calls our attention to a recent article appearing in *Time Magazine* (November 19, 1956) concerning trouble homing pigeons are having keeping on the beam these days. *Time* reports that pigeon clubs in various parts of the world have reported a high percentage of bird losses during the passed few months and several have stopped racing and competitive contests because of the heavy losses. For example, in a recent 56-bird race in Arizona *Time* reports that all the birds were lost; in a New York City race recently all except nine of 230 birds were lost; and English pigeon fanciers recently lost all but 100 of a 7,000-to-8,000 bird flight from the Channel Islands. Never have such losses been so numerous and so widespread. Pigeon fanciers fear that some mysterious influence is confusing or destroying their famous homing instinct. *Time* further reports that there appears to be no scientific theory to account for these losses since scientists do not really understand the mysterious instincts or special senses that guide pigeons home.

W2ESO points out however, that somewhere in the past he recalls a suggestion that pigeons might be using the earth's magnetic field for homing purposes, and if this were the case could not the unusual sunspot activity of this past year be responsible for upsetting the field and thereby causing the homing pigeons to become lost?

I am no pigeon fancier, nor can I shed any light on what they may be using for navigational guides. However if pigeons do in fact derive their homing instincts from the magnetic field that surrounds the earth then *we can* expect them to have a difficult time finding their way home for the next few years. The earth's magnetic field, relatively stable during the past few years, is now being subjected to violent fluctuations resulting in world-wide magnetic disturbances, or "storms." If pigeons depend upon the field for homing, naturally these fluctuations will mislead them and could cause them to become lost. The recent severe changes in the earth's magnetic field are a result of an unprecedented rapid increase in sunspots. As readers of this column know, these black specks appearing across the face of the sun are actually tremendous craters

[*Continued on page 104*]

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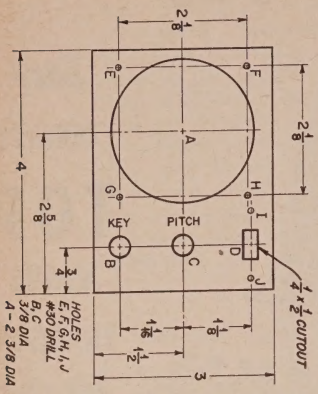
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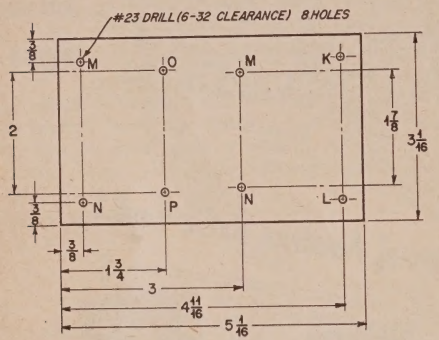
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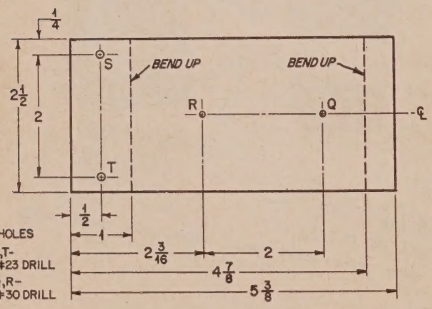
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Novice *[from page 81]*







or the tap connections on the universal output transformer. Incidentally, because this is a universal transformer, the new 10 ohm speakers will work fine, with some experimentation as to the correct tap to use. If the monitor does not key instantly and smoothly, like a good c-w note, it is a sign that the transistor is not up to par.

Now let's try Snortin' Morten out on your transmitter. After a sufficient warm up time (of your rig, not the transistor. Transistors do not have to heat up, I guess they get their holes and spaces up, but that is another subject) lay the pickup wire about 6 inches from your antenna lead, slide the switch down and key your transmitter. Morten should again snort. If it does not, move the pickup wire closer until you have 6 to 8 inches laying alongside your antenna lead (no more! or you may burn out the xtal, transistor or both.). If it still does not oscillate and it worked as a code practice oscillator, it indicates an error in wiring, a bad crystal, or you forgot to turn on the transmitter! A vacuum tube voltmeter connected between the center switch terminal to ground should indicate between three and 15 volts *positive*. If it is negative, you got the crysal in backwards. The least amount of coupling to the antenna that gives satisfactory volume should be used to extend the life of the transistor and crystal.

Some Novices may use a coaxial cable to the antenna, but this does not pose too much of a problem. If this is the case, the constructor should poke the pickup wire into the transmitter through a convenient hole. Use as little coupling as possible and keep the pickup wire away from the tank coil as far as possible to avoid the possibility of arc over. Another interesting trouble can develop with too much coupling. I originally overloaded Morten to the tune of about 45 volts! Morten decided to go into business for himself and put a set of horizontal bars on the television screen! Backing off on the coupling to less than 15 volts corrected the trouble. Strong local hams and local broadcast stations will also make Morten snort if coupled too tightly to the antenna.

That about caps things up for this month. Let me know what you think of this type of construction project. It is quite a bit of work to prepare, but if there is reader interest, we'll have more in the future. Your suggestions for technical subjects will also be appreciated. For next month, we are preparing a technical report on the *Heath DX-20* CW Transmitter that should prove to be very interesting.

Letters and Stuff

. . . I need an antenna to fit in small places. The space I have in the back of my lot is 60 feet wide and 58 feet long. I can not put up a vertical antenna, too crowded. I am using a long wire, end fed, but I don't do so well. Edward G. Griffiin W7VQC, 335 N. Main St., Moscow, Idaho.

Well, I threw in my two bits worth, but there are probably many Novices in the same boat and I think Ed would like to hear from them to find out what they did about the problem.

. . . I would like to meet a local ham and get help on code and theory. I would like to see a layout of a station, and get a start in ham radio. My phone number is GL-4-5964 and my address is 245 12 Avenue, Sea Cliff, New York.

I received a very interesting letter from Seoul, Korea and a very beautiful Christmas card from Chong Man Lee. He says:

I am in the 11th grade at Kyung Dong Boys High School. I am 18 years old. My subjects are English, Physics, Algebra, History, Music and so on. There are seven members in my family, parents, two sisters, two brothers and myself. I am the oldest of the children. I like American popular music. I have an S-72 receiver and I listen to "Music U.S.A." program with the set. I am very interested in electronics. I want to be a ham. Chong Man Lee, #333-97 Sindang-dong. Songdong-Ku, Seoul, Korea.

Chong would like to write to American amateurs and exchange information. I know he will appreciate hearing from you.

73, Don, W6TNS



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Editorial [*from page 12*]

guess we will have to charge a nominal fee for the booklet to keep from going broke, but it won't do any more than limit you to getting just what you need and pay the postage for us. I had in mind 10¢ each . . . we'll see.

Big Prizes

In order to make the press a bit tighter for those working for the WPX Certificates I might add that we will be giving a three year subscription to the first winner in each category . . . c.w., phone, sideband . . . plus some nice publicity in a well known amateur radio magazine.

Sideband Dinner

The 7th Annual Single Sideband Dinner will be at the Hotel Shelburne, Lexington Avenue at 37th Street, New York, on March 19th (Tuesday) during the IRE Show. Guess I'll see all of you fellows there again this year, eh? I believe the Double Sidebanders will be welcomed too. Get in touch with Fred Huff, W2AMB for more details.

Recenter Travels

I missed the DX Convention last year, so thought I'd better get out there to see what was up this time. The conclave gathered January 19-20 at Fresno, cold damp Fresno, for two days of jollity. Most of the western Big Guns of DX'dom were there . . . W6AM, W6ITH, me. The prime DX present in person was Danny Weil of the Yasme. My figures show 116 present for the Saturday night DX Dinner and 111 for the Breakfast the next morning. I guess five of the gang must have lived it up a little too much after the dinner.

Reg, W6ITH, gave a very interesting talk about his adventures in getting the PJ2MC and FS7RT calls. A big feature of the Breakfast was the famous DX Quiz. I copped a copy of this and will try to get it set for you to break your heart over next month. You better get out those old back issues and read 'em over for the DX news.

California is a pretty terrific place and I'm thinking more and more about how I could move out there, editorial offices and all. I had hoped to get some time to look things over a bit this trip, but by the time I got through visiting a few people I had to dash back to 20° New York so I could get down to Washington for the Potomac Valley-Frankfort Radio Club annual dinner. I no sooner got back to NYC than I flopped into bed with a withering cold and had to miss the banquet after all. Confound!

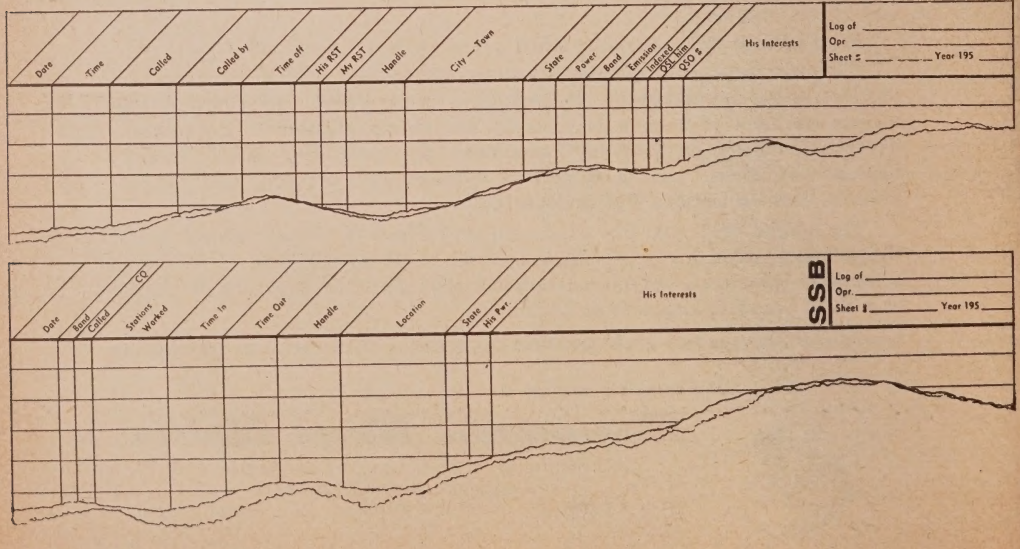
Log Sheets

Having finally risen to a position of (?) power I am at long last able to have a log sheet printed which fits the needs of the operating ham (me). I have been a prisoner of the available log sheets for too many years and I finally rebelled. While I was at it I had a bunch of them printed up, so if you have had the same problem and feel the need for a modern log sheet then you can have some of mine. They cost me about $1 per hundred, including postage, so that's what they will cost you if you dig 'em. I made two kinds, one for sideband, the other not. See samples below. Let me know if you want 'em punched for a three ring notebook . . . that's what I do.

Placation

To placate those sticklers for routine, here is another tricky signature. Try this one on c.w.

$1 + 2 \times 3!^2$, Wayne

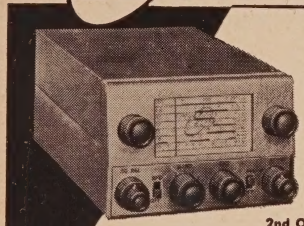


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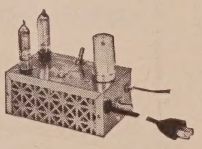
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VHF [*from page 90*]

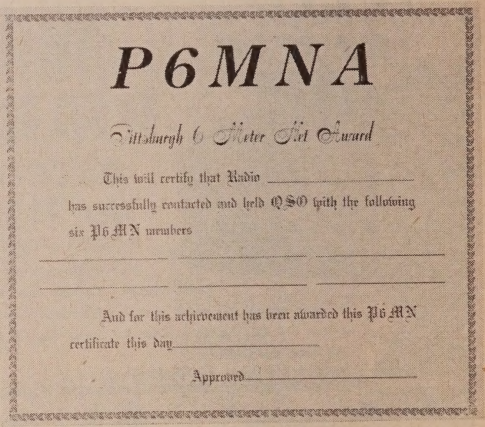
mostly one way. Had a few E skip signals the past few days." (Written Dec. 3, 1956.) *Sorry to have missed you Jay, I've been watching for you too.—Helen.*

Delmar, New York From the Delmar Game Farm, Steve Fordham *and* K2HPN we hear:

"Nothing too startling at this end. Six has been deader'n a mackerel the last couple of days. Those sure were nice openings we had around the turn of the year. We were working Europe and the west coast almost daily. Sure would like to bend some waves down into those mountain states and slip over the 40 states mark that we have worked so far. Looks like it now will have to be double hop next summer.

"Two meters has picked up a little around here since the summer slump, but do not believe it is still up to activity of a year ago now. Have some work to do on converter and build the preamp. Heard Bob (W1RUD) on in the contest on cw. but never caught him or the state of Maine, bless 'm. Operated from home QTH for this one. Quite a jump from usual hill operations but enjoyed it all including 4-8 A.M., Sunday, when we slept. Total, 114 contacts in ten sections on 6, 2, and 1¼ meters." *Four whole hours of sleep Steve! How could you waste so much time?*

Tachikawa, Japan Dale B. Schermerhorn (KA2DS) sends word from the Orient:



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"Far as I know, KA2DS is the only station active on six meters with the KA-call. There are umpteen number of JA-stations actve on this band. My normal operating frequency is 50.4 Mc. Lower, there is far too many JA-stations on the air.

"If things go as expected will be working a lot more of the boys back there in the states on six meters. Looks like my antenna is now operating the way it should.

"Equipment is home made. 50 watts, three element Yagi, wide spaced. International Crystal Co. Converter into a rebuilt Super pro receiver." *Thanks for the report, Dale. We'll be looking for more of them from you.*

Essex, England Steve (G2BVN) one of the English VHF minded boys, sez:

"Just a line to let you know that I am looking for crossband W and VE contacts on 28/50 mc. Have heard W1 2 3 and 8 and VE1 on 50 mc so far, working about thirty stations.

"The best time seems to be between 1500 and 1700 GMT depending on propagation conditions. Our Channel 2 TV on 51.75 mc should be heard in W when conditions are favorable.

"I would like a sked and shall be pleased to listen if anyone cares to drop me a line, or give a shout on 28 mc, listening between 28.2 and 28.25.

"Signal strengths vary between 3 and 9, often with heavy QSB, and seem to peak up just before the band closes." *Thanks very much for the letter. Steve. Helen has called you on a number of occasions but has heard you say that the TV interference was terrific.*

73, Sam, W1FZJ



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For further information, check number 86A on page 126.

YASME [from page 46]

this apparently was the Moresby light leading into the harbour. After that I lost interest and screwed myself up into the cockpit again trying to get warm.

I don't know what roused me, but I jumped up from the cockpit and found that the launch was no longer visible. In the distance I could see lights, but here we were adrift in the open sea. Realization of the situation came when I felt the thump of the seas under the stern and knew I was no longer under way. I pushed the helm hard over to try to get Yasme up into the seas, but she just wallowed there out of control. Where had the rescue launch gone? Not a sign anywhere, and hardly a sound except the screaming of the wind and the crashing of the waves as they broke over the decks of Yasme. I scrambled forward, and there was the frayed end of the towing hawser hanging over the bow. It had broken at my WRONG end! What to do now?

