ANC

W7KT

CQ

RADIO AMATEURS' JOURNAL

DECEMBER
1956
50c

OL-5771
Bill Reuter



YASME

. . . sails to disaster!

See page 46



Best Wishes for the Best Christmas Ever

A COLLINS SSB rig can be yours now with Collins time payment plan.





Herbert Hoover, Jr., W6ZH/K6EV the undersecretary of state, congratulates the 1955 Award winner, Robert W. Gunderson, W2JI0.

Many Types of Public Service Can Qualify Amateurs for 1956 Edison Award!

JANUARY 3 is closing date for nominations for the 1956 Edison Radio Amateur Award. Because only candidates whom you nominate by letter are eligible for the Award, you will serve the best interests of the entire amateur group by naming a candidate. Nominating time is growing short . . . act soon!

Award recognition can result from many different activities. See the partial list at right. An amateur you know may have distinguished himself in one of these ways, or by other public service. If so, be sure to submit his name.

It is easy to name a candidate. For nominating-letter rules, and terms of the Edison Award, see this same page in the September issue of this magazine. Or write to *Edison Award Committee, General Electric Co., Schenectady 5, N. Y.*

HERE ARE TYPICAL ACTIVITIES THAT MERIT AWARD RECOGNITION:

Emergency communications work in a disaster, such as a flood, hurricane, tornado, or explosion.

Relaying messages from remote points for the benefit of isolated servicemen and civilians.

Civil-defense organization work.

Training novices, or otherwise encouraging and assisting amateur activities and interests.

Helping amateurs or others with their specialized problems, through professional knowledge and experience.

Publishing a book or other literature that contributes to amateur or general scientific knowledge or procedure.

Helping disabled or physically handicapped amateurs or others.

Designing and constructing radio equipment for use by persons in remote parts of the world, who do not have access to regular commercial communications channels.

Weather reporting; radio assistance to state or local traffic and police authorities; co-operation in forest-fire prevention and control.

Progress Is Our Most Important Product

GENERAL ELECTRIC

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CRYSTALS
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2800 WEST BROADWAY, COUNCIL BLUFFS, IOWA

CQ, The Radio Amateurs' Journal

December, 1956
Vol. 12, No. 12

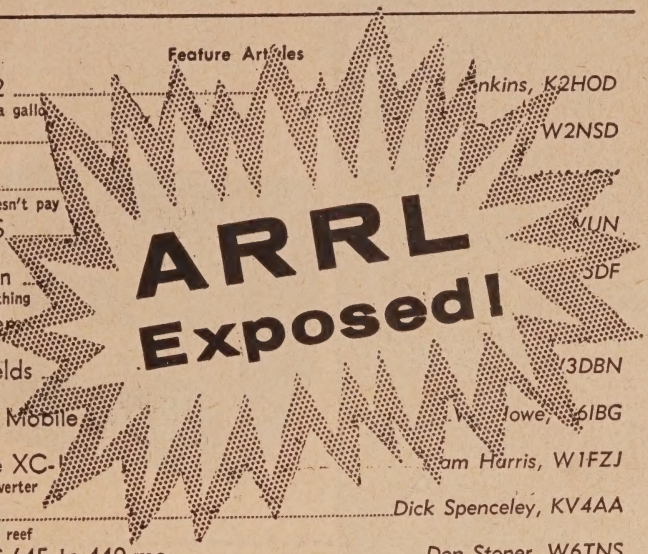
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HEATHKIT

DX-100

PHONE AND CW

transmitter

KIT

FEATURES

Design proven through actual signal reports.

★

Only top-quality components used throughout.

★

5-point TVI suppression, and pi network output to match 50 to 600 ohms.

★

Detailed construction manual for simplified assembly.

★

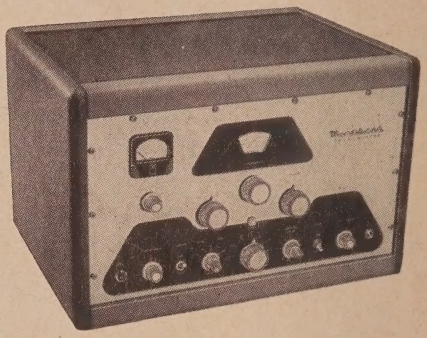
100 watts output on 160, 80, 40, 20, 15, 11, and 10 meters.

★

Attractive and functional physical design.

The Heathkit Model DX-100 Transmitter is rapidly becoming the "standard" ham rig in its power class. The high quality and outstanding performance it offers can be matched only in equipment costing many dollars more. It features a built-in VFO, modulator, and power supplies, and is bandswitching for phone or CW operation on 160, 80, 40, 20, 15, 11, and 10 meters. The kit includes a detailed construction manual, the cabinet, all tubes, prewound coils, and all other parts necessary for construction.

Push-pull 1625 tubes are used to modulate parallel 6164 tubes for RF output in excess of 100 watts on phone, and 120 watts on CW. May be excited from the built-in VFO or from crystals. Features pi network output circuit, illuminated VFO dial and meter face, and 5-point TVI suppression. High grade, well-rated parts supplied. Schematic diagram and technical specifications on request.



MODEL DX-100

$189.50

Shpg. Wt. 107 Lbs.

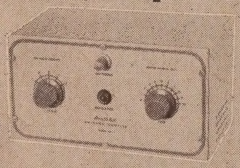
Shipped Motor Freight unless otherwise specified. $50.00 deposit required on all C.O.D. orders.

HEATHKIT

antenna coupler KIT

MODEL AC-1

$14.50



Shpg. Wt. 4 Lbs.

In addition to matching a low power transmitter to an end-fed long wire antenna, this antenna coupler incorporates a 3-section low-pass filter, to attenuate output above 36 mc and reduce TVI. Handles up to 75 watts, 10 through 80 meters. 52 ohm coaxial input—tapped inductor and variable capacitor—neon RF indicator. Ideal for use with the Heathkit AT-1 Transmitter.

HEATHKIT

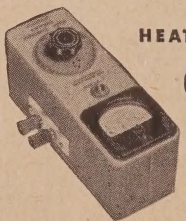
grid dip meter KIT

The Model GD-1B is a time-proven instrument. It will enable you to accomplish literally hundreds of jobs on all types of equipment. Frequency range is from 2 mc to 250 mc. A 500 ua meter is employed for indication, and a sensitivity control and headphone jack are provided. Includes pre-wound coils and rack. Indispensable for the ham, serviceman, and engineer. Extra coils available to extend frequency down to 350 kc.



MODEL GD-1B **$19.50**

Shpg. Wt. 4 Lbs.



HEATHKIT

antenna impedance meter KIT

MODEL AM-1

$14.50

Shpg. Wt. 2 Lbs.

Used with an RF signal source, the AM-1 will enable you to match your antenna-receiver-transmitter system for optimum operation. Will double as a phone monitor or relative field strength meter. Uses 100 ua meter, and covers 0 to 600 ohms. Frequency to 150 mc.

HEATH COMPANY

A Subsidiary of Daystrom, Inc.

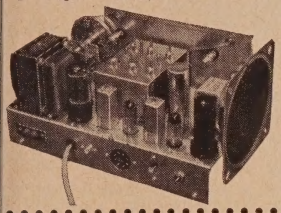
BENTON HARBOR 12, MICHIGAN

HEATHKIT communications-type all band receiver KIT

Slide-rule dial —electrical bandspread—ham bands marked.

Slug-tuned coils and efficient IF transformers for good sensitivity and selectivity.

Transformer-operated power supply for safety and high efficiency.



The Model AR-3 receiver features new high-Q slug-tuned coils, new layout, and new-type IF transformers. The result is high sensitivity and selectivity and better image rejection on all bands.

Transformer-type power supply, electrical bandspread, RF and AF gain controls, antenna trimmer, AGC, BFO, headphone jacks, socket for Q multiplier, 5½" PM speaker and illuminated dial.

SPECIFICATIONS:

Frequency Range—550 kc to 30 mc on four bands.
Tube Complement—1—12BE6 oscillator and mixer • 1—12BA6 IF amplifier • 1—12BA6 second detector, AVC, first audio amplifier and reflex BFO • 1—12A6 beam power output • 1—5Y3 full wave rectifier



$27.95 *(Less Cabinet)* • **MODEL AR-3**
Shpg. Wt. 12 Lbs.

CABINET: Fabric-covered cabinet available. Includes aluminum panel, speaker grille, and protective rubber feet. Measures 12¾" W. x 6¼" H. x 7¾" D. No. 91-15. Shpg. Wt. 5 Lbs. **$4.50.**

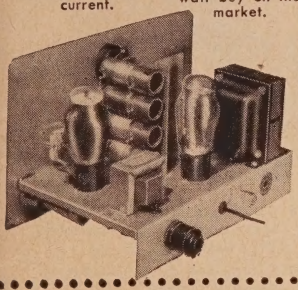
HEATHKIT CW amateur transmitter KIT

Single-knob bandswitching for 80, 40, 20, 15, 11, and 10 meters.

Panel meter monitors final grid or plate current.

Plate power input 25-30 watts.

Best dollar-per-watt buy on the market.



The AT-1 is complete with its own power supply, and covers 80, 40, 20, 15, 11, and 10 meters with single-knob bandswitching. Designed for crystal or external VFO excitation. Incorporates key-click filter, line filter, copper plated chassis, pre-wound coils, 52-ohm coaxial output, panel meter, and high quality components throughout. Easy to build, even for the beginner. Employs 6AG7 oscillator and 6L6 final. Up to 30 watts power input.



$29.50 • **MODEL AT-1**
Shpg. Wt. 15 Lbs.

SPECIFICATIONS:

RF Amplifier Power Input	25-30 watts
Output Connection	52 ohms
Band Coverage	80, 40, 20, 15, 11, 10 Meters
Tube Complement:	
5U4G	Rectifier
6AG7	Oscillator—Multiplier
6L6	Amplifier—Doubler

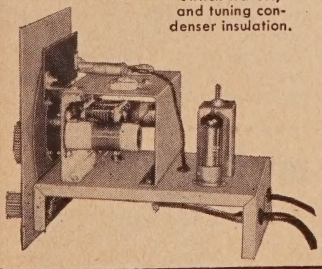
OA2 voltage regulator tube for stability.

Covers 160-80-40-20-15-11-10 meters.

Smooth-acting, illuminated and pre-calibrated dial.

6AU6 electron-coupled Clapp oscillator.

Copper plated chassis—aluminum case—profuse shielding—ceramic coil forms, switch wafers, and tuning condenser insulation.