As I came aft, there in the distance astern I saw a faint light which I decided was the launch. So, into the cabin and in with the forward gear on the engine. Very sluggishly Yasme turned in a half circle and headed towards the faint light. I followed that light,

(Continued on page 109)

Prop [from page 96]

remaining from violent explosions taking place within the sun's core. During these solar explosions, streams of ultraviolet and other electrified fragments of atoms are emitted. Upon reaching the earth's atmosphere this radiation violently upsets the earth's magnetic field, causes auroral displays, and plays havoc with long-distance, short-wave radio communications. Present sunspot activity is considerably higher than any recorded previously in scientific history. Accordingly, magnetic distubances are also on the increase. During 1956 the earth's magnetic field was severely disturbed on the average of at least one week a month. During November, 1956, several very severe magnetic storms developed and these may account for some of the racing losses reported by *Time*. It may be another three years yet before solar explosions subside to the point where the earth's magnetic field remains relatively stable enabling pigeons to resume accurate navigation again, if in fact this is their guide. Pigeons however are not alone in having their navigation systems go haywire during magnetic storms; ironically certain type compasses and other electronic navigation devices used for guiding ships and aircraft also become unreliable during these periods.

Part 3.

Part 3 of "The Sunspot Story: Cycle 19" originally to be published in this month's *CQ* will be delayed until August or September in order to permit the analysis of additional data.

73, George, W3ASK

RTTY [from page 83]

the near future, K6LFK will be at Lake Tahoe near Squaw Valley where the 1960 Olympic Games will be held. The ski runs will be ready this year, and Mort says that there he will have a complete log cabin with knotty pine ham shack.

W2SMX, of Farmingdale, Long Island, received a DX-100 kit for Christmas from his XYL (!!!) and is now in the process of adding FSK to the v.f.o. John likes to build, as witnessed by his corn-fed kilowatt and 32-element beam on 2-meters.

Comments

I hope that you fellows who have written to me and have not received the usual prompt reply will forgive the delay incurred by the move of W2JTP (and family) from Howard Beach to High Hills. Mail sent to the old address apparently takes a bit of time to be forwarded. In addition, like W6AEE, the furniture is in place but the radio gear is not. (January)

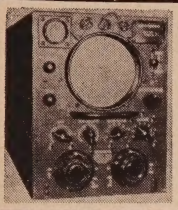
When W2JTP finally gets back on the East Coast RTTY Net (3620 kc, Wednesdays, 7 p.m.), I am sure that the NCS, W1BGW, will be glad to learn that the XYL now has an electric dishwasher, use of which should reduce the tardiness in getting on at 7!

73, Byron, W2JTP

ASB-5 RECEIVER for 420 Mc BAND!

As featured in "CQ" for October 1956. Easily converted, makes a marvelous receiver for 420 band, with RF Amplifier! Supplied complete with all tubes, OUR LOW PRICE **$14.95**

Tuning Knob for ASB-5 Receiver $1.29



LORAN APN/4 OSCILLOSCOPE

Easily converted for use on radio-TV Service Bench!

BRAND NEW

Completely Assembled

Supplied complete with 5" Scope type 5CP1 and RCA 100 Kc. Crystal Unit **$14.95**

DYNAMIC HANDMIKE with "Press-to-talk" Switch, cord and plug—**BRAND NEW**, ... only **$2.95**

HI-FI DYNAMIC HEADSET WITH RUBBER CUSHIONS

Freq. Range: 40-14,000 CPS. No distortion. **BRAND NEW** **$5.95**

DYNAMIC Headphone with Dynamic Mike, BRAND NEW, complete **$3.95**

MICROPHONES

Model		Excellent Used	BRAND NEW
TS-9	Handset		$4.95
T-17	Carbon Hand Mike	5.45	$7.95

CD-307A Cords, with PL55 plug and JK26 Jack ..... .99

DYNAMIC HEADPHONES, 600-ohm impedance, with large earphone cushions, cord and phone plug. **BRAND NEW**, special **$2.95**

HEADPHONES

Model	Description	Excellent Used	BRAND NEW
HS-23	High Impedance	$2.25	$4.35
HS-33	Low Impedance	1.99	4.65
HS-30	Low Imp. (weatherwt.)	1.49	2.25
CD-307A	Cords, with PL55 plug and JK26 Jack		.99

ARC-5 MARINE RECEIVER-TRANSMITTER

Navy Type Comm. Receiver 1.5 to 3 Mc
BRAND NEW with 6 tubes **$16.95**

Navy Type Comm. Transmitter 2.1-3 Mc
BRAND NEW with 4 tubes and Xtal **$12.45**

BRAND NEW SPECIAL PURPOSE TUBES

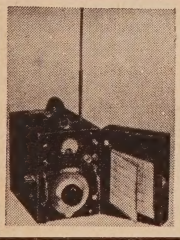
in Original Individual Packing

JAN CRP-730A MAGNETRON, Raytheon $3.45

Type	Each	Lots of 12	Lots of 100
6J6W	$.45	$5.15	$41.00
1625	.16	1.75	13.50
1626	.16	1.75	13.50
826	.44	4.95	39.50
2J724B	.35	3.95	29.50

BRAND NEW CATHODE RAY TUBES

3CP1	.88	5BP4	$2.22
3FP7	.88	5CP1	2.45
5BP1	2.22	9LP7	1.88



BC-906 FREQ. METER— VALUE $200.00!

Made by PHILCO

Cavity type, 145 to 235 Mc. BRAND NEW in original factory packing, complete with antenna and operating manual. OUR LOW PRICE **$8.88**

FL8-A RADIO FILTER $1.79

BRAND NEW WOBBULATOR, Special! $4.95

WRITE FOR FREE CATALOG!

Please include 25% Deposit with order — Balance C.O.D. MINIMUM ORDER $3.00. All Shipments F.O.B. Our Warehouse N.Y.C.

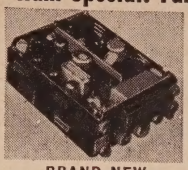
G & G Radio Supply Co.

Dept. C-3

53 Vesey St., New York 7, N.Y., CO 7-4605

Branch: 5009 N. Neva Ave., Chicago 31, Ill.

Ham Special! Famous BC-645 Transceiver



BRAND NEW

With MANUAL for Easy Conversion to CITIZENS' BAND!

Makes wonderful mobile rig for 420-500 Mc. Easy to convert for phone or CW 2-way communication. This swell rig originally cost over $1000—yours for practically a song! You get it all, in original factory carton, BRAND NEW, complete with 17 tubes, less power supply. **Conversion Instructions Included.** Shpg. wt. 25 lbs. **$29.50**

PE-101C DYNAMOTOR for BC-645, has 12-24V input (easy to convert for 6V Battery operation) ..... only **$7.95**

UHF ANTENNA ASSEMBLY, for BC-645 ..... $2.45

Complete set of 10 Plugs for BC-645 ..... **$5.50**

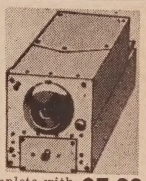
CONTROL BOX for above $2.25

SHOCK MOUNT for above 1.25

CONVERSION BOOKLET. Instructions for most useful surplus rigs **$2.50**

R24-ARC/5 NAVY TYPE
(Similar to BC-946)

BROADCAST RECEIVER



520 to 1500 Kc. 6 tubes: 3—12SK7, 12SR7, 12A6, 12K8. For dynamotor operation. Easily converted to 110 or 32 Volt. 2—IF stages, 3-gang tuning cond. Complete with all tubes, in original sealed carton. BRAND NEW **$19.95**

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**

BC-459 TRANSMITTER—7-9.1 Mc, complete with all tubes and crystal. BRAND NEW **$11.95**

ARC-5/T-19 TRANSMITTER—3 to 4 Mc. BRAND NEW, complete with all tubes & crystal **$8.88**

SCR-274 COMMAND EQUIPMENT

ALL COMPLETE WITH TUBES

Type	Description	Used	Excellent Used	Brand NEW
BC-453	Receiver 190-550 KC	$9.95	$11.95	$14.95
BC-454	Receiver 3-6 Mc	7.19	8.29	11.95
BC-455	Receiver 6-9 Mc	5.25	7.95	9.95
BC-456	Modulator	2.24	2.75	4.24
ARC-5/T-19	Xmtr 3-4 Mc (like new)		6.95	8.88

110-VOLT AC POWER SUPPLY KIT

FOR ALL 274-N and ARC-5 RECEIVERS

Can be assembled quickly and easily, on pre-drilled chassis. Plugs into the rear of any model 274-N receiver and delivers 24 volts as well as "B" voltage. No wiring changes needed. Complete kit of parts with metal case, instructions **$7.95**

SPLINED TUNING KNOB for 274-N RECEIVERS. Fits BC-453 BC-454 and others. Only **49c**

ARC-5/T-23 TRANSMITTER

100-156 Mc Includes 2-832A, 2-1625 Tubes.
BRAND NEW $19.95

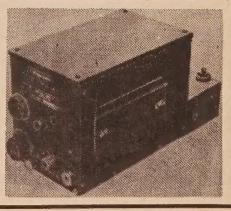
SPECIAL OFFER! Limited quantity ARC-5/T23 xmitters.
Excellent Used, less tubes $5.95
BRAND NEW, less tubes $7.95

AN/ARR-2 RECEIVER

BRAND NEW—A Terrific Value! Tuning Range 234 to 258 MC. Tubes: 7-9001, 3-6AK5, 1-12A6. Only a few at this low price! Complete **$8.88**

With 28V 1.6A Dynamotor, complete $12.98

110 VOLT AC POWER SUPPLY KIT for above $7.95



SCR-522 FINEST 2-METER RIG!

Terrific buy! VHF Transmitter-Receiver, complete with all components. 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. COMBINATION ..... **Special $33.33**

Receiver Only, with all tubes $19.50
Transmitter Only, with all tubes $22.25

TG-5-B TELEGRAPH SET

Made for USA Army Signal Corps. A dandy little field set for 2-way communication. Sturdy metal container, 6¾"x4¾"x4", with hinged covers, complete with telegraph key and headset. BRAND NEW, in carrying case with shoulder strap **$9.95**

Used, exc. Cond. $7.95

For further information, check number 67 on page 126.

Free BROCHURE

Also Time Payment Plan
Mail this for full information

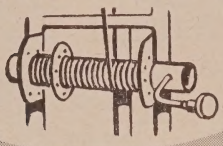
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ADDRESS_____

CITY_____ STATE_____

CQ-3

TELESCOPES
CRANK DOWN TO ADJUST



3 SIZES — 30 - 40 - 50 FT.

The answer to your prayer—crank it up or down. Used by hundreds of hams—testimonials available. Lower it for storms. Install it yourself. SPRING LOADED RACHET WINCH can be padlocked. Good looking, husky, yet light. ¾ in. aircraft type tubular steel. Hoist cable tested for 920 lbs.

50 ft.—$96.50 (100 lbs.)
40 ft.—$73.95 (80 lbs.)
30 ft.—$59.75 (60 lbs.)
F.O.B. St. Petersburg

Also 40 ft. layover available.
All packed in strong shipping carton.

PIPE BASE eliminates concrete

EAVE BRACKET simplifies installation

HINGED BASE Easy to service

10 ft. sections build up to 80 ft. Easy to install with simple lock joint. Strong aircraft type tubular steel—light weight.

20 ft. Towers (35 lbs.)—$34.25
10 ft. Towers (20 lbs.)—$16.00

Tele-Vue TOWERS, inc.
701-707 49th St. So., • St. Petersburg, Fla.

Prices subject to change without notice

For further information, check number 91 on page 126

3rd Class [*from page 51*]

replies are often desirable as they are more easily handled than "tear off" sheets and can be filed easily. An envelope mailing is often preferred to a stapled closed mailing as it is easier to include several items along with the main piece of mail. In addition, envelope pieces can often be fed through mailing and addressing machines more readily. They also are more easily handled by the post office, thus helping promote quicker delivery. On the other hand, envelope mailing is more expensive than staple closed mailing because of envelope cost, weight of the envelope and mailing machine stamping charge. Stapled closed mailing often permits printing on the stamps, the return address and other information at the same time the main sheet is printed.

Last—before finishing large scale mailing plans check with your local postmaster. He is there to help you. And as in the case of Mr. John Gaffney, postmaster of the Liverpool, New York, Post Office, who reviewed this presentation, he will become a friend to save you much time and effort in the use of Uncle Sam's Mail. A word of caution on third class mail announcements is in order and that is—allow at least one week for delivery. Since first class mail delivery has priority over third class—it is often possible to have third class mail delayed several days if first class delivery is particularly heavy in a given section. Therefore to help insure delivery on time have third class mail meeting announcements in the mail at least a week before the meeting date. ■

Last Minute Forecast for March

Exceptionally good short-wave radio propagation conditions are forecast for March 1-3, 15-17, and 29-31. A severe radio storm is expected to occur between March 18-19, with the period March 26-27 also below normal. Seasonally normal conditions are expected during the remainder of the month.

Surplus [*from page 69*]

from 200 kc to 18 mc. If you can give me any information about the line-up, circuit diagram, etc., I would sure appreciate it.

"George Ashley, 1628 Hartland, Memphis, Tenn."

. . . I did not have any information on this unit so I am throwing it up in the air, can any of you fellows help George?

"Dear Don:

"I wonder if it would be possible to take the 16 mc signal from tht 2nd i-f and run it through a communications receiver to improve the performance of the ASB-5 receiver?

"Gerald B. Bay, W9OHO 1107 Elm St., Glenview, Ill."

. . . You can convert the 16 mc signal down to a lower frequency, providing the receiver you are using is not too sharp (bandwidth, I mean).

SAVE!...BARGAINS GALORE!...SAVE!

NEW LOW PRICES! — EFFECTIVE MARCH 1st

COMMAND TRANSMITTERS & RECEIVERS



ARC-5 and SCR274 as available

BC 455

XLNT.....$5.95

NEW.....$7.95

Receivers, w/o dynamotors

R-25 Marine, 1.5-3 MC, new.....$10.95
R-26 or BC-454, 3-6 MC, used $6.95. New.....7.95
R-27 or BC-455, 6-9.1 Mc, used $5.95. New.....7.95
R-28, 100-156 MC, Exlt.....13.95
R-4/ARR-2, 234-258 MC, as is w/o tubes, $2.95, w/tubes, used.....4.95

Transmitters, w/o modulator or dynamotor

T-18 Marine, 2.1-3 Mc, as is, w/tubes, 3.95, used 4.95, boxed.....7.95
T-19 or BC-696, 3-4 Mc, as is w/tubes, 6.95, used 7.95, new.....8.95
T-20 or BC-457, 4-5.3 Mc, as is w/tubes 2.95, used 3.95, boxed.....5.95
T-21 or BC-458, 5.3-7 Mc, as is w/tubes, 2.95, used 3.95, boxed by depot.....4.95
T-22 or BC-459, 7-9.1 Mc, as is w/tubes 3.95, used 5.95, boxed.....8.95
T-23, 100-156 Mc, xmitter used, 13.95, xlnt.....14.95
Special—1 R-28 Rec. & 1 T-23 xmitter both.....25.95

Misc. Command Equipment as available

Receiver dynamotors 28V, used.....$ 1.00
BC-456 SC Mod. w/tubes, new 4.95, used.....3.95
MD-7 ARC-5 PI Mod w/tubes less dyn. Xlnt.....8.95
28 v dynamotors for above unit.....3.00
3-Rec. Rack, used, 1.49, new.....2.49
New 2-Trans. Rack.....2.95
New 24V Trans, 1A.....3.50
Plugs for rear of receiver.....1.00



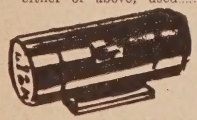
110 VAC power supply for ARC-5 & 274N Recvrs kit 8.95, Wired & tested 12.95

Receiver Conversion kit: cont. schematic, BFO Sw, 25 K Pot. phone jack and knob, with instructions.....1.95

1625 Tubes, for trans # mod, 50¢....3/1.00

Popular Dynamotor Specials

DM-34 Recvr. Dyna, 12 V in 220 @ 80 ma Out, new 4.95
DM-36 Same as above, 28 V. new.....4.95
either of above, used.....3.95



PE-101C Dynamotor, 12 or 24 v input, 500 v at 200 Ma out, (300 v 6v in) new.....10.95
DM-42, 12 V in. out 1000 and 500, ea at 215 Ma. used 12.95
DM-35, 12V in, 600 at 200 Ma out, Like New.....12.95

Wincharger Dyna. 12 v in 440 @ 220 MA Out, new.....12.95
BD-69 Rec. Dyna. 14 v in, 220 at 80 MA out, new.....9.95
PE-73, 24 v in 1000 at 350 Ma out. New 8.95, used.....6.95
PE-94, 28 v in for 522, 300 at 250 Ma. 150 bias, and 12 V 10 A, new.....4.95

"CITIZEN'S BAND!"