HEATHKIT vfo KIT

The Model VF-1 features illuminated and pre-calibrated dial scale. Cable and plug provided to fit the crystal socket of any modern transmitter. Covers 160-80-40-20-15-11 and 10 meters with 3 basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Derives operating power from transmitter power supply. Has VR tube for stability. Go VFO for more operating enjoyment.

MODEL VF-1

$19.50

Shpg. Wt. 7 Lbs.



SPECIFICATIONS:

Output Frequencies—1750-2000 kc, 7000-7425 kc, 6740-6808 kc. **Calibrated Bands**—160-80-40-20-15-11-10 meters. **Tube Compliment**—6AU6 Oscillator OA2 Voltage Regulator. **Power Requirements**—250-350 VDC @ 15-20 ma. and 6.3 VAC @ .45 A.

ORDER DIRECT FROM THIS AD . . . OR WRITE FOR FREE CATALOG. Describes more than 65 interesting "build-it-yourself" projects. Amateur equipment, hi fi amplifiers, and the complete Heathkit line of test instruments. Get yours today!

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



Feenix, Ariz.

Deer Hon. Ed:

This are the time of year that the Hon. Bells are starting to jingeling and the Hon. Gentlefellows are starting to caroling. Are also time here in Feenix to be getting reddy for the cold wether.

How's that, Hon. Ed., you never thinking we having cold wether? Gollys yes. Any time now we having to turn off the air condishuners. Not only that, around Christmas time we having temperachures what going way down to forty-five, or maybe even forty. If having reel severe winter temperachures maybe even getting down to freezing.

Ackchewally Scratchi not worrying to much about cold wether, but I are worrying about Xmas. I never seeming to get the Xmas gifts I wanting, no matters what I do. I can be needing new reseever and hinting to everybuddys about it, and end up with a bucketful of toobs. So this year, I desiding not to worrying about what peeple giving me. As long as not getting what I wanting anyway, might as well not getting what I wanting with less trouble and worry.

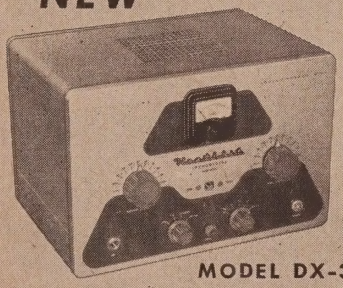
Scratchi also kinda confewsed on what kind Xmas gifts to giving—that is, I are confewsed until resently. After local amchoor club meeting, I now having good ideas what kind Xmas gifts everybuddy likes.

You see, each Desember the local amchoor club having meeting where each person brings a Christmas gift which are they put in pile, and at end of meeting everybuddy gets one gift out of pile. Generally this are reel slicky trick so you can getting rid of all the stuff in your junkbox—or getting rid of such things as toobs which have numbers rubbed off.

This year, howsumever, the Hon. Club President are telling everybuddys in club that he not wanting any old junk to showing up, but he wanting each person to picking out something that are good and that are in working condishun.

That kinda racket aren't hard to beeting, I'm thinking. So, day of meeting, I rapping up

HEATHKIT NEW DX-35 phone and cw transmitter KIT



MODEL DX-35

$56.95

Shpg. Wt. 24 Lbs.

- Built-in modulator for phone operation.
- Bandswitching on 80, 40, 20, 15, 11 and 10 meters. Pi network output coupling.
- Switch selection of three crystals—provision for external VFO excitation.
- Attractive and functional physical design.

This brand new transmitter model provides phone and CW operation on 80, 40, 20, 15, 11, and 10 meters. Plate power input to 65 watts on CW and controlled carrier modulation peaks to 50 watts on phone. Completely bandswitching.

Employs two-stage 12AX7 speech amplifier, 12AU7 modulator, 12BY7 oscillator, 12BY7 buffer, and 6146 final. The buffer stage assures plenty of drive to the final on all bands. Pi network output coupling employed for easy antenna loading. Switch selection of crystals. Crystals changed without removing transmitter cabinet. Husky power transformer and choke are potted, and the circuit is well shielded. Meter indicates final grid or plate current.

Truly a remarkable transmitter package for the price. Ideal both for the novice and for the more experienced operator.

Send for free 1956 Heathkit Catalog describing more than 65 interesting "build-it-yourself" projects.

HEATH COMPANY

A Subsidiary of Daystrom, Inc.

BENTON HARBOR 12, MICHIGAN

HEATHKIT "Q" multiplier KIT

Provides extra selectivity for separating signals, or will reject one signal to eliminate heterodyne. Effective Q of 4,000 for sharp "peak" or "null." Tunes any signal within receiver IF. Operates with 450 to 460 kc IF. Will not function with AC-DC type receivers. Requires 6.3 VAC at 300 ma, and 150-250 VDC at 2 ma.

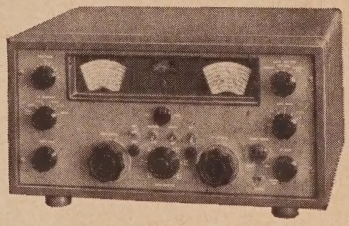


MODEL QF-1

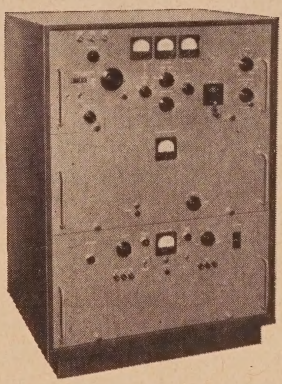
$9.95 Shpg. Wt. 3 Lbs.