420-465 MC. TRANSCEIVER. This is the famous APN-1. In excellent condition, complete but less tubes. Just remove the wobulator (which alone is worth $2.50!) and add a sweep generator. Special! This month only.....**$2.95**

SIGMA 4F 8000 OHM SENSITIVE RELAY. Pulls in at 1.6MA release at .75 MA. SPDT 2AMP contacts removed from onew equip. guaranteed.....$2.95 ea.
BC-654 Transceiver: 3800 to 5800 KC.....Used: 34.95

Cathode Ray Tubes

5HP4 or 5CP1.....New 1.98
7BP7.....New 2.98

WESTON—SANGAMO—YOUR CHOICE

METERS.	ALL NEW	2" SQUARE
0-2 Ma	0-300 Ma	
0-5 Ma	0-500 Ma	$3.29 ea.
0-15 Ma	0-20 VDC	SPECIAL
0-50 Ma	0-40 VDC	
0-100 Ma	0-300 VDC	3 for $9.00
0-200 Ma		

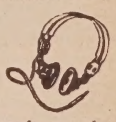


Heavy Duty Collins choke 4 Hy-300 Ma can take 500 Ma peaks, new.....3.95
Bantam 1-watter, BC-746 plug-in transmitter tuning unit from WALKIE TALKIE. 140 mmfd APC type variable cond. plus assorted parts including chassis. Builds into low power transmitter (See CQ March '54).....New, $1.29

COIL CONDENSERS

2 mfd 5000 vdc new.....$5.95
4 mfd 5600 vdc.....2.25
2 mfd 2500 vdc new.....2.95
2 mfd 1000 vdc new.....1.95
10 mfd 600 vdc new.....1.49
8 mfd 600 vdc new.....1.49
4 mfd 600 vdc new 3 for 1.00
2 mfd 600 vdc new 3 for 59¢

Mobile Microphones, newly assembled, W.E. D173015 similar to the TC-128, push-to-talk switch, 3 cond. 5' curl, cord, new.....**$3.95**
Chest Mike T-26 w/Fl Button New.....$1.49
F-1 Carbon Mike Element.....59¢
RT-48A/TPX-4 IFF Trans-Receiver 157-167MC. Complete with Tubes, used, xlnt. Makes nice 2 Meter Rig.....$12.95
BC 655 Signal Generator Range 17.5 to 160 Mc. good for T.V. set alignment, use as transmitter fre. checker, built in 0-200 Ua. Triplett 2" round Meter New.....$19.95
Brand New Headphones, HS-23, 2000 ohms, $3.95 HS-33, 600 ohms, complete with brand new rubber cushions.....**$4.95**
Used HS-23, w/o cushions.....1.95
New small cushions, pr.....49
Used chamois cushions, pr.....49
New lg rubber cushions, pr.....29





Brand new Impedance matching transformer, plug in, 2000 ohms to 600 ohms, takes std plug, boxed 69¢ each, 3 for.....**$1.95**

CD-307A cords, has JK-26 on one end for phones. std plug other end brand new, boxed.....**$ .97**

Stewart Warner Ammeter, 60-0-60 Amps. brand new, 95¢ 6 for.....5.00
Phone-CW Filters, 1020 cycles, new, FL-5, 69¢ FL-8 with switch.....1.89
GP-7 transmitter with all tubes less 803 tube and 80 meter coil unit only.....13.95
less tubes and coil unit.....7.95
TU-7, 4.5-6.2 MC; TU-8, 6.2-7.7 Mc; TU-9, 7.7-10 MC; TU-10, 10-12.5 MC; TU-26, 200-500 Kc. choice, used, for BC-375 transmitter, each.....2.29
T-30 Throat Mikes, used, 5 for.....1.00
3' Mast Sections, MS-49 thru 52, 50¢ each. 53 and above, 75¢ each. Special 1 each MS-49 thru 54, makes 18' vertical.....2.95

MN-26C direction finding Equipment
MN-26C Receiver w. dyna.....10.95
MN-20E Loop.....4.95
MN-52H Az Cont Box.....2.95
All above new, special, 1 each for.....17.95



Antenna Insulators. Bendix MT-48C, plated end caps, new 15¢ ea., 10 for.....1.25
Control Box w/5 Ma S meter, special.....1.98
SCR-522, exc. condition. Contains Receiver, Transmitter, Modulator, tubes, tunes 100-156 MC, covers 2 m w/o modification.....29.50
New transmitters, GF-11 for 12 volts, or GF 12 for 24 volts, with tubes and built in modulator—less tuning unit, GF-11 $8.95.....GF-12 8.95
Tuning Unit for above.....1.95

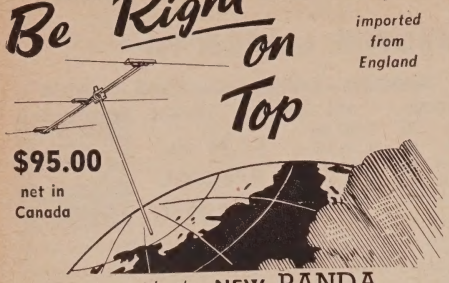
TG34 or TG10, 1 Hour Code Tapes

No. 10, No. 13.....New, ea. 1.25

2.00 Minimum Order. All prices Subject to Change without Notice. Canada & Mexico minimum 10.00. Cash with Order. Sorry, no COD. California Orders Include 4% tax. Prices FOB Los Angeles

SAM'S SURPLUS, 1306 Bond St., Los Angeles 15, California

For further information, check number 87 on page 126.



with the NEW PANDA

GLOBEMASTER

3-BAND MINIBEAM!

★ Three Bands 10, 15, and 20 meters
★ One Beam
★ One Feed Line

Savard is the exclusive Canadian distributor of this world-famous imported Panda Minibeam.

We carry parts and accessories.
Write today for catalog.

SAVARD RADIO CO.

910 Bleury **Montreal 1, Canada**

For further information, check number 96 on page 126.

We will pay you $$$$.¢¢ cash for an AN/ARN-6
or any of its components
AS-313 LOOP
Phone us collect on above items — STanley 7-0406

SIMILAR FABULOUS PRICES FOR:

APR-9 . . . ARC-1 . . . ARN-7 . . . ART-13 PARTS . . . BC-788-C . . . LP-21-AM, -LM, or MO-18A or MC-507 from these loops . . . I-152C . . . R-65/APN-9 . . . TEST SETS 1-100, TS-117, -125, -147, -148, -488.

ARROW SALES, INC.

Dept. CQ

7460 Varna Ave., No. Hollywood, Calif.

KITS WIRED

All types of kits wired and tested by trained and experienced technicians. All work guaranteed. Reasonable prices. Write for details.

BRISTOL ELECTRONICS LAB.

403 Arnold Road **Bristol, Tennessee**

A local oscillator at 420 mc is not too stable, and you may get too much drift on the incoming signals.

I also received a letter from K2RAG on the subject of amateur television. It reads:

"I would appreciate hearing about your 420 mc TV activities. I am interested in an iconoscope, sync circuits and a TV transmitter. I am planning to get an ASB-5 and run it into a conventional TV receiver. Do you have any better suggestions?

"Chris Bednarek, K2RAG
118-07 228 St., Columbia Heights, NY."

. . . Well, Chris, I have a 5527 iconoscope camera, a Vidicon camera, an Indian head monoscope generator, and no 420 mc transmitter at present. I am stripping the local TV stations sync and re-inserting it along with new blanking and video. I plan on a conversion of the ATK/ATJ war surplus television camera for a future issue, if there is enough interest (flood the editor, W2NSD, with mail if interested). Also there is a possibility of an article on the new amateur ½ inch Vidicon as soon as it is available. However, the editor wants to bo sure that someone is interested in such an article before printing it.

Has anyone added AVC to his Command Set Receiver? A letter from Michael Yurkovich requested information on this subject. If you have any info, write him at 113 Cottage Grove, Highland Park 3, Mich.

Charles H. Pregh, 528½ Scott St., Yuba City, Calif. would like information on making his BC-1335 tunable. I do not have any information on this unit so maybe someone in the grand jury can help him.

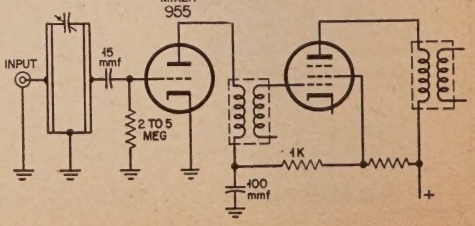
John L. Webb K6CSR, 18305 Plummer St., Northridge, California would like to obtain a manual on the CND-46156 which is part of the RAL-7 equipment. I am snowed on this one also. Any takers?

Here is a helpful letter which I received. I appreciate the information very much and I am sure the BC-645 owners will also.

"Dear OM:

"I have been using a BC-645 on 425 mc since 1948 and have an a.c. power pack and also the dynamotor for 12 volt operation from my car all arranged for easy plug in. Have worked San Diego many times with it. The receiver as converted in CQ for Dec. 1956 is very insensitive and S4 to 5 rigs can be made S9 by putting B plus on the mixer plate and using a grid leak detector per diagram. Remove the ground on the primary of T1. Add 100 mmfd capacitors. Connect the primary lead to screen grid of the first i-f tube through 1K resistor. There is a notch in the shield partition and the resistor can be inserted in so as to reach to the screen grid connection. Remove all shunt loading resistors on the i-f coil secondaries. Some 955's will oscillate, but try several and one can be found that will not.

"73's W6ZW La Cresenta, Calif."



. . . This is good to know. I tried it in my BC-645 and it does all that W6ZW says. Thanks OM.

Well that wraps it up for this month. Next month a Conelrad receiver from war surplus.

73, Don, W6TNS

Apology

[*from page 16*]

to authorize amateur operation on at least some of its ship under appropriate circumstances. To that end our staff on behalf of amateurs everywhere, will continue to work in liaison with DNC.

In closing, Admiral Bruton, please accept my thanks for inviting me to visit you at your office to discuss this matter. I shall see to it that a copy of this letter will be printed in a prominent place in the March 1957 issue of CQ.

Sincerely yours,
S. R. Cowan
Publisher

Moniscope

We forgot to mention in our review of the Moniscope (CQ Nov. '56, page 51) that no matter what kind of receiver you hanker for there is a Moniscope with an i.f. for you. Available are i.f.'s at 50, 80, 262 and 455 kc.

YASME [from page 104]

which always seemed just out of reach.

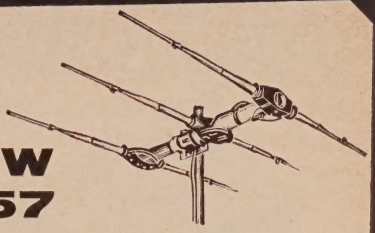
As we plodded on around three knots with the beam seas doing their very best to capsize Yasme, the night disappeared, and a faint tinge of dawn appeared. With the light came the outline of land ahead and the tiny rescue craft bouncing on the horizon. On my left was a large chunk of mountain sticking out of the sea. I knew we should soon be in calm waters. Gradually Yasme forged ahead into the lee of this most welcome land and the rescue launch circled in to lead us to a safe anchorage. In a few minutes my anchor was rattling down into the sand of Port Moresby.

After 9 days . . . safety at last . . . peace, food, and more than anything else . . . sleep. We had been nine hours at sea under tow, apart from the last hour or so where the Yasme came in under her own power. It was an experience I should never want again. It did, as Dick said earlier on, give me material for a short story.

I crammed all the chow I could into the frying pan and then into me. As I finished eating customs boarded Yasme, next I went to the Doctor to get my cuts fixed up, then back aboard for a long, long sleep.

Next month: Disaster!

HARVEY has it...



NEW 1957

TELREX

Amateur Beam Antennas

Commercial grade arrays at amateur prices; superior in performance, design and construction to any other antenna. Hair-pin resonated, precision tuned, matched and calibrated. Provide highest signal-to-noise ratio possible; 75% reduction in precipitation static.

Harvey Ships Everywhere in the World

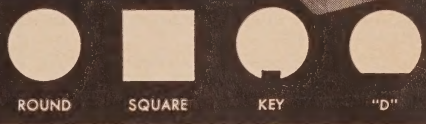
Prices Net, F.O.B., N.Y.C. Subject to change without notice

Established 1927
HARVEY RADIO CO., INC.
103 West 43rd St., New York 36, N. Y. • JUdson 2-1500

For further information, check number 92 on page 126.

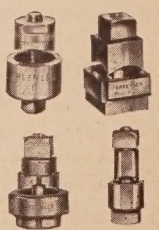
CUT CHASSIS HOLES FAST!





Smooth, accurate openings made in 1½ minutes or less with Greenlee Radio Chassis Punch

Quickly make smooth, accurate holes in metal, bakelite, or hard rubber with a GREENLEE Chassis Punch. Easy to operate . . . simply turn with an ordinary wrench. Round, square, key, and "D" types . . . *wide range of sizes* to make openings for sockets, plugs, controls, meters, terminal strips, transformers, panel lights, etc. Assure perfect fit of parts and professional finish to every job. Write for descriptive literature. Greenlee Tool Co., 2363 Columbia Ave., Rockford, Ill.



GREENLEE

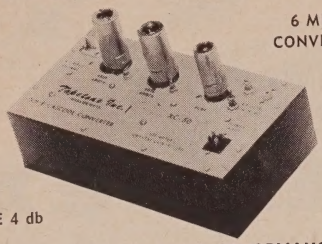
For further information, check number 70 on page 126.

The OUTSTANDING XC-50 and XC-51

FOR OUTPUT OF 14 TO 18 MC FOR BEST REJECTION TV CHANNEL 4

FOR OUTPUT OF 10 TO 14 MC FOR BEST REJECTION TV CHANNEL 2

6 METER CONVERTERS



NOISE FIGURE 4 db

DOUBLE CASCODE, HIGH PERFORMANCE VERY LOW ORDER UNWANTED SIGNAL RECEPTION, HIGH POWER GAIN

SPECIFICATIONS:

Power Gain: 2000 (33 db). Sensitivity: .1 microvolts will produce a 2 to 1 signal to noise ratio when used with normal communications receiver bandwidth; .03 microvolts when followed by a crystal filter. Image frequency rejection: 90 db. Rejection of signals at intermediate frequency: 80 db. Other spurious responses: greater than 80 db down. Tube complement: 6BS8/6BQ7A, 6BS8/6BQ7A, 6CB6, 12AT7.

$59.95

TAPETONE INC.

10 ARDLOCK PL., WEBSTER, MASS.

For further information, check number 90 on page 126.

LMB "SAL-MET"

LMB Presents The New

FREE 1957 CATALOG covering the full precision engineered line of original box chassis as manufactured by LMB including new Miniature, new Jiffy, new T. F., new Utility Boxes. Eleven different types, 160 different shapes and sizes. A ready reference for engineers, experimentors or anyone using metal boxes. Send for your FREE CATALOG now!

"SAL-MET" Non-corrosive Flux—solders copper to aluminum, aluminum to aluminum, any metal to any metal, using conventional solder and regular soldering iron. Send for both LMB and "SAL-MET" Catalogs.

LMB, 1011 Venice Blvd., Los Angeles 15, Calif.

GOOD BUYS — SOME NEW — SOME USED

RECEIVERS . . . RAK-8, 15/600 KC w/manual, (new), 160 lbs. $89.50
BC-1206, 200-400 KC w/tubes, (used), 7 lbs. 6.95
MN-26S, 150-1500 KC w/tubes & dynamotor, (used), 60 lbs. 14.95
R-4A/ARR-2, 234-258 MC w/tubes, less dyn., (used), 9 lbs. 5.95

TRANSFORMERS . . . each has 115 V, 60 cycle primary ..... all are new
1000V/30MA, 6.3V/0.6A, 2.5KV ins. 7 lbs....$1.69....2/$2.95
2.5V/10A, 6.3V/5.5A, 6.3V/1A, 1KV ins., HS, 11 lbs..... 2.29
4000V/10MA, hermetically sealed case, 10 lbs. 1.19
115V/10MA ct, 115V/10MA ct, 1275V ins., 2 lbs 95¢.. 3/$2.45
6.3V/1.8A, 6.3V/0.6A, 700V/30MA ct, 525V/5MA, 2.5V/1.75MA, 6.3V/0.6A, 1.5-3.5KV ins., for scope 6 lbs. 3.45

TUBES . . . all new . . . 6AC7W..... 85¢ 5Y3.....39¢
2C39.....$2.95 5GP1/5BP1XXX.....$2.45
3FP7.....$1.00 postpaid 869B.....$14.75
Loads of values . . . write for our free bargain bulletin
All prices are FOB Sacramento

JOE PALMER, 1440 Las Salinas Way, Sacramento, California

letters [*from page 14*]

Dear Sir:

With great pleasure I enclose the logs for the CQ World Wide DX Contest. This is the most enjoyed DX Contest for myself and my friends here in Poland. It is a pity that my results are not too good this year, but with the shortage of good equipment, the uncertainness of business, and the nervousness over the local political events and those in Hungary, you can perhaps understand.

I am one of the editors of *Radioamator* and hope to get news and photographs from American amateurs which I can use to better inform Polish amateurs. We now have 240 licensed, compared with just 80 in the fall of 1955.

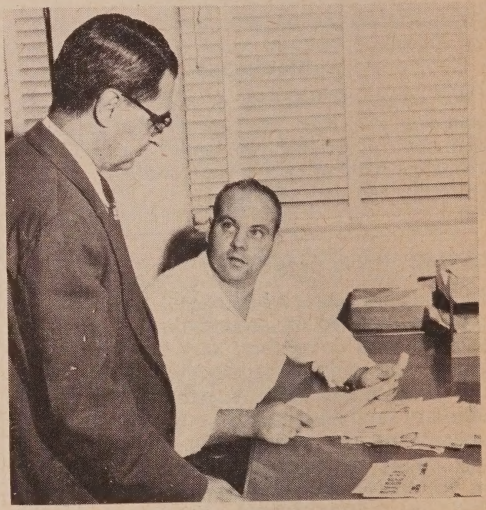
All of us here send the best of 73 to the CQ staff; we really like the new CQ editing manner.

Wojciech Nietyksza, SP5FM

Free Maps

Dear Sir:

Reference to our little "Letter to the Editor" notice in the November issue of CQ offering a free map to any Ham requesting it up to 500. We were literally swamped with requests—the requests far exceeding the supply. We are sorry we could not supply all of the requests for maps which were received.



The enclosed photo shows, checking one morning's mail of map requests (which was well over a hundred), (standing) P. M. Bunting, director of public relations, who made the maps available. Bunting, incidentally, is a BCL and not even a SWL. Also shown is Johnny Wood —W5FLS—who is a photographer in the Public Relations Department of the Cotton Belt. Johnny, being an avid Ham, did the folding and addressing of the maps.

73's, P. M. Bunting

Voo Doo

Dear Sir:

I signed up for two years . . . take the pin out of my voo doo doll (Oh, my Back!).

Bob Corbett, W3GXP

DSB

Dear Sir:

After reading W2CRR's DSB article in the January CQ for the third time, I still like what the man says. His proposed system of DSB has many advantages over both AM and SSB, not to mention FM. Partisans of both AM and SSB should get together on DSB, thus resolving the squabble.

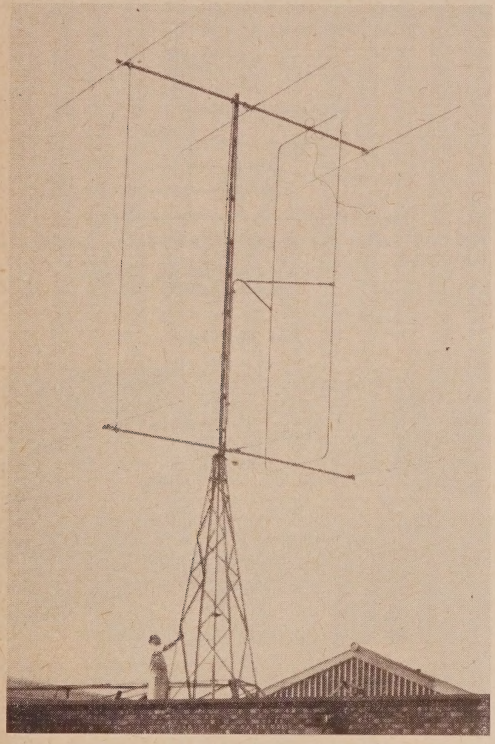
The "ideal" DSB receiver, hinted at in the first paragraph on page 28 interests me intensely. Could it be the "AN/FRR-48(XW-1)" depicted and briefly mentioned in the same author's article, "Synchronous Communications" in Proc. IRE for December 1956? Please see if you can't get W2CRR to do a piece on DSB receivers in the immediate future.

Basil C. Barbee, W5FPJ
Nacogdoches, Texas

Beam

Dear Sir:

Here is a photograph of a 4 over 4 slot beam for ten meters that I am using with phenomenal success. Possibly



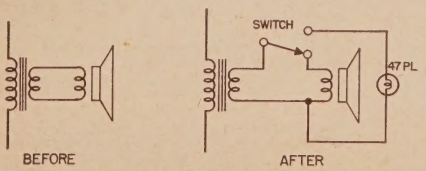
your journal can save me the impossible job of trying to describe it over the air.

B. Sykes, G2HCG
Northampton, England

Conelrad

Dear Ed,

Being neither an electronic engineer or a rich man I have held a dim view of the proposed devices to provide a Conelrad Alarm as required now by FCC. Having a little "spare" time one evening I decided to do a little tinkering and try to use the audio output of a broadcast receiver for my visual alarm. All that was used was a single-pole double-throw switch, a spare pilot light holder (with red Jewel) with a #47 bulb, and a little wire (all from the junk box). The before and after diagrams show the *simple* modification.



[*Turn page*]

A....Always
B....Buy
C....Columbia

T-R-A-N-S-F-O-R-M-E-R-S

PRE-AMP POWER TRANSFORMER
Primary 110 volt 60 cycle
Secondary #1 150 Volts @ 30 Ma
Secondary #2 6.3 Volts @ .9 Amp
$1.25

POWER TRANSFORMER
Primary 110 volt 60 cycle
Secondary #1 750 VCT @ 300 Ma
Secondary #2 6.3 VCT @ 6 Amp
Secondary #3 5 V @ 6 Amp
$6.95

POWER TRANSFORMER #208 PA.
Primary 110 volt 60 cycle
Secondary #1 720 VCT @ 80 Ma
Secondary #2 6.3 V @ 2.5 Amp
Secondary #3 5 V @ 2 Amp
$2.95

POWER TRANSFORMER #20164
Primary 110 volt 60 cycle
Secondary #1 740 VCT @ 140 Ma
Secondary #2 5 V @ 3 Amp
Secondary #3 6.3 V @ 2.5 Amp
$3.95

POWER TRANSFORMER #20195
Primary 110 volt 60 cycle
Secondary #1 740 VCT @ 180 Ma
Secondary #2 5 V @ 4 Amp
Secondary #3 6.3 V @ 3 Amp
Secondary #4 6.3 V @ 3 Amp
$4.95

POWER TRANSFORMER #20163
Primary 110 volt 60 cycle
Secondary #1 680 VCT @ 80 ma
Secondary #2 5 V @ 2 Amp
Secondary #3 6.3 V @ 2 Amp
$2.95

POWER TRANSFORMER •20194
Primary 110 volt 60 cycle
Secondary #1 680 VCT @ 140 Ma
Secondary #2 5 V @ 3 Amps
Secondary #3 6.3 V @ 1.5 Amps
$2.95

COMMAND GEAR—EXCELLENT COND.

BC-453 RECVR. 19-55 MC Q 5'er	$12.95
BC-454 RECVR. 3-6 MC. 80 meters. ONLY	4.95
BC-455 RECVR. 6-9.1 MC. 40 meters	4.95
BC-457 XMTR. 4-5.3 MC. Special!	2.95
BC-458 XMTR. 5-3.7 MC. It's a steal!	2.95
4-5.3 MC. XMTR. Brand new, boxed. Only	4.95
5.3-7 MC. XMTR. Spanking new! Boxed!	4.95
BC-456 MODULATOR: Excellent cond.	4.95
BC-442 ANTENNA SWITCHING RELAY: with vacuum capacitor. New, low price	3.49
TRIPLE RECEIVER RACK. With shock mount	2.50
DOUBLE XMTR. RACK. With shock mount	2.50
ALL PLUGS: For SCR-274N or ARC-5 Ea.	1.00
1625 TUBES: For spares. New, boxed. Ea.	.25
TRIPLE RECEIVER CONTROL BOX. BC-450	.95
TRANSMITTER CONTROL BOX. Only	.95
18 FT. FLEX CABLE TACH SHAFTS. To control receiver remotely. Special	1.95

STEREOPHONIC HI FI AUDIO OUTPUT TRANSFORMER #24044

For you binaural enthusiasts we have acquired a limited quantity of binaural output transformers at a terrifically low price, so that you may be able to experiment with this new phase of audio at a reasonable savings. This transformer is completely shielded and potted and contains two separate cores, and two separate windings, of 15 Watts of power each. Specifications are exactly the same as those for model #24038. They are reasonably small in size, very easy to mount, and absolutely brand new and factory fresh. Each unit unconditionally guaranteed from manufacturing defects. Supply is limited so get yours now at this terrific savings **$15.00**

MBF TRANSCEIVER
Late model. Ideal 6 and 10 meter set-up. 115 VAC and DC. Good condition. **$22.95**
Size 9½ x 10-1/16 x 15-13/16"
SCHEMATIC for this unit $1.00

All orders FOB Los Angeles. 25% deposit required. All items subject to prior sale. MINIMUM ORDER $3.00. OPEN FRIDAY NITE TILL 10 P.M.

Columbia ELECTRONICS
2251 W. WASHINGTON BLVD.
LOS ANGELES 18, CALIFORNIA

For further information, check number 61 on page 126.

New DOW KEY Relays

Multikit Series DKPK



with interchangeable coil and contact assembly, the new series offers a versatile relay of unusually high quality. A.C. types entirely free of hum or chatter.

COILS

6, 12, 24 v. a.c.....$1.85
110 v. a.c..... 2.20
220 v. a.c..... 2.85

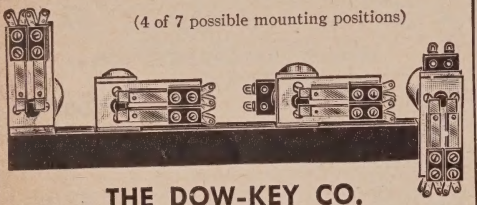
6, 12, 24, 48 v. d.c...$1.85
110 v. d.c..... 2.75

CONTACT ASSEMBLIES

SPDT 10 amp.....$1.65 DPDT 15 amp.....$2.25

See your distributor. If he has not yet stocked Dow DKPK series relays, order from factory. Send check or money order or will ship C.O.D. Prices net F.O.B. Warren, Minn. Shipping weight 5 oz. Dealers' inquiries invited. Literature on request.

(4 of 7 possible mounting positions)



THE DOW-KEY CO.

BOX 57G **WARREN, MINNESOTA**

For further information, check number 63 on page 126.

A CUSTOMIZED SERVICE FOR THE RADIO AMATEUR

Custom-Designed Mobile equipment.
Q-Multipliers built-in your present receiver.
Custom-Designed VHF-UHF equipment.
Expert transmitter repair.
Complete receiver renovation.
Custom-Designed Conelrad equipment.
Miniature transistorized equipment.

These are just a few of our services.
Write for information.

KALAB ELECTRONICS COMPANY

6714 East Independence Pl., Tulsa 15, Okla.

REX SPECIALS

NATIONAL COMMUNICATIONS RECEIVER RBL-5, 15-600 kc 6 bands, operate from 115 V AC 60 cycle, brand new, original pack w/tech manual.....$59.95

ARC-5 Xmtrs. 5.3-7 MC. Brand new $4.89. 3 to 4 MC excellent cond. w-tubes $5.95. Receiver—autotune head 3-6 mc excel. $5.95.

REX RADIO, 88 Cortlandt St. New York 7, N. Y.

Next month . . .

Sidebanding the DX-100

To my surprise the thing really works. With the switch to the audio side the receiver works as usual. With the switch changed to the visual side, and the volume turned up, the red pilot light winks at me to say "the station is OK and no Conelrad alert is on". When the light stays dark it is a sure sign something is wrong and a check must be made to see if it is equipment failure or a real Conelrad alert.

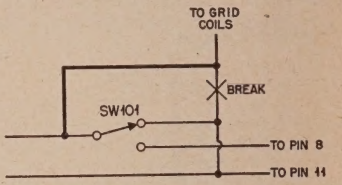
This device should appeal to Novices and the addition of a small pilot light jewel and switch to the BC receiver shouldn't make the XYL *too* mad.

Don McNeil
WØUSO

AF-67 Modification

Gentlemen,

Refering to Feb CQ, page 57 a simple way to get more signal outside the AF-67 transmitter for "zeroing in" is to wire the 6AQ5 stage as follows:



this will suffice for those not wishing to install the coax relay.

Harry Stewart, W8PSV
Multi-Products Co.

Fort Benning



The Fort Benning (Ga.) Electronics Club meeting recently brought quite a crew of stateside hams together. Left to right (standing) are K4KJA, W4YOU, K4HKD, KN4LNI, KN4LNH, W7OUC, W8MLK. Seated is W3DXD, OM of the W4TIS shack in which the picture was taken. W4TIS (A4TIS) is the MARS station of the United Stated Army Infantry School at Fort Benning.

With the exception of W4YOU, club president, all 4's pictured received their ticket through association with the club.

(Official US Army photo by Pvt. Kramer)

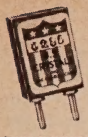
Cards

Dear Sirs:

Several days ago I received your October, 1956 issue of CQ. Having thumbed through it, I arrived at your poll on the last page, and was shocked to see how low you had stooped to achieve your answers. That piece of advertising employs a neat little trick that some of the cheapest magazines on the American market today are currently using. If you have as little faith in your fellow hams as to have to put in advertising employing tricky wording and false heading in order to feel that you will be able to get replies, then I think that maybe you'd better try selling christmas cards and forget about ham radio.