Season's Greetings

FOR THIS AND MANY MANY SEASONS TO COME . . . *with the*

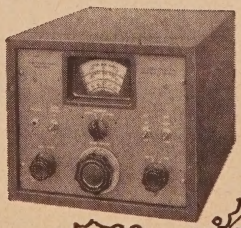


GPR-90



GPT-750

GSB-1





. . . and tnx once agn fer ur fb response

The Technical Materiel Corp.

MAMARONECK, N. Y. IN CANADA: TMC Canada, LTD. OTTAWA, ONTARIO

Designed for

Application



The No. 90651

GRID DIP METER

The No. 90651 MILLEN GRID DIP METER is compact and completely self contained. The AC power supply is of the "transformer" type. The drum dial has seven calibrated uniform length scales from 1.5 MC to 300 MC plus an arbitrary scale for use with the 4 additional inductors available to extend the range to 220 kc. Internal terminal strip permits battery operation for antenna measurement.

JAMES MILLEN MFG. CO., INC.

MAIN OFFICE AND FACTORY

MALDEN

MASSACHUSETTS

a cupple type '27 toobs, an '01A and a '24A toob—all good and in working condishun. After all, that what Hon. Club President saying —good, and in working condishun!!

That nite the Desember meeting going grate guns. Having reel good speaker, the refreshments are hitting the spot, and at the end of the meeting the Hon. Club President, dressed as Sandy Claws, are giving everybuddys their present. I not even bothering to open mine, as having feeling it reel 1/c present, and wanting to open it at home.

All the way home I trying to figyouring what present can be. It are about the size and shape of a book, but nobuddys giving a book, so what can it be? Couldn't be toobs—to hevvy. Couldn't be transister power supply—to lite. By gollies, I can't desiding what it is.

Getting home, I rushing into shack, tareing off rapping paper, and a note are falling out. Rite at top of note it saying "This is not your Christmas Present". Boy, he telling me. What I thinking are a book are reely six books. Six copies of License Manual. I needing those like Hon. Hole in head.

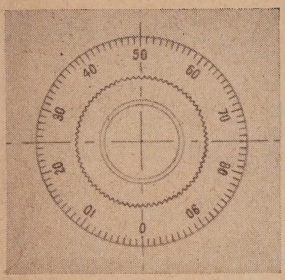
I grabbing up rest of note and reading it. "While these presents are not for you, they can bring you much more joy than any present I could give you. To find this joy and happiness, seek out six young men who would like to become radio amateurs. Give each one of them a book. Then also give them a promise that you will help them to become radio amateurs. The joy that this act brings to them will be multiplied many times and returned to you. Remember: It is more blessed to give than to receive. Signed: The Spirit of St. Nicholas".

Hon. Ed., when I first reeding the note I not knowing what to think. But, after reeding it cupple of times, Scratchi are thinking that this feller knows what he talking about. I think that was a wonderful present to get. And I know at least six fellers that are wanting to becoming radio amchoors, so I won't having any trubble giving away those six license manuals.

The first feller that I going to give one of those books to is the feller that got stuck with Scratchi's present of old toobs. In fackly, I think I calling him now to seeing if home, so I can taking book over rite away. Oh, before I going . . . Merry Christmas, Hon. Ed.

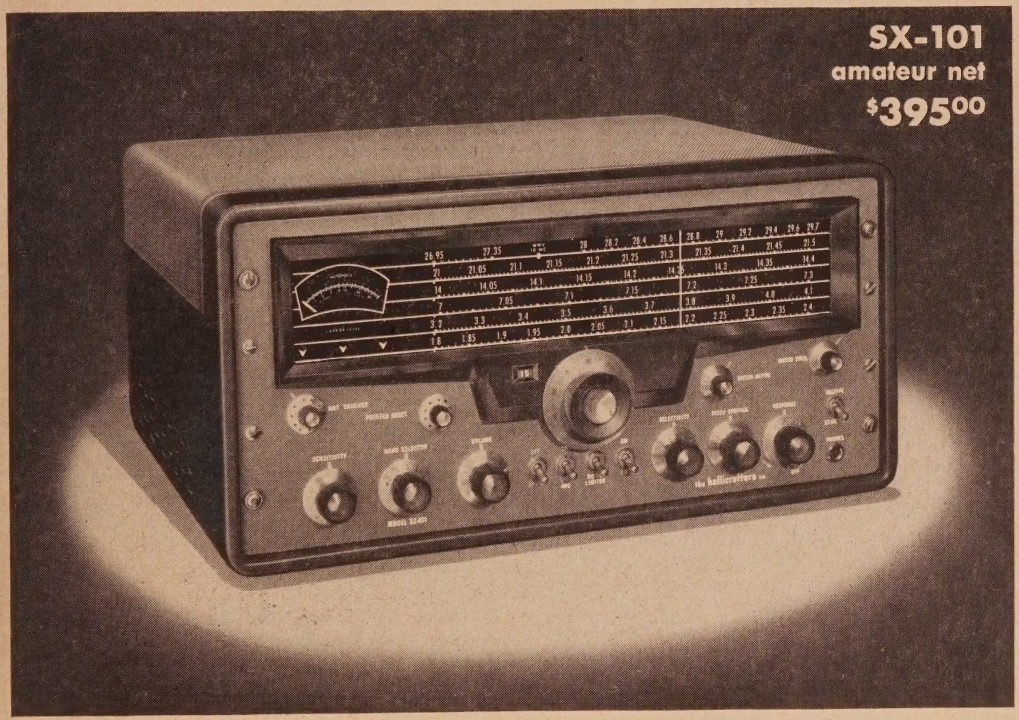
Yours respectively,
Hashafisti Scratchi

CQ CQ CQ CQ . . .
Has a new QTH
300 W 43rd St
JUdson 2-4460



New heavyweight champion!