The hams that I know who are really active and interested in radio feel that amateur radio is a brotherhood—an organization set up between fellows who have a mutual interest. I think that an unwritten code of the amateur is helping his fellow ham. All hams have a mutual trust and tie between them. As I read and reread your advertisement I felt that you had violated one of the most valuable codes of ham radio. Personally, I would never read another issue of your magazine. I

[*Continued on page 125*]



U. S. Crystals offers the most complete line of guaranteed crystal frequencies for the novice, amateur, technician, and the experimenter.

2015	2585	2985	3955	5090	6006 6	6475	7073 3	7450	7725	7980	8240	8500		
2017	2590	2990	3980	5127 5	6025	6500	7075	7458 3	7730	7983 3	8241 7	8506 6		
2020	2595	2995	3990	5165	6040	6506 6	7100	7466 7	7733 3	7990	8250	8508 7		
2025	2650	3005	3995	5180	6042	6525	7106 6	7473 3	7740	7991 7	8254 3	8510		
2035	2655	3010	4035	5205	6050	6540	7125	7475	7741 7	8000	8260	8516 7		
2040	2660	3015	4045	5235	6073 3	6550	7140	7483 3	7750	8006 6	8266 7	8520		
2055	2665	3020	4080	5245	6075	6573 3	7150	7491 7	7758 3	8010	8270	8525		
2060	2680	3025	4095	5285	6100	6575	7160	7500	7760	8016 7	8273 3	8530		
2065	2685	3030	4110	5295	6106 6	6600	7173 3	7506 6	7766 7	8020	8275	8533 3		
2090	2690	3035	4135	5300	6125	6606 6	7175	7508 3	7770	8025	8280	8540		
2105	2695	3040	4165	5305	6140	6625	7200	7510	7773 3	8030	8283 3	8541 7		
2125	2705	3045	4175	5327 5	6142	6640	7206 6	7516 7	7775	8033 3	8290	8550		
2130	2710	3050	4190	5335	6150	6650	7225	7520	7780	8040	8291 7	8558 3		
2135	2715	3055	4215	5385	6173 3	6673 3	7240	7525	7783 3	8041 7	8300	8560		
2140	2720	3060	4220	5397 5	6175	6675	7250	7530	7790	8050	8306 6	8566 7		
2195	2750	3065	4255	5435	6185	6700	7273 3	7533 3	7791 7	8058 3	8308 3	8570		
2300	2755	3070	4260	5437 5	6200	6706 6	7275	7540	7800	8060	8310	8573 3		
2305	2760	3075	4295	5485	6206 6	6725	7300	7541 7	7806 6	8066 7	8316 7	8575		
2320	2765	3095	4300	5500	6225	6740	7306 6	7550	7808 3	8070	8320	8580		
2350	2770	3110	4330	5545	6235	6750	7308 3	7558 3	7810	8073 3	8325	8583 3		
2355	2775	3130	4340	5582 5	6240	6773 3	7316 7	7560	7816 7	8075	8330	8590		
2360	2780	3135	4395	5587 5	6250	6775	7325	7566 7	7820	8080	8333 3	8591 7		
2365	2785	3140	4397 5	5645				7570	7825	8083 3	8340	8600		
2370	2790	3145	4445	5660				7573 3	7830	8090	8341 7	8606 6		
2375	2795	3150	4450	5675				7575	7833 3	8091 7	8350	8608 3		
2398	2815	3155	4490	5687 5				7580	7840	8100	8358 3	8610		
2415	2825	3160	4495	5700				7583 3	7841 7	8106 6	8360	8616 7		
2430	2830	3165	4535	5706 7				7590	7850	8108 3	8366 7	8620		
2435	2835	3170	4540	5725				7591 7	7858 3	8110	8370	8625		
2440	2840	3175	4580	5730				7600	7860	8116 7	8375	8630		
2442	2845	3202	4610	5740				7606 6	7866 7	8120	8380	8633 3		
2450	2850	3205	4620	5750				7608 3	7870	8125	8383 3	8640		
2455	2855	3210	4635	5760				7610	7873 3	8130	8390	8641 7		
2460	2860	3220	4680	5773 3				7616 7	7875	8133 3	8391 7	8650		
2465	2865	3225	5782 5	5775				7620	7880	8140	8400	8658 3		
2470	2870	3230	5800	5780				7625	7883 3	8141 7	8406 6	8660		
2475	2875	3235	5806 7	5825	6273 3	6800	7333 3	7630	7890	8150	8408 3	8666 7		
2480	2880	3240	5820	5840	6275 5	6806 6	7340	7640	7891 7	8158 3	8410	8670		
2485	2885	3290	4695	5850	6275	6815	7341 7	7641 7	7900	8160	8416 7	8673 3		
2490	2890	3310	4710	5852 5	6300	6825	7350	7650	7906 6	8163 3	8420	8675		
2495	2895	3320	4735	5860	6306 6	6840	7358 3	7658 3	7908 3	8166 7	8425	8680		
2505	2905	3340	4780	5873 5	6315	6850	7366 7	7660	7910	8170	8430	8683 3		
2510	2910	3410	4785	5875	6325	6873 3	7633 3	7666 7	7916 7	8173 3	8433 3	8690		
2515	2915	3420	4815	5880	6335	6875	7373 3	7670	7920	8175	8440	8691 7		
2520	2920	3455	4820	5892 5	6340	6900	7375	7673 3	7925	8180	8441 7	8700		
2525	2925	3465	4840	5900	6350	6906 6	7383 3	7675	7930	8183 3	8450	8706 6		
2530	2930	3510	4845	5906 7	6362	6925	7391 7	7680	7933 3	8190	8458 3	8708 3		
2535	2935	3525	4852 5	5907 5	6373 3	6940	7400	7683 3	7940	8191 7	8460	8710		
2545	2940	3640	4880	5925	6375	6950	7406	7690	7941 7	8200	8466 7	8716 7		
2550	2945	3655	4900	5940	6400	6973 3	7406 6	7691 7	7950	8206 6	8470	8720		
2557	2950	3680	4930	5950	6405	6975	7408 3	7700	7958 3	8208 3	8473 3	8725		
2560	2955	3700	4950	5955	6406 6	7000	7416 7	7706 6	7960	8210	8475	8730		
2565	2960	3760	4980	5973 3	6425	7006 6	7425	7708 3	7966 7	8216 7	8480	8733 3		
2570	2965	3800	4995	5975	6440	7025	7433 3	7710	7970	8220	8483 3	8740		
2575	2975	3885	5030	5995	6450	7040	7440	7716 7	7973 3	8225	8490	8741 7		
2580	2980	3940	5035	6000	6473 3	7050	7441 7	7720	7975	8233 3	8491 7	8750		

FT-243 YOUR CHOICE 49¢ ea.

NUMBERS LISTED ARE FUNDAMENTAL FREQUENCIES IN KILOCYCLES

NOVICE BAND FT-243 FUNDAMENTAL OR DC-34 FREQUENCIES **99c**

YOUR CHOICE OF FREQUENCIES!

80 METERS 3701 through 3748 in steps of 1 KC. FT-243 or DC-34.

40 METERS 7176 through 7198 in steps of 1 KC. FT-243 only.

DOUBLING TO 40 METERS 3588 through 3599 in steps of 1 KC. FT-243 or DC-34.

15 METERS 5276 through 5312 in steps of 1 KC. FT-243 or DC-34.

FT-241 Single Side Band low frequency Crystals — 370 KC to 540 KC.....ea. 49c

DC 34/35 from 1690 to 4440 KC.....ea. 49c

AN/TRC-1 FT-241 holders from 729 to 1040 KC — 1000 KC excluded.....49c

FT-171 Banana plug type pins, stock freq.....ea. 49c

FT-243 1000 KC Marker Std.....ea. $2.95

100 KC FT-249 RCA VC-5.....ea. 4.95

SPECIAL GRINDING SERVICE

Available to the Amateur, Novice, Experimenter, Technician and all users of crystal control. FT-243-½" DC-34-35-¾" FT-171 Banana.

ALL FREQUENCIES AVAILABLE IN STOCK SEND FOR CATALOG

Include 5c per crystal for postage and insurance. Calif. add 4% Tax. No. C.O.D'S. Prices subject to change. Ind. 2nd choice; substitution may be necessary.

U. S. CRYSTALS, INC.

1342 So. La Brea Ave., Los Angeles 19, Calif.

For further information, check number 93 on page 126.

LOOK .... it's here!

"Band-Hopper"



1. BANDSWITCHING – 160M – 80M – 40M – 20M – 15M – 10M.
2. 100:1 GEAR DIAL DRIVE. FOR SMOOTH ACCURATE TUNING. CALIBRATION OF DIAL 5KC.
3. VFO TEMPERATURE COMPENSATED AND EXTREMELY STABLE.
4. BUILT-IN REGULATED POWER SUPPLY.
5. STANDBY SWITCH PROVIDES ROCK STABILITY FOR IMMEDIATE OPERATING.
6. HETERODYNING PRINCIPLE PROVIDES FOR MAXIMUM STABILITY ON HIGH FREQUENCY BANDS.
7. FOR USE WITH ANY 9MC PHASING SSB TRANSMITTER SUCH AS PHASEMASTER JR., DELUXE PHASEMASTER JR., PHASEMASTER II OR 10B-20A.
8. MATCHING CABINET TO PHASEMASTER LINE 7-1/16" x 9-1/16" x 11-1/8".

VFO FOR SSB

Only **$139.50**

See Your Dealer or Write Today

Lakeshore INDUSTRIES

MANITOWOC, WISCONSIN

MANUFACTURERS OF PRECISION ELECTRONIC EQUIPMENT

For further information, check number 77 on page 126.

GOV'T SURPLUS BARGAINS

SCR 522 TWO METER RIG $24.50

100-156 mcs 4 channel crystal controlled. Receiver and Transmitter with case, all tubes.

I-196 SIGNAL GENERATOR 150-236 Mcs $4.95

Brand new with book, tubes, canvas carrying case, portable battery operated in original Gov't packing. Gov't cost $60

ARC-5 TRANSMITTERS

Excellent, with all tubes, crystal, conversion details.

T-20	(4-5.3mc)	used	$3.25
T-20	(4-5.3mc)	Sparkling new	4.25
T-21	(5.3-7mc)	Sparkling new	4.25

BC 1066 RECEIVER 150-235 mc $5.25

Btry operated. portable, with canvas carrying case. Excellent or new condition, with all tubes, schematic. Gov't cost $55

RU or BC RECEIVERS 850 kc-13.5 mc $4.95

Command set (aircraft receiver) covers range 850kc-13.5mc with 9 plug-in coils (1 furnished), used, excellent shape, all tubes. Extra coils 50¢ each. You furnish the power and you have a pretty good receiver for SWL at low cost. Gov't cost $250

TANK PERISCOPES $1.75 PAIR

Two of these make a periscope or take 'em apart for the prisms. Will refract the sun's rays into a beautiful spectrum. Make trick photo shots. Gadgeteers delight. New. Gov't cost $60 pair. Wgt. 6 lbs pr.

All items shipped FOB Malden (you pay freight). Send payment for goods and pay Express Charges on receipt of goods. At these prices an early sellout is predicted. Order now.

Send 5¢ for Bargain Picture List of other items.

MESHNA 5800 Lynn St. Malden 48, Mass.

For further information, check number 78 on page 126.

EASY TO LEARN CODE

It is easy and pleasant to learn or increase speed the modern way — with an **Instructograph Code Teacher.** Excellent for the beginner or advanced student. A quick, practical and dependable method. Available tapes from beginner's alphabet to typical messages on all subjects. Speed range 5 to 40 WPM. Always ready, no QRM, beats having someone send to you.

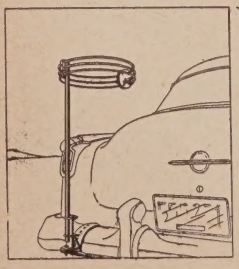


ENDORSED BY THOUSANDS!

The Instructograph Code Teacher literally takes the place of an operator-instructor and enables anyone to learn and master code without further assistance. Thousands of successful operators have "acquired the code" with the **Instructograph System.** Write today for full particulars and convenient rental plans.

INSTRUCTOGRAPH COMPANY

Dept. C., 4701 SHERIDAN RD., CHICAGO 40, ILL.



WOW!

Horizontal polarized 6 meter MOBILE antenna.

Reduces flutter . . . swish . . . ignition noise . . . a full sized antenna available with clamp-on bumper mount. Also supplied less mounting accessories. *AVAILABLE NOW.*

Write

HI-PAR PRODUCTS CO.
Fitchburg, Mass.

VK4AB Visits U. S.

Ramsey Bryce, VK4AB, and a friend are visiting the States for a couple of months starting February 15th. They are only permitted to bring $400 between them so the length of their stay will depend entirely on how many amateurs are willing to put them up for a day or so. If you have a couple of cots and a few extra meals handy drop a note immediately to Glenn Munro, W8GLS, 17543 Ramsgate, Birmingham, Michigan, who will coordinate for Ramsey.

Q-multiplier [*from page 57*]

side and prop the end of the tuned g.d.o.'s coil within a half inch of the externally-cored coil. Set the tuning condenser of the Q-Xer to midscale and adjust the internal core of the coil to produce a dip on the meter. This point is critical within a quarter of a turn. Tuning the variable condenser through its range should produce maximum dip at centre scale.

Power supply trouble was found in two cases. A slight power hum may go neglected in the normal receiver. If this ripple voltage is fed to the Q-Xer, it is magnified to a roar. An additional filter brought the action to normal. A reduction of plate volts from 250 to 150 brought only a small drop in regenerative action.

Increased selectivity is pronounced on both phone and c.w. reception. The increase in volume of the signal is most pronounced on C W where the total energy may be concentrated into a few hundred cycles. It has failed to help in reception of S S B. Seldom do the interfering signals seem to have the correct spacing for the "null" position to be fully effective. The Q-Xer is bound to be the best $10.00 that you have spent on your receiver. ■

Stolen, as usual, from

AUTOCALL

The bulletin of the
Washington, D. C. Mobile Radio Club

Last month's Puzzlers should have worked out like this:

#1. 301 men.

#2.
```
                  80809
        ____________________
124 ) 10020316
      992
      ----
       1003
        992
       ----
        1116
        1116
```

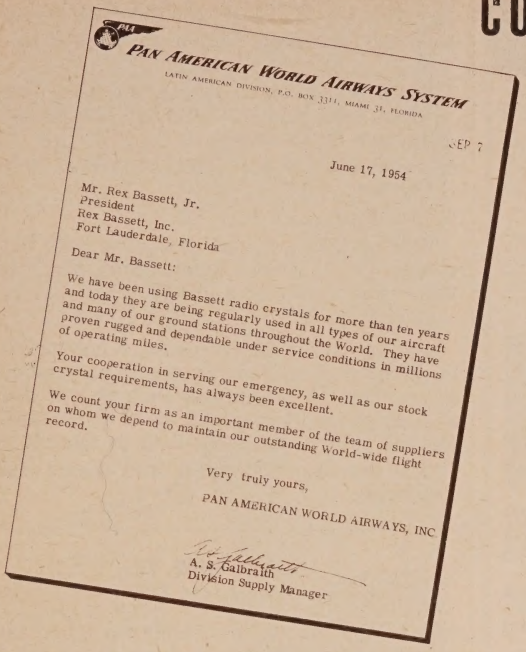
#3. The Engineer's name is Smith.

And so we recklessly plunge into this month's brow furrowers.

Puzzler #1. W5RHW sent this one in.

1. With none out and the bases loaded in the first inning, Becker looped a single to center, scoring Jones with the second run.

CONTROL CRYSTALS!