Hallicrafters new SX-101 receiver employs heaviest chassis in industry... incorporates V.F.O. feature*...has 2000° disc logging counter.



It's all amateur—and as rugged as they come! Hallicrafters presents the complete answer to ham reception, with every essential needed for today and for the future.

First—built like a battleship. Bigger. Heavier. Second—a marvel of stability—the result of 22 years of experience and development. Third—it brings you a long list of new features:

- **Complete coverage of 7 bands—160, 80, 40, 20, 15, 11-10 meters.**
- **Special 10 mc. pos. for WWV, plus coverage of major MARS frequencies.**
- **Exclusive Hallicrafters upper/lower side band selection.**
- **S-meter functions with A.V.C. off.**
- **Tee-notch filter.**
- ***Local oscillator output available for use in heterodyne V.F.O.**

PLUS: Band in use individually illuminated... built-in crystal calibrator... antenna trimmer... dual conversion... full gear drive from tuning knob to gang condensers... five steps of selectivity from 500-5000 cycles... sensitivity—less than 1 microvolt on all bands... direct coupled series noise limiter... 50 to 1 tuning knob ratio... and many more.

For full specifications see it at your Radio Parts Supplier today!

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FROM
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WHERE THE BEST IDEAS IN COMMUNICATIONS ARE BORN

EXPORT SALES: Philips Export Co. 100 East 42nd Street, New York 17, New York

EDITORIAL
WAYNE GREEN

. . . de W2NSD

NEVER SAY DIE

Disaster for Danny

As you may have heard on the air, or will read in the DX Column, the Yasme struck an uncharted reef off the coast of Australia and was a total loss. Fortunately, Danny was picked up by air rescue after he got off a fast QRR by ham radio.

Which leaves Danny sitting at Port Moresby, New Guinea with nothing to his name but the pair of shorts he was wearing when he swam through the shark infested waters to the raft dropped by a plane. Which throws somewhat of a crimp in a 1/c round-the-world DX'pedition. All of our hearts went out to Danny in his time of discouragement. Dick and I talked over what possibilities we could envision. Naturally our first reaction once the shock of the news was over was to try to figure some way to help him get another ship. The cost of one down Australia way would be much less than stateside, but even so, it would take several thousand dollars. We both felt that a plea in the magazine would probably bring enough in donations, but neither of us wanted to ask.

Dick suggested that perhaps someone reading the magazine would be able to swing a deal whereby a company would foot the bill in return for publicity. What say fellows? Start scheming. Here is the chance for someone to be a hero plus the opportunity for some company to get a terrific deal on publicity.

Those Cards

Just under the back cover of the October *CQ*, where people who read a magazine backwards would run into it first thing (sure, I know you read it backwards), was a postcard to be filled out and turned over to the U.S. Government. Then for four (sob) cents each we could buy them up from our mailman when he came to call.

Five percent returns are considered good on such things . . . we have already gotten over 10%. Congratulations gentlemen and fie on you who wouldn't cooperate. Dig back into that old dusty October issue, fill out the card, mark it "Merry Xmas" and send it in. Astound and distress our publisher with a whopping postage-due bill for the yuletide.

I had been planning on running such a card for almost a year, but little items like budget, wrong time of year, etc., kept putting it off. Mainly I wanted to find out how many people were reading our regular columns. Also I wanted to get a check on the phone-c.w. balance of power these days. The last I had heard was a secret report that several years ago the ARRL had found the percentage to be 50-50 on one of their polls. A quick check on a few hundred cards indicates that this is way way off . . . running about 62% for phone to 38% for c.w.

I also note that there are some strong pro and con feelings on some of the departments in *CQ*. Scratchi, SSB, Yasme, and the lighter vein of the magazine drew the most comments in the way of border remarks. Let me take a moment to explain to the Scratchi haters that they might as well face facts: the majority of our readers voted that they liked it, and a great many of them took the trouble to underline their "yes" in that blank. You see, a lot of readers think Scratchi is abolutely *great*. We have a lot of pages in *CQ*, and if you don't dig Scratchi then there certainly is a lot of other articles and departments which will be interesting. The departments you like best a lot of others just can't stand.

Ditto above for SSB and Yasme. SSB is new, and a lot of us like to keep things the way they are now. A lot of us phone men get pretty excited when an SSB'er slides in on the channel and chops a QSO up into frustration for us. On the other hand, a lot of the most active SSB'ers today were the loudest frothers on the band a year or so ago. Danny has about 40,000 of our readers on the edge of their chair to see what is going to happen to him next and many of the cards reported that they read his stories before anything else. If you have been passing up the Yasme series maybe you'd better take a closer look and see what has been going on out there in the Pacific.

The last question on the card was put in as an afterthought to add a touch of humor . . . and was so accepted by most everyone. One or two took me literally and got real mad that I should be asking myself to their house for dinner. Oh well, you never can tell. I got a big kick out of some of the comments that came back to this free dinner question. Here are some at random: "Yes, franks and beans." "All depends on how much you eat." "Throw

[*Continued on next page*]



Season's Greetings from all of us to you...

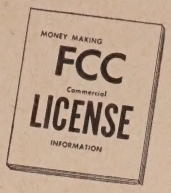
THE 112 AMATEUR RADIO OPERATORS AT EIMAC

K6AFH
K6ANN
K6AVP
W6AY
K6BAS
W6BAX
K6BCM
W6BDN
K6BJ
W6BMU
W6BZ
W6CBN
W6CDT
W6CEO
W6CHE
W6CJL
W6DJI
W6DOZ
W6DUW
W6DVB
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W6OMC
W6OMD
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W6QD
W6QIT
W6QQV
W6RWI
W6RXW
W6SC
W6SCZ
KN6TNK
W6TVS
W6TXT
W6UF
W6UFU
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W6WC
W6WSL
W6YSX
W6ZGV
W6ZIU
W6ZLB
W6ZNP
W6ZPH
W6ZVV
W1KKP
W2CN
W2QA
K4AIM
W4DLL
W4TO
W7EPM
W7ESK
W7HDI
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WN7YWL
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Paul Reichert, West Salem, Ohio	2nd	10 weeks
Harold Phipps, LaPorte, Indiana	1st	28 weeks

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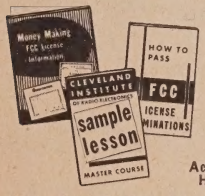
Letter from nationally-known Airlines: "Radio Operators and Radio Mechanics are needed for our company. Periodic wage increase with opportunity for advancement. Many company benefits."

OUR TRAINEES GET JOBS LIKE THIS:

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"Since enrolling with Cleveland Institute I have received my 1st class license, and am now Chief Engineer of Station WAIN. Thanks to the Institute for making this possible."

Lewis M. Owens, Columbia, Ky.



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Name Age

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Special Tuition Rates to Members of Armed Forces

Editorial [*from page 10*]

the bum out." "Salami sandwich." "If he can find seat (5 kids)." "Also two free snorts of bourbon." "OK, only one though." "Oh, all right." "When?" "Steak." "Also cot in shack for overnight visits." "NONONONONO" "Cold sardine and peanut butter sandwich with day old coffee." And a lot more. About 80% gave a yes, assuring me dinners for the rest of my life. Bless you all, I'll get around as soon as I can.

Syracuse VHF Round-up

The Syracuse VHF Club held their second VHF Round-up on October 6th, and a wonderful affair it was. Most of the VHF luminaries from the east and middle west were there. I'd say they had about 250 at least. The major technical talk was given by W9WOK, with W1FZJ acting as M.C. I was also pleased to meet W1RFU, W1RUD, W1PYM, and VE3DIR there.

The prospect of the 280 mile drive to Syracuse was discouraging . . . six hours up and six hours back. Then, the night before the Round-up I went out to the VHF Institute club meeting in Maspeth, Long Island to hear Ed Tilton talk about scatter, aurora, etc. Sitting behind me was John Sutter W2MHM, long a VHF'er, and proud owner of the most beautiful plane at our local seaplane base . . . Luscomb 8F. I told him about the Roundup and suggested we fly up the next morning. He said he would check the weather and let me know.

About daybreak Saturday the phone rang . . . the weather was perfect . . . get right down to the plane. Pausing not to wonder where I'd put my winter underwear, I quickly packed my toothbrush and a vest and hot footed it to the base. We gassed up, called the Syracuse gang to let them know when we should arrive, and took off with John Piloting and me Navigating. Flying across New York State turned out to be quite a handfull for the navigator, but we got there right on time. We landed about two blocks from the meeting, pulled the plane up on shore, and were driven to the Roundup by one of their more airminded members, Henry Putchi, ex-OE1KR, who has just two more years to wait for his citizenship and ham ticket.

I met quite a gang of fellows I had worked on two meters there. There were those that I had run into on aurora, those from my visits to Mt. Washington and Mt. Mansfield, and my trip to Pittsfield last winter.

After the technical talks in the afternoon they served a fine chicken dinner . . . a whole half chicken . . . large size . . . plus all the seconds you could eat. The after dinner speaker was a professional in such matters and kept everyone laughing. It was the first time I have ever heard a talk on hanging and embalming by an after dinner speaker. We were treated

[*Gad, even more on 111*]

With the NEW Model HT-30 Transmitter/Exciter

HALLICRAFTERS RAISES THE STANDARDS OF SSB TRANSMISSION

For almost a quarter of a century the constant goal of Hallicrafters engineers has been the improvement of receiving and transmitting equipment standards. This policy of continuous improvement is again reflected in the design and engineering of Hallicrafters amazing new HT-30 Transmitter/Exciter.

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- SSB, AM, AND CW ARE ALL PROVIDED FOR IN ONE COMPACT UNIT. Front of panel full function control allows selection of AM, CW and upper or lower side band. Only 18" x 9¾" x 12"; the unit is powerful—35 watts peak output on SSB.