PAN AMERICAN WORLD AIRWAYS SYSTEM

LATIN AMERICAN DIVISION, P.O. BOX 3311, MIAMI 31, FLORIDA

SEP 7

June 17, 1954

Mr. Rex Bassett, Jr.
President
Rex Bassett, Inc.
Fort Lauderdale, Florida

Dear Mr. Bassett:

We have been using Bassett radio crystals for more than ten years and today they are being regularly used in all types of our aircraft and many of our ground stations throughout the World. They have proven rugged and dependable under service conditions in millions of operating miles.

Your cooperation in serving our emergency, as well as our stock crystal requirements, has always been excellent.

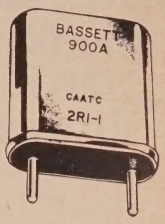
We count your firm as an important member of the team of suppliers on whom we depend to maintain our outstanding World-wide flight record.

Very truly yours,

PAN AMERICAN WORLD AIRWAYS, INC

A. S. Galbraith
Division Supply Manager

PRECISION CRYSTALS FOR 20 YEARS



Aviation — Amateur — Marine —
Emergency Law Enforcement —
Mobile — Industrial

Immediate Delivery

Write for Catalog

REX BASSETT, INC.
BASSETT BUILDING
FORT LAUDERDALE, FLORIDA

For further information, check number 56 on page 126.

TREMENDOUS CRYSTAL CLEARANCE SALE!

Save Money—Order in Package Quantities!

All crystals tested and guaranteed to oscillate. Please include 20¢ postage and handling charge for every 10 crystals or less. Minimum order $2.50. No C.O.D's.

PACKAGE DEAL No. 1
25 Assorted FT-243 45 Assorted FT-241A
15 Assorted FT-171B 15 Assorted CR-1A
100 Crystals Our Choice **$8.95**
Assorted.....Regular value $66.00

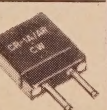
PACKAGE DEAL No. 2
FT-241A Crystals for Single Sideband
379 KC–538 KC
35 Crystals Our Choice **$3.49**
Assorted.....Regular Value $14.00

PACKAGE DEAL No. 3
HAM BAND CRYSTALS—FT-243
For operating on 80, 40, 20, 15, 10, 6 and 2 meters—on either fundamentals or harmonics.
25 Crystals Our Choice **$6.95**
Assorted.....Regular Value $20.00


FT-243
RANGE
3655 KC
–8733 KC


FT-241A
RANGE
370 KC
–538 KC


FT-171B
RANGE
2030 KC
–3995 KC


CR-1A
RANGE
5910 KC
–7930 KC

INDIVIDUAL CRYSTALS • Indicate 2nd choice—Substitution May Be Necessary

Low Frequency — FT-241A for SSB, Lattice Filter etc., .093" Pins, .486" SPC, marked in Channel Nos. 0 to 79, 54th Harmonic and 270 to 389, 72nd Harmonic. Listed below by Fundamental Frequencies, fractions omitted.

49¢ each—10 for $4.00

370	393	418	490	513	537	400	462
372	394	419	491	514	538	440	463
374	395	420	492	515		441	464
375	396	422	493	516		442	465
376	397	424	494	518		444	466
377	398	425	495	519		445	469
379	403	426	496	520		446	470
380	404	427	497	522		447	472
381	405	431	501	523		448	473
383	406	433	502	525		450	474
384	407	435	503	526		451	475
385	408	436	504	527		452	476
386	409	481	506	529		453	477
387	411	483	507	530		455	479
388	412	484	508	531		457	480
390	414	485	509	533		458	
391	415	487	511	534		459	
392	416	488	512	536		461	

79¢ each—10 for only $6.50

CR-1A SCR 522-EE Pin, ½" SP		FT-171B—BC-610 Banana Plugs, ¾" SPC			
5910	7810	2030	2258	2435	3250
6370	7930	2045	2260	2442	3322
6450		2065	2282	2532	3995
6497		2105	2300	2545	
6610		2125	2305	2557	
7380		2145	2360	3202	
7480		2155	2390	3215	
7580		2220	2415	3237	

FT-243 — .093" Dia. — .486" SPC

49¢ each—10 for $4.00

4035	5773	6373	7520	7800
4080	5775	6375	7525	7806
4165	5780	6400	7540	7825
4190	5806	6406	7550	7840
4280	5840	6425	7573	7841
4340	5852	6673	7575	7850
4397	5873	6675	7583	7873
4490	5880	6700	7600	7875
4495	5892	6706	7606	7900
4840	5906	6725	7625	7906
4852	5925	6750	7640	7925
4930	5940	6775	7641	7940
4950	5955	6800	7650	7950
5030	5973	6825	7660	7975
5385	6206	6850	7673	8250
5397	6225	6875	7675	8273
5437	6240	6900	7700	8300
5485	6250	6925	7706	8310
5500	6273	6950	7710	8316
5660	6275	6975	7725	8320
5675	6300	7450	7740	8630
5700	6306	7473	7750	8690
5706	6325	7475	7766	
5740	6340	7500	7773	
5750	6350	7506	7775	

79¢ each—10 for $6.50

3735	6200	6640	8275	8625
6025	6450	6650	8280	8650
6040	6473	7000	8350	8690
6042	6475	7075	8375	8700
6073	6500	7125	8425	8733
6075	6506	7150	8430	
6100	6525	7300	8450	
6125	6550	7306	8475	
6140	6573	7425	8500	
6150	6575	7440	8525	
6173	6600	8173	8550	
6175	6606	8175	8575	
6185	6625	8225	8600	

Sun
PARTS DISTRIBUTORS, LTD.
514 TENTH ST. N.W., Wash., D.C. Dept. Q.

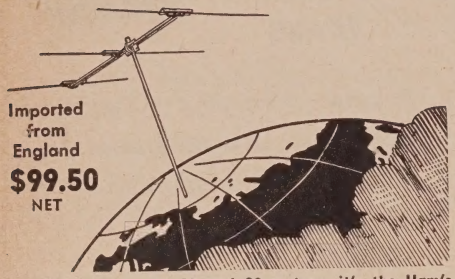
SPECIAL 200 KC XTAL in FT-241A HOLDER—$1.25—WITHOUT HOLDER—39¢ ea.—3 for $1.00

For further information, check number 88 on page 126.



FORT ORANGE
Radio Distributing Co. Inc.
904 BROADWAY, ALBANY 4, N.Y., U.S.A.
AMATEUR HEADQUARTERS

The Famous G4ZU GLOBEMASTER PANDA BEAM



Imported from England
$99.50
NET

3 Band Minibeam 10, 15 and 20 meters—it's the Ham's dream beam—Fort Orange is exclusive U. S. distributor. One antenna, one beam, one feed line—it's pretuned, fits any 2" pole. No tricky loading coils, twin boom for strength. This is the world-famous beam.

Write or call Uncledave, W2APF with your needs and problems. Time payment plan. Write for the new, giant used equipment list #2M . . . Just off the press and loaded with bargains.

WE SPECIALIZE IN FOREIGN TRADE

For further information, check number 66 on page 126.

BACK ISSUES FOR SALE

1946—June, July, Aug., Sept., Oct., Dec.
1947—All issues, except Nov.
1948—All issues, except Jan., July, Nov.
1949—All issues, except Feb., Nov.
1950—All issues, except Dec.
1951—All issues, except May, Nov.
1952—All issues, except Aug.
1953—All issues, except May, July, Dec.
1954—All issues, except Feb.
1955—All issues, except Nov.
1956—All issues to date.
1957—All issues to date

50c per copy

CQ Magazine

300 West 43 St. New York 36, N. Y.

2. Black belted a grand-slam homer in the first.
3. Smith struck out to end the first inning.
4. White sacrificed Brown to second in the fifth.
5. With Anderson at bat in the fifth, Brown stole third and scored after the catch on Black's fly to deep left.
6. Neither Gray nor Smith was ever a base 'runner.
7. The final score was 7-0.

The players are: Anderson; Becker; Black; Brown; Gray; Green; Jones; Smith and White. What was the batting order?

Puzzler #2.

Starting with a one inch cube, a hole one inch in diameter is drilled through it perpendicular to one face. A second one inch hole is drilled at right angles; how much material is removed (or left, which ever you want to figure)?

The answers will appear next month unless we forget.

LONG TIME YLs

[*from page 71*]

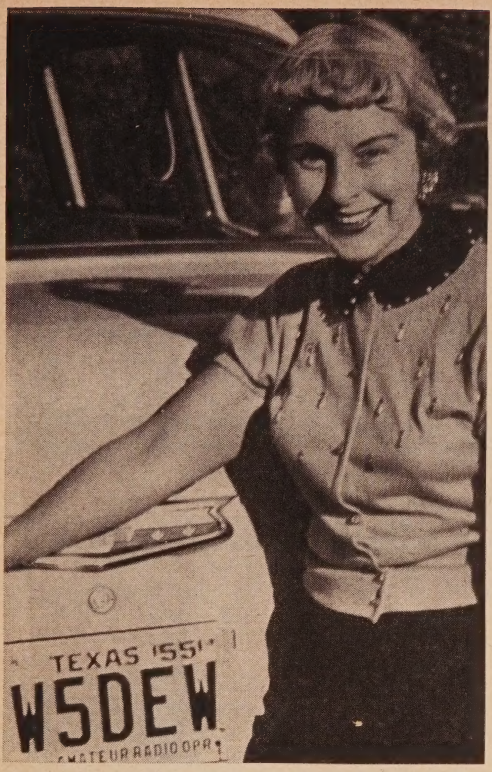
increase the size of their family by a boy and a girl and they traveled over much of Central and South America and in Europe. At present El is at Ankara, Turkey, where OM Floyd is communications superintendent with Pan American World Airways System. No hamming is allowed by civilians in Turkey, but El hopes some activity may be permitted before their three-year stay is up.

There were several early YL stations in Texas, but the most active throughout the years has been that of Mary Palmer, W5DEW, at Port Arthur. Before World War II Mary spent all of her time, day and night, on 20 meters, and became one of the early members of YLRL. When war came she taught at Port Arthur College, worked with the Signal Corps and later for a BC station. Next to hamming she loves conventions and has attended all she can, including the first National one held in Chicago in 1938. The "Dew Drop of Texas," as she is popularly known, spends most of her time

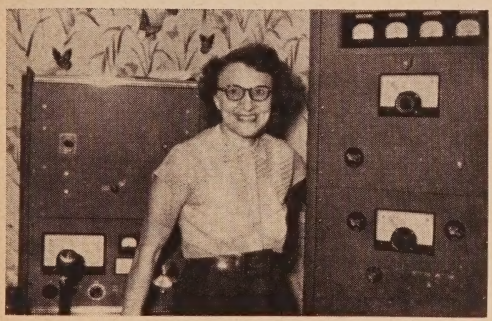
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*?★!// that WLFZJ.



W5DEW, Mary Palmer



W5DQF, Madie Eidson

on 75 meters' is a member of MARS and the Tumble Bug net. Her OM is W5BUZ and their daughter is W5APC, Kit, who has two boys and a girl, making Mary a grandmother. The home rig is a 400-watt Globe King.

Another YL to go on the air in Texas in *1933* was Madie Eidson, at Temple. Madie's OM is W5AMK and with his help she got her license on her first wedding anniversay, 3/27/33. Going on the air with the call W5DQF, she worked c.w. entirely and earned WAC. Recently she has not been very active, but does get on phone, mostly 10, 40 and 75. ■

(To be concluded)

DESIGN AN AUTOMATIC CONELRAD ALARM

Then make it with this **wonder relay**; send your circuit and story to CQ, and win the prize of having it published under your name if they like it. The **wonder relay** is Sigma 80030 which cost Uncle $11.36 in lots of 1 jillion—you get it in **single** lots for only $2.95. Sealed octal plug-in, polarized 5000 ohm coil. Send 0.9 ma through coil in one direction, and the SPDT contact arm pin 6 snaps over to pin 7 **and stays there!** Send the current through in the **other** direction, and 6 snaps over to 4 and stays there. Specs say 0.9 ma. Sample we tested snapped at 0.42 ma. Contacts handle 2 A DC. On **request**, with your order, a brochure on how to design a Wheatstone Bridge circuit, will be sent you **ABSOLUTELY FREE!** Relay shpg wt 1 lb.
Cat. 1306RY14CQ. Brand new. Only **$2.95**

VHF CHECKER WITH SCOPE DISPLAY 150-240 mc

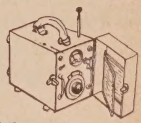
Brand new unit made for Air Forces, so you know that it is made right. Signal generator feeds pulsed RF to your receiver. Output of your receiver is displayed and measured accurately. Built in AC power supply 115 V, any frequency from 50 to 1200 cy. Also use the scope to analyze Hi-Fi amplifiers by pulsing its sweep from your square-wave generator. Each sweep will present one complete pulse from your amplifier's output. Shpg wt 50 lbs. A $1200 set. BRAND NEW, **with all tubes and Instruction book,**
for only **$42.50**

COMMUNICATIONS RECEIVER

RCA's CRV-46151 6-tube superhet. 195 Kc thru 9.05 MC. Very sensitive. Includes RF stage. Sharp and broad selectivity. Has AVC-MVC switching and BFO. You may replace the dynamotor with an AC power supply. Dope sheets and schematics included. Excellent cond. shpg wt. 30 lbs. Cat. No. 3806RE5CQ. Only **$19.95**

MOUNTING RACK **$2.50**

FREQUENCY METER BARGAIN!



BC906 is also a wonderful **Grid Dip Meter** and **Relative Field Strength Meter!** Frequency 144-225 mc. covers VHF communications and upper TV channels. You tune a silver-plated cavity to resonance with a large National Velvet Vernier dial. A probe in the cavity feeds the diode plate of a 1S5 and the rectified negative voltage applied to the grid of the same tube dips the plate current as shown on a 0-500 dc microammeter. The dial is individually calibrated with a curve showing 100 kc per dial division. The entire unit is in a compact carrying case only 12½ x 8¾ x 6½" with a leather handle. Schematic is pasted inside. Includes plug-in antenna. Specs inside for one ea. 1.5 V. and 45 V batteries. This precision laboratory device is in excellent condition **$7.95**

420 MC SPECIALS

RECEIVER: 46ACJ has double-conversion. Uses 13 tubes. Three 446-A Lighthouse Tubes tune 450-600 mc, and you retune only the oscillator. We give you schematic and instructions. First IF of 55 mc is amplified in 2 stages. Second IF of 16 mc has 4 stages. Detector is followed by two stages. Brand new. Includes 8-6AC7, 3-46A, 1-6AG7, 1-6H6. Only **$9.95**

If you have lots of 6AC7's get it less these only at $6.95

TRANSMITTER: 30 Watt TV transmitter. Uses 4-8025, 2 as 250-385 mc P-P osc. driving the other two as PA. The PA is grid modulated by a 3-tube video ampl. and plate-mod by a 3-tube sync ampl. New with all tubes, schematic and instructions for easy conversion to 420.
Only **$15.75**

THE BEST PORTABLE MOBILE 10 & 6

The best for back-pack and automobile. 28-80 MC, AM. Modifications necessary for amateur use are easy and explicitly shown in simple instruction sheet furnished with your order. This is the famous Marine Corps TBY. Original power supply not included, but power supply which you can use is spelled out in these instructions.
Transceiver Unit only, excellent, used condition, with tubes. Special **$14.95**

COMBO DEAL: The above transceiver and instruction sheet PLUS headset and microphone and **AN75 Antenna** all for only **$24.95**

WIDE-PASS TEST SCOPE & 455 KC PANADAPTOR

Both in one compact unit! Brand new with schematic. Also 5.25 and 30 mc. inputs. The only modification required is to replace **only one** power transformer with 60 cy. units we show you how to find in your hell box and how to connect **ID-60/APA-10.** A gem that cost govt. $1,000!
Cat. 14061SC1CQ **$39.50**

Excellent used depot re-packs. Hard to tell from new. Cat. 13361SC1UCQ. **$27.50**

SEND FOR OUR FREE FLYER

All shpts. FOB whs. Send 25% dep. with all C.O.D. orders. Item sub. to prior sale & change of price without notice. Min. order $2.50.