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Questions and Answers On A Mosley 3-Band Beam For 10, 15 & 20

Q. — *Why doesn't MOSLEY make a 3–band beam for 10, 15 and 20?*

A. — We do, . . . now. It's our Model VPA-73, available for immediate delivery.

Q. — *Why were you so long bringing out this 3–bander? Other manufacturers have had them for months!*

A. — Sad, but true. Sometimes we're "fustest with the mostest"—sometimes not. But ALWAYS, we make sure OUR design is sound and thoroughly proven BEFORE we ask our Ham friends to part with their hard-earned money. You see, we're Hams too!

Q. — *What are the design features of MOSLEY multi-band beams that offer advantages to the Hams?*

A. — There are numerous advantages:

1. Most MOSLEY multi-band beams, including the VPA-73, may be fed with one coax line or with separate lines to each driven element. It is advantageous to use separate feed lines where second harmonics or sub-harmonics generated in the transmitter cannot be easily suppressed. Let's take an example: Suppose you are doubling in the final and working 20 meter phone on 14,225 kc. Chances are, your rig is delivering a peach of a signal on 28,450 kc. With a beam capable of radiating on both bands and being fed with one coax line how can you possibly prevent your phone signal from cluttering up the 10 meter CW band?

2. All coils are machine wound on ceramic forms and completely weatherproof. They will not de-tune due to coil form distortion or to rain or snow.

3. A minimum of condensers are used and they are best quality air-insulated variables with locking rotors.

4. Inductive coupling of line to radiating element assures maximum energy transfer at any reasonable SWR regardless of antenna resonant frequency and operating frequency.

Q. — *What gain do you claim for the MOSLEY VPA-73? Be honest now!*

A. — We don't claim . . . we PROMISE you will get 7.5 db. forward gain and 20 db., or better, front-to-back IF you assemble your MOSLEY beam properly and install it the way a beam should be installed!

Q. — *Is that last remark just a "gimmick" to put you in the clear in case the beam doesn't deliver?*

A. — No Sir! A beam antenna has very little environmental tolerance. It is designed to function efficiently at a certain minimum height and minimum distance from objects that could interact with it. MOSLEY beams are adjusted and pre-tuned to give maximum performance at 35', or more, above ground and away from grounded metal objects. To avoid high SWR and poor front-to-back performance with ANY factory pre-tuned beam, follow the manufacturer's installation suggestions as nearly as possible.

Q. — *What are the specifications of the MOSLEY VPA-73?*

A. — 7 elements in all, working in combinations of 3 elements — director, driven and reflector — on each band. Maximum element length is 24' 6" and the aluminum boom is 12' long. Weight of beam is 61 pounds.

Q. — *How much?*

A. — Amateur Net $151.20, less coupling yoke which means you use three separate 52 ohm coax lines. $178.38 with coupling yoke for single line feed.

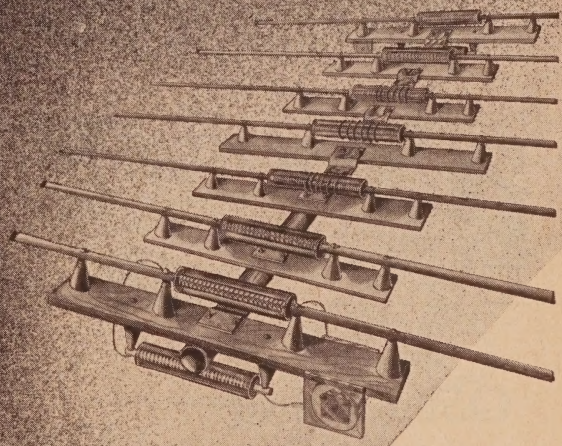
Q. — *Thanks for the dope! Where can I buy a MOSLEY Model VPA-73?*

A. — See your favorite Ham Dealer!

DEPENDABILITY

for 10, 15 & 20

Model VPA-73



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Letters . . . to the editor

Dear Editor,

During the recent typhoons the emergency net in KR6 land (Okinawa) swung into operation when the extreme winds cut all communications and power lines for three days. In the over 100 mph winds most Ham stations were put out of commission except KR6QW, PO and QX who maintained contact with Formosa and Japan as well as weather aircraft and local wire switchboards.

Chet Bibbins, KA2EB

Hi Wayne;

The National Bureau of Standards publishes a monthly news Bulletin. This bulletin, sixteen pages per issue, is concerned with reporting work being done by the bureau. It is sent to the subscriber for one dollar per year. True, it is not an amateur publication but many of its articles have "Amateur Appeal." Some recent articles have concerned "Forward Scatter Technique in Communications," the new WWV Standards only recently authorized and techniques in related fields.

Orders or inquires should be addressed to:

Superintendent of Documents
Government Printing Office
Washington 25, D. C.

Drexel Yandell, W5LOA

Loran v. 160 Meters

Dear Editor:

K8AEC's letter anent Loran and ARRL Bulletin Number 547 deserves some comment. Mr. Reed is entitled to his opinion but I think in the interests of fair play that there should be more information considered. I feel that the position of the FCC should be clarified and that a brief discussion of the Loran side is in order. I'm sure K8AEC agrees. So . . .

First—The FCC has control of frequencies only in so far as use by non-government interests is concerned. The assignment and use of frequencies by agencies of the *Federal* Government is the responsibility of the President of the United States under Section 305 of the Communications Act of 1934, as amended. There has been no change in the basic sharing agreement as reflected by footnote 23 to the FCC's Table of Frequency Allocations which plainly states: "The amateur service may use, in any area, whichever bands, 1800-1825, 1875-1900, 1900-1925, or 1975-2000 Kc., are not required for loran in that area, in accordance with the following conditions:

(1) The use of these frequencies by the amateur service shall not be a bar to the expansion of the radionavigation (Loran) service;

(2) The amateur service shall not cause harmful interference to the radionavigation (Loran) service;

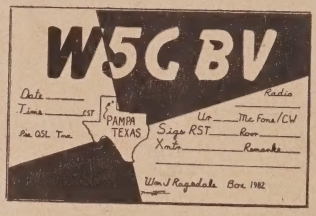
(3) Only types A-1 and A-3 emission shall be employed;

(4) Amateur operation shall be limited to . . . (There follows the familiar table of frequency and day/night power for various U. S. areas)

(b) The provisions of (a) above shall be considered as temporary in the sense that they shall remain subject to cancellation or revision, in whole or in part by order of the Commission without hearing whenever the Commission shall deem such cancellation or revision

[*Continued on page 18*]



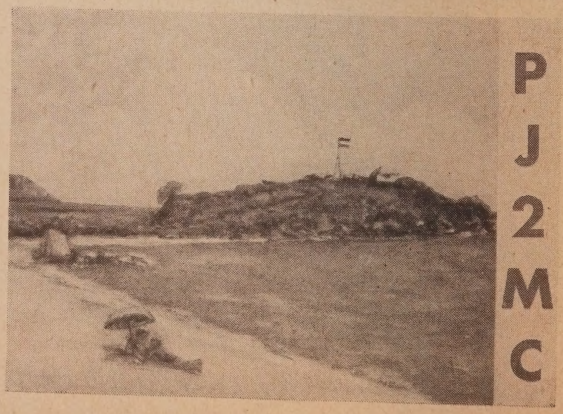




QSL Contest

There were about 150 losers this month. Let's gather our forces and really crush the QSL Contest editor with losers. Who knows, maybe he will lose his senses and let yours slip through. Please do not attach large denomination bills or call long distance to push your hopeless case. The winner must suffer through two more long years of CQ. Runners up receive our lavish thanks for filling up space in CQ for free.

WINNER





THE MORROW MAH

ARMCHAIR HAMSHACK

Here's the one outfit you can get now and be equipped to communicate voice or CW the year 'round wherever you happen to be! It's the most compact fixed station you've ever seen. What's more, it can be removed in a jiffy to take along as a portable . . . or mount in your car for mobile use.

Transmitter is extremely stable, 90-watts CW, 60-watts phone, covers 80, 40, 20, 15 and 10 meters. Features simplified tune-up and push-to-talk convenience.

Receiver has exclusive Morrow "squelch circuit" to eliminate interstation noise, is sensitive to ½ microvolt on all bands.

AC Power Supply has built-in speaker, matching finish.

End Table has mar-proof mahogany sliding top, blending zolotone finish, separate shelf-compartment for log books and Conelrad monitor unit. MAH includes mike, connecting cables. A $644.90 value. **Amateur net, $595.00**

MAH with table of solid mahogany, maple or birch veneer. Amateur net, $675.00

(Antennas, mobile power supply and Conelrad monitor not included)

FOR EASY TERMS — SEE YOUR JOBBER

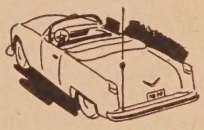
One compact outfit



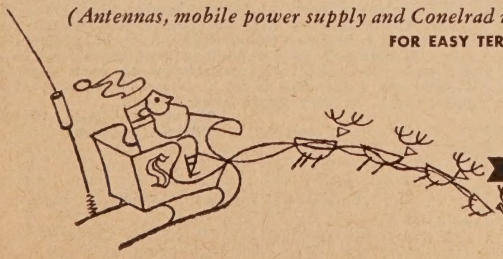
for fixed station



portable . . . or



mobile operation



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MORROW

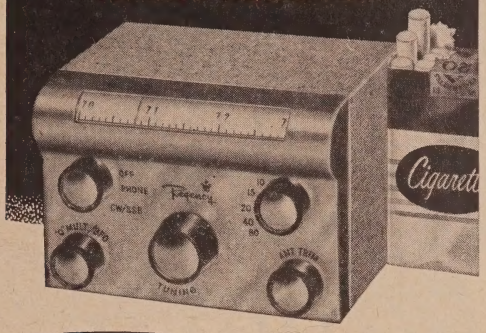
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• Can be used with any receiver, anytime, anywhere. Bracket available for mounting on car steering column.

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Dept. C, 7900 Pendleton Pike, Indianapolis 26, Indiana

letters [from page 16]

to be necessary or desirable in the light of the priority within this band of the Loran system of radionavigation". The present needs of the Loran service in the areas discussed in ARRL Bulletin Number 547 are such that the entire portion of the spectrum, 1800 to 2000 Kc., must be utilized. Part 12 of the Amateur Service rules are couched in almost identical language.

Second:—Loran techniques have been vastly improved in the past several years, particularly with regard to narrower pulse widths to provide the required accuracy. In any pulsed system the sidebands