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California Distributors' Stores
G. L. Electronics Inc., 1632 Venice Blvd., Los Angeles
P.A.R.T.S., INC., 8905 San Fernando Rd., Sun Valley

For further information, check number 53 on page 126.

ELSCO



Monitor aurally or Visually
Play Safe
•
Observe FCC Regulations
•
$12.95 amateur net

CONELRAD Monitor as described by Herb Greenberg, March 1956 "CQ"—Not a kit, but completely wired and tested. Use with any Broadcast receiver by tying into voice coil leads. Leads brought out from SPDT relay to tie in buzzer, light or transmitter plate relay.

Your Favorite Supplier or Write

ELECTRONIC SPECIALTIES MFG. Corp.
Worcester 10, Mass.

For further information, check number 65 on page 126.

CQ AMATEURS

PHONE PATCH $3.50 c.o.d.s Accepted
+ Postage

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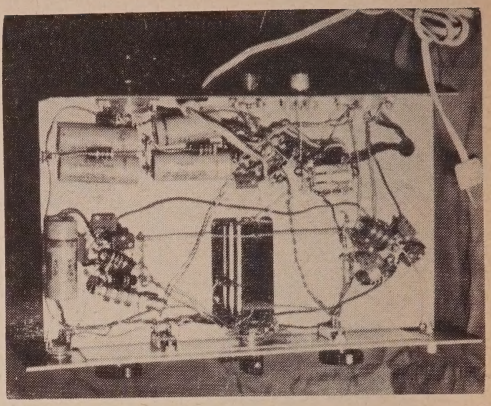
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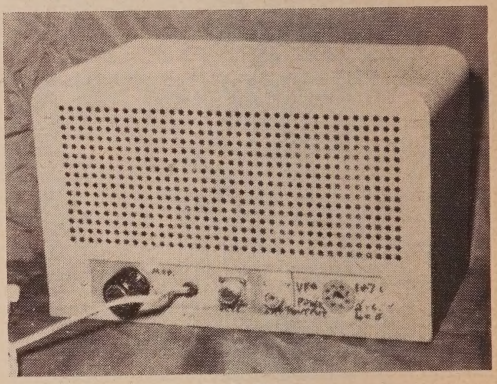
AT-1 [*from page 37*]



Bottom View

to diagram. The wires connecting receiver coaxial socket and antenna coaxial socket to the relay posts should be heavy gauge bare wire, about B & S #12. Connections should be as short as possible. The chassis is then replaced in its case and the transmitter is ready for use.

It is, of course, extremely important not to mistake the receiver socket for the antenna socket, and vice versa when using the equipment. Plugging into the wrong socket can result in burning out the receiver. We have tried to minimize this danger by painting the receiver socket and corresponding plug with a dark shellac, except where electrical contact has to be made.



Back View

The authors have used this built-in relay in their own transmitter for a long time with excellent results. It is felt that the low cost and ease of construction make it a "must" for novice transmitters. ■

Parts List

1 3PDT Relay, Potter and Bromfield, 6 volts No. KL14A
1 Amphenol coaxial socket, Type SO-239
1 ft. Heavy bare wire, about B & S No. 12 gauge
Miscellaneous wire, solder, grommets, etc.

BARGAIN SALE — WHILE THEY LAST



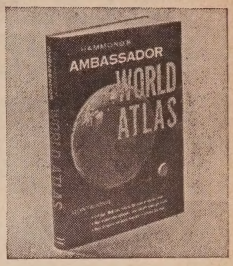
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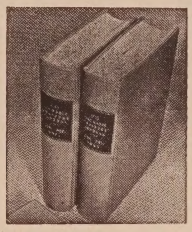


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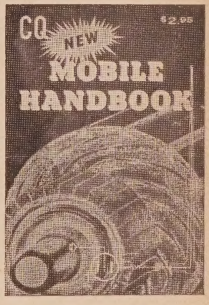


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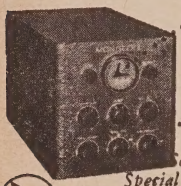
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BARGAINS: Reconditioned with new guarantee. Shipped on approval. Hallicrafters S38 $29.00; S40A $69.00; SX99 $119.00; SX71 $149.00; SX96 $189.00; SX100 $229.00; Viking Adventurer $39.00; Viking II $199.00; S40B; S85; SX88; SW54; NC98; NC183D; HR05; NC300; HQ129X; HQ140X; HQ140XA; GPR90; A54; AF67; PMR6; PMR7; HT9; HT19, Collins 75A3; 75A4; 32V3; many other items. Easy terms. Write for list. Henry Radio, Butler, Mo.

NC-183D NATIONAL RECEIVER. Perfect in and out; not a scratch; make an offer. Frank Lindsay, Arapahoe, Nebraska.

SX-28, BC-348, PMR-6A, Eico Scope, Pilotuner, Superior Signal Generator, RCA Sweep Generator, New 600L. Robert Wolfe, W3HDT, 2506 Hoffman, Baltimore 13, Maryland.

DELUXE GAMMA MATCH GOTHAM BEAMS. 4 element 10 mtrs. $20.00, 3 element 15 mtrs. $30.00. 2 Heathkit antenna couplers, $9.50 each. Knight VFO, $20.00. All above items have instructions. Mosely 20 mtr. loading coil for driven element $4.00. Midget 300 ohm relay, never used $3.50. B and W JVL coils, 10-40 mtrs. 75c each. 3½ inch volt—ohm meter, 0-1000 ohms, $2.25. Crystals in FT243 holders: 3620 kc. 75c, 10,700 kc, 10,650 kc, $1.50 each, PR brand for 14,301 kc., highest offer. Ameco low pass filter with coaxial connectors $2.50. Write to Bill Hazelett, 5322 Ben Avenue, North Hollywood, California.

FOR SALE: Gonset Super-Six 6 or 12 volt $45.00. Noise Clipper $7.00. Master Mobile: HD chrome spring antenna base mount $6.50, antenna base section and whip $5.00, 40 & 80 mtr. coils $2.50. Ballantine PE-103 6 or 12 volt dynamotor with control relay, battery cable and heavy duty fuse holder $25.00. Trades possible, cash preferred. All inquiries answered. Viking Mobile 6v $95.00, 12v $100.00., W5CTB, 2487 Culver, San Angelo, Texas.

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.

ATTENTION MOBILEERS!! Leece Neville 6 volt 100 amp. system alternator, regulator and rectifier, $45.00. Also Leece Neville 12 volt 100 amp. system, alternator, regulator & rectifier $85.00. Perfect condition. Herbert A. Zimmerman, Jr., 115 Willow St., Brooklyn 1, N. Y. K2PAT, ULster 2-3472.

FOR SALE: Army BC-659-H Ten Meter FM Transmitter-Receiver with 6-12 volt Power Supply and BC-728-A receiver (4 channel fixed frequency) with built-in vibrator power supply. David Shaw, 1800 Slaterville Road, Ithaca, New York.

AMERICAN ELECTRONICS MONISCOPE new in factory carton with manual never used. Guaranteed, no reasonable offer refused. Alfred Rugel, WØPRM, 304 N. Park Blvd., Independence, Kansas.

MARINE CRYSTALS. New, guaranteed. Heavy service type. All channels. Airmail delivery prepaid. Specify frequency and holder pin dimensions. Transmitting $2.95, Receiving $2.50. Quantity discounts. Also CAP, Aircraft 3023.5 etc. Amateur $1.00. Crystals since 1933. C-W Crystals, Box 2065, El Monte, Calif.

COMMAND-ARC-5 EQUIPMENT. 4.0–5.3 and 5.3–7.0 Mc. Transmitters with tubes, used, unmodified $2.95. New $5.75. Shipping Weight 12 lbs. Three receiver racks with plugs $1.75. 28 V. receiver and transmitter Dynamotors 95¢. 115 V. 60 cycle Circuit Breakers 50¢. 200 Watt 100,000 ohm high power bleeders new $1.65. New 800 and 203-A tubes $1.75 Wt. 2 lbs. 860 Tetrodes $2.75, 4 lbs. BC-654A Field Transmitter-Receiver $19.75. Lots of meters, crystals, transformers, etc. Write for list. R. E. Woods, 2142 Parkway, El Monte, Calif. GIlbert 8-3139.

SELL 600 Watt Fone CW Transmitter: Pair 813's, B&W HDVL Coils 80-20-15, all band grid circuit, pair 811-A modulators, separate final, modulator, screen, bias power supplies. Bud rack. $350.00. F.O.B., W5BQJ, 214 North Adams, DeWitt, Arkansas.

COMPLETE SSB TRANSMITTER 300 Watts Pep. 15 through 160 bandswitching AB1 final, 10B and VFO. All excellent condition and commercial appearance $250.-00. Send stamped, addressed envelope for details. W7YKR, 207 Highland, Newcastle, Wyoming.

FOR SALE: Bandswitching 75 watt Novice Transmitter $40.00. 120 Watt CW, 60 watt phone transmitter, bandswitching 160 through 10, $100.00. WRL VFO, professionally wired and calibrated $47.50. W8VVD, 467 Park, Birmingham, Michigan.

FOR SALE: Hallicrafters S-72 portable 500 Kc to 30 Mc. 9 tubes 1 RF stage AC-DC and Battery. Battery included $50.00. Paul P. Graves, 34 Grove St., Augusta, Maine.

MULTI-BAND ANTENNA, 80-40-20-15-10, $10.95. Patented. Send stamp for information. Lattin Radio Laboratories, Owensboro, Kentucky.

SAVE! BUY surplus direct from Government at tremendous savings, radio, electronic equipment, parts, power tools, machinery, hundreds others. List, $1.00. Box 169CAF, East Hartford 8, Conn.

MICHIGAN HAMS! Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 327 E. Hoover, Ann Arbor, Michigan. Telephone NOrmandy 8-8696, NOrmandy 8-8262.

PERSONAL HAM SUPPLIES! Pocket printer—name, call, address (ink pad included)—$1.00. 500 miniature labels—name, call, address—$1.00. Lucite desk wedge, name or call, gold on black—$2.75. All postpaid. Santer, 544 East 6th St., New York 9, N. Y.

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TRADE—Revere Model 700 Tape Recorder for ham gear, prefer high power linear, high power two meter transmitter. W9OKM, Henry Kampe, 1207 Oneida Street, Joliet, Illinois.

TRADE: BC221 for Ham Communications type Receiver similar to RME45. Max Strauss, 4025 Wilmington Road, South Euclid 21, Ohio.

BUY, SELL, SWAP — Test or Ham equipment. State needs or lowest price and condition. W4FXQ, 5208 Birkenhead Road, Jacksonville, Florida.

SWAP SRT 75 NOVICE TRANSMITTER for 8 MM movie outfit or what have you. W2WER, 57 E. Utica St., Oswego, New York.

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0Z4	.50	4X500	44.00	6J4	3.65	815	1.89
1B3	.78	5BP1	1.49	6J5	.59	829B	8.39
1L4	.82	5R4GY	1.25	6J6	.59	832A	5.45
1R4	.88	5U4	.59	6K8	1.21	837	1.25
1R5	.78	5Y3	.59	6L6	1.19	866A	1.21
1S4	.78	6AB4	.59	6SA7	.79	872A	1.21
1S5	.68	6AC7	.95	6SJ7	.72	954	.10
2C22	20/$1	6AG7	.97	6SK7	.72	955	.33
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2C40	6.92	6AL5	.59	6U8	.95	1625	.29
2C43	7.84	6AQ5	.66	6V6		1626	.20
2C46	5.29	6AS7	2.95	6Y6	.85	1629	.12
2C51	2.84	6AU6	.69	12A6	.59	1851	2.50
2D21	.68	6BA6	.59	12AT7	.89	5842	$18
2X2	.48	6BA7	.79	12AU7	.79	7193	20/$1
3A4	.48	6BE6	.59	12AV6	.59	WRITE	
3A5	.68	6BG6	1.29	12AX7	.79	4	
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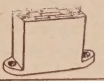
25 Precision Resistors	40 Insulators
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Mfd.	WVDC	Price	Mfd.	WVDC	Price
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.01	1200	.25	.015	2500	.50
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Miniature 12 to 28 VDC Blower Motor & Fan $3.49
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NEW "TAB" BUILT POWER SUPPLIES 1100 VDC@200ma, Brute force filter, oil capacitors, Bleeder, **Bridge** 866A Rectifiers, Fil 6.3V@8A, 125 VDC Bias $48. Kit with chassis $39. 550VDC@200ma $36. Kit $28. Built 2200VDC@200ma DC Supply $66.

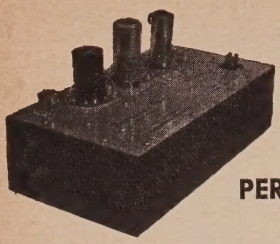
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For further information, check number 89 on page 126.

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2.8 db

A TRULY HIGH PERFORMANCE 2 METER CONVERTER

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Power gain: 2000 (33db)—Sensitivity .085 microvolts will produce a 2 to 1 signal to noise ratio when used with a 5KC bandwidth I.F.; .025 microvolts when followed by a crystal filter.—Image frequency rejection: 60 db.—Rejection of signals at intermediate frequency: 90 db.—Spurious responses: greater than 80 db down.—I.F. tuning range: 14 to 18 mc.—Input impedance: 50-75 ohms nominal—Output impedance: 50 ohms nominal—Power requirements: 6.3 V @ 1.3a, and + 150V DC @ 60 ma. regulated—Tube complement: 417A/5842, 6BZ7/6BQ7A, 6CB6, 12TA7. **$79.95**

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For further information, check number 90A on page 126.



Groth

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Registers Fractions to 99.9 Turns FOR roller inductances, INDUCTUNERS, fine tuning gear reducers, vacuum and other multiturn variable condensers. One hole mounting. Handy logging space. Case: 2″ x 4″. Shaft: ¼″ x 3″. TC 2 has 2½″ dial—1⅝″ knob. TC 3 has 3″ dial—2⅝ knob. Black bakelite.
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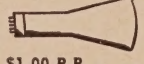
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Cash or trade. Quick action. Top money!
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WANTED

WANTED: Viking Ranger. Will pay $150.00 cash. W8VVD, 467 Park, Birmingham, Michigan.

WANTED: ARC-3, ART13, ARC-1, BC-348, 0-17/ART13 LFO, BC-221, BC-312, BC-610E and other Military Surplus Equipment. Bonus Prices for ARC-3 and 0-17/ART13 LFO. You ship COD, we pay freight. Write-Wire-Phone. James S. Spivey, Inc., 4908 Hampden Lane, Washington, D.C. Phone: OLiver 6-8608.

WANTED: Multimatch modulation transformer for real kool KW. If price fanatically low, will pay postage from anywhere in U. S. Write KØCEM, Box 604, Bismarck, N. Dakota.

WANTED: Hewlett Packard 410B V.T.V.M. and 200 AB Audio Oscillator. R. Zeliff, W2LJB, 415 Prospect Street, Nutley 10, New Jersey.

WANTED: BC-788 400 M.C. Trans-Receiver, I-152 Cathode Ray Indicator, R-101/ARN-6 Receiver, AS-313 Loop with glass cover, ARC-3 units. George McCauley, Mineola, New York.

WANTED: BC-221, BC-348, BC-312, BC-342, BC-610-E, ARN-7, BC-788, ARN-6, APR-4, ARC-1, ARC-3, ART-13. All types surplus or amateur transmitters, receivers, test equipment taken in trade for New Johnson Viking Ranger, Pacemaker, Valiant, Hallicrafters, Hammarlund, National, B&W, Gonset, Elmac, Telrex, Fisher Hi-Fi, etc. Write Tom W1AFN, Alltronics, Box 19, Boston 1, Mass. Tel. RIchmond 2-0048.

WANTED: Used Receivers and Transmitters: Will pay cash or trade. 10% down with up to 24 months to pay. In stock new 75A4's, KWS1's (Collins equipment shipped out of our Cedar Rapids Store.) Demonstrator Johnson KW Amplifier with Desk, Johnson 6N2, Valiant, Pacemaker, B & W, National, Hallicrafters, Elmac, Hammarlund, Gonset, Central Electronics; 10-15-20 Meter Hi-Gain Beams $99.75; 10 meter $18.95 also Mosley and Gotham. Write for bargains in used receivers and transmitters. Ken, WØZCN or Glen, WØZKD, Ken-Els Radio Supply Co., 428 Central Ave., Fort Dodge, Iowa.

WANTED: MEISSNER "Signal-Shifter" VFO, must cover 160. State model, year, condition, price. W1BB.

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CASH FOR BC-312, BC-342, R5A/ARN7, BC-788, BC-610E, BC-939, BC-614, BC-221 and late type test eqpt., receivers, etc. We pay freight charges. Write. Amber Industrial Corporation, 75 Varick Street, New York 13, New York.

AN/APR-4 Tuning Units, Airborne Electronics, Test Equipment, also Surplus and Commercial laboratory items wanted. Engineering Associates, 434 Patterson Road, Dayton 9, Ohio.

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MISCELLANEOUS

ATTENTION: Kits wired. You ship, I wire and test. DX-35 $20.00; DX-100 $45.00. Write for quotations. R. C. Townley, K4BOJ, Box 144, Anniston, Alabama.

130 Copies CQ 1945 to date; 360 copies QST 1927 to date: 37 copies RADIO 1936 to 1942, some gaps, some duplicates. Sell all or part. Henry Shaw, W3FJZ, 1811 Roberta Ave., Abington, Pa.

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QSLs. Samples, dime. Print Shop, Corwith, Iowa.

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QSL's-SWL's, samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

QSL SAMPLES, Dime, refundable. Roy Gale, Waterford, Conn.

QSL's—"Brownie" W3CJI, 3110 Lehigh, Allentown, Pa. Samples, 10c, with catalogue, 25c.

QUALITY QSL's. Samples, 10c. Lee, W5CZA, Box 7171, Oklahoma City, Oklahoma.

QSL Special. Free sample. Nat Stinnette, W4AYV, Umatilla, Florida.

DELUXE QSLs. Petty, W2HAZ, Box 27, Trenton, N.J. Samples 10¢.

QSL's, SWL's, YL-OM's, (samples 9¾) NOVICES, GENERALS, want reasonably priced "tacked-up-type" different, comic, sedate, uninhibited, infrequent, uncommon, curious, peculiar, incomparable, singular, unprecedented, extraordinary, remarkable, unusual. (Whew) Rogers, KØAAB, 737-B Lincoln Avenue, St. Paul 5, Minnesota.

QSLS? SWLS? Largest variety samples 25¢ (refunded). CALLBOOKS (Spring) $4.50. "Rus" Sackers, W8DED, P.O. Box 218, Holland, Michigan.

QSLS. Glossy. Samples 10¢. WIOLU Press, 30 Magoun Ave., Medford, Mass.

letters [*from page 112*]

feel that since your methods are so low that you have to stoop to trickery, then perhaps your material is all fiction and put in for business interests only, not for the betterment of hams.

Please find enclosed an ad for the sale of my station along with the proper payment.

Sincerly,
Tony Morris, W1FDX
Hartford, Conn.

Ed: OK on all that OM, but did you send in the card?

Film

Dear Wayne,

As a result of my second round the world Ham Safari I am producing a Color TV show showing foreign places, action, drama, danger, suspense, and danger. If any hams have any film of this style in 16mm I should like to buy it. Send me information on complete details of subject, number of feet of each scene and what they want for it to me at 912 Glenoaks, Pasadena, Calf. Kodachrome is preferred and for those who want to shoot for me I will supply film and will pay for footage they shoot for me.

Myron Zobel

As you read this you will find your self getting sleepy. Your eyes are tired, your head is heavy . . . heavy . . . heavy . . . you can hardly stay awake. Your eyes want to close, but you can't make them even though you are tired . . . tired . . . tired . . . tired. No matter how hard you try you can't close your eyes. Just relax and rest . . . rest . . . rest. You have been intending to send for a subscription to CQ for a long . . . long . . . long time . . . you will wake up in a few minutes feeling completely refreshed, alive and eager to get busy doing things. You will have an uncontrollable desire to send in a subscription to CQ. This will be more important than anything else to you. When I count three you will awake feeling wonderful . . . you will not remember having read this paragraph . . . you will not even look back over it . . . you will reach for your check book and send in your subscription to CQ . . . Alright now. One . . . two . . . three! Wake Up!

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Our Cover

The Phil-Mont Mobile Radio Club recently put this van into service for emergency communications. Inside are complete stations for two, six, ten and 75/40 meters plus a 30 watt P.A. system, gas heater for winter, roof top antennas for three bands, and a fully stocked galley for the hungry.



Interior of Phil-Mont Emergency Van.

Antarctica

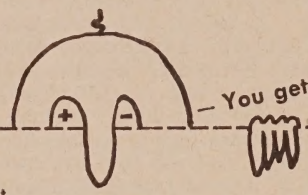
[*from page 64*]

arctica is a continent surrounded by deep oceans of many hundreds of miles' expanse. Antarctica is more barren than the Sahara Desert, which teems with life by comparison. Only a few seals and penguins inhabit the more agreeable coasts. By contrast, the waters surrounding the continent contain the most abundant sea life in the world. They dig that cool water, and the ocean currents sweep rich minerals up from the depths.

Another fact: we're going there, tomorrow morning. Due to arrive at McMurdo Jan. 22. Pretty balmy down there. I understand it hit 19 above the other day. I expect we'll be crossing to Little America, since we received a communique mentioning a seaplane we were to pick up there. Then (for the record) back to N.Z., this time Auckland, and (says scuttlebutt) maybe Tahiti, even Pearl.

73, Jim, K2OLK

Ed Note: Jim left Antarctica on the 12th of February to return to the U.S. There will be one or two more articles about his findings in subsequent issues of CQ.



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City_____ Zone_____ State_____

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New . . . Improved
LA-400-B LINEAR AMPLIFIER



Now gives simplified multiband operation on 75 through 10 meters. Improved TVI suppression . . . free from parasitics or harmonic radiation. Plus new metering circuit for reading RF voltage input, plate current and RF amperes output. Low impedence, untuned input circuit. 400 watts P.E.P. input with more stability and better linearity with only 20 watts drive. Designed around four Modified 1625 Tetrodes. Especially effective for SSB; also delivers high quality signal on AM, PM and CW. Ideal for portable use.

SATISFACTION GUARANTEED

PRICE $199.95
($19.95 down; $16.50 per month)
ALSO AVAILABLE
Modified 1625 Tetrodes $3.75 each

P.S. Sidebanders: Watch for announcement of the V-F-O-MATIC

Makes your 75A-2, 3, or 4 receiver the VFO for your KWS-1, 10A, 20A or Phasemaster II. Automatically keeps your transmitter on the same frequency to which your receiver is tuned. No more calibrating or "talking yourself on" frequency with V-F-O-Matic. *Coming soon! Worth waiting for!*

P & H ELECTRONICS • 424 Columbia, Lafayette, Ind.
For further information, check number 82 on page 126

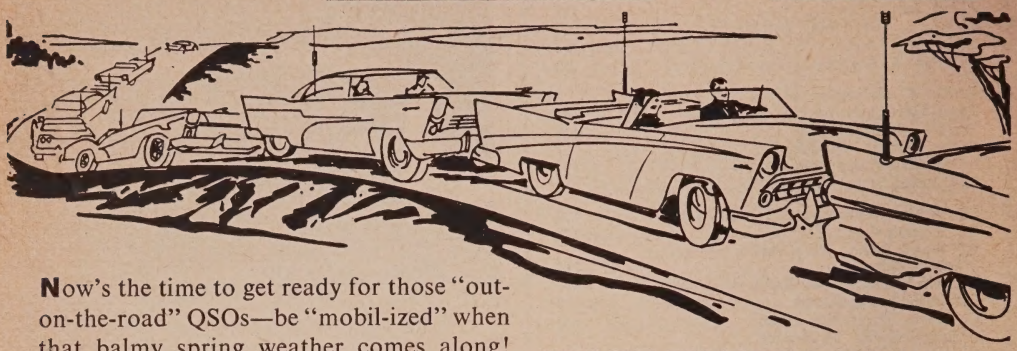
WANTED

BC-610 E to I Transmitter
BC-614 E to I Speech Amplifier
BC-939 A & B Loading Unit
BC-312 BC-342 Receiver
JB-70 Junction Box
BC-221 Frequency Meter

RADALAB, INC.
87-17 124th St., Richmond Hill 18, N. Y.

WE WIRE ANY KIT!
Heathkit DX-100 transmitter. Only **$240.00,** wired and tested. Write stating your particular needs.
THE KitKraft COMPANY
21 Ann Street **New York 38, N. Y.**

it's time to "mobil-ize" *at* ALLIED!

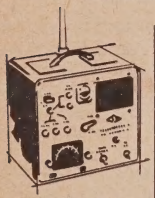


Now's the time to get ready for those "out-on-the-road" QSOs—be "mobil-ized" when that balmy spring weather comes along! Whether you're just getting started in mobile work or "sprucing up" your present road-rig, ALLIED has exactly what you want. We've got *everything* in stock for *immediate* shipment—from a complete deluxe mobile installation to a tube of anti-static powder! And, of course, when you deal with us at ALLIED, you get the *biggest* trade-in offers in Ham Radio and the Easiest Terms.

KING-SIZE TRADES: We're trading highest—just try us. Write today—describe your present equipment—and see what a sweet deal we'll give you on the Mobile gear you want.

EASIEST TERMS: You'll find it light on your pocket when you buy on our liberal Easy Pay Terms. You pay only 10% down (your trade-in will more than cover the down payment)—and the rest in easy budget-sparing monthly payments. So make your Mobile selection now!

ALL FAMOUS-NAME MOBILE GEAR IS AVAILABLE AT ALLIED!



GONSET
G-66
G-77
Communicators
Converters



JOHNSON TRANSMITTERS
240-141
240-152
240-152-2

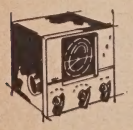


MORROW
5BR-2 Converter
MBR-5 Receiver
MB-560 Transmitter

MULTI-ELMAC
Trans-citer
PMR-7 Receiver

REGENCY
ATC-1 Converter

JAMES POWER SUPPLIES

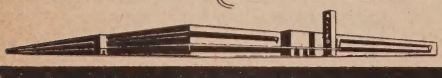


RME-EV CONVERTER

MASTER MOBILE
Antennas
Tuners
Bumper Mounts
Coils

SONAR
Direction Finder
Radio-Telephone

OUR 36th YEAR



MARCH BARGAIN BULLETIN

More of ALLIED's famous values. The lowest prices anywhere on top-quality reconditioned gear—with 90-day new-set warranty—plus top-notch values in surplus items. Quantities are limited—be an early bird—order now.

Super Values in Reconditioned Gear

Central SSB Slicer	$ 39.95
Hallicrafters SX-43	94.95
Hallicrafters S-76	108.00
Hallicrafters SX-96	179.00
Johnson Viking I	119.00
Lysco 600S	79.95
S & W Mobilceiver	34.95
Hammarlund HQ-129X	139.00

Buys in Surplus (New) Gear

DM-42A Dynamotor. 12-14 v. input. Output: 1030 v. DC @ 260 ma. With 6 v. DC input, output is 515 v. DC @ 215 ma.

58 PX 172. Only $9.95
807 Tube. Stock No. **58 E 403** 99c
872A Tube. Stock No. **58 E 406** 99c



KEEP YOUR ALLIED CATALOG HANDY

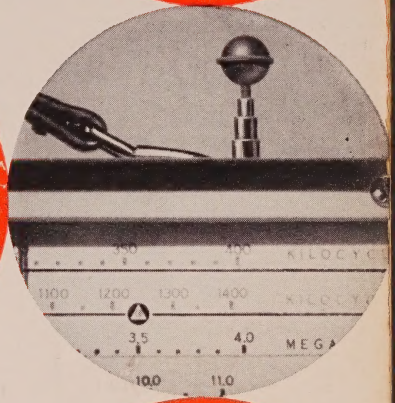
It's your complete Buying Guide to everything in station gear—and the most widely used Electronic Supply Guide. If you haven't a copy of this latest 356-page catalog, write for it today.

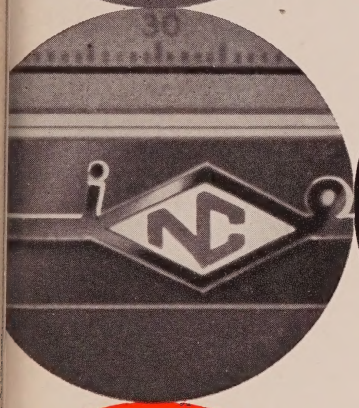
Order from ALLIED RADIO 100 N. WESTERN AVE. CHICAGO 80, ILLINOIS

For further information, check number 51 on page 126.

3 NEW FROM NATIONAL

The first of 3 new receivers from National will be announced on this page next month. Don't miss reading all about it.





You'll want to see this exciting receiver, and examine it. So, if you plan to buy a receiver in the $100 to $200 price bracket, WAIT! You'll want to see what is NEW FROM NATIONAL!

Eight out of every ten U.S. Navy ships use National Receivers



National NC
MALDEN 48, MASS.
tuned to tomorrow

ON BROWNE/New York

For further information, check number 81 on page 126.

Leading Amateur Designs ...USE RCA TUBES



Power Amplifier of the new Hallicrafters HT-32, using 2 RCA-6146's in parallel



RCA-6146 Amateur radio's most popular power tube. 90 watts input, CW; 67.5 watts, 'phone.



New Hallicrafters HT-32 Transmitter

Featuring piezo-electric filtering to reduce unwanted sideband, and a stable bridged-tee sideband modulator, Hallicrafters' new HT-32 pictured here is capable of packing a healthy wallop on SSB, AM, or CW from "ten to eighty." And, it's significant to note that Hallicrafters designers selected RCA-6146's (two in parallel) for the "final."

Here's why Leading Amateur Designs use RCA Power Tubes...

RCA high-perveance power tubes are conservatively rated and built to "take it." They have great reserve of cathode emission. They deliver full power output at relatively low plate voltages. And they're ECONOMICAL and DEPENDABLE.

Is it time to replace tubes—put new pep in your present equipment? Are you planning to build new gear? If so, specify "RCA's"—the tubes that deliver every watt you pay for. Order from your RCA Tube Distributor. For data on any specific tube type, write RCA Commercial Engineering, Harrison, N. J.

TUBES FOR AMATEURS

RADIO CORPORATION OF AMERICA

Tube Division • Harrison, N. J.

For further information, check number 85 on page 126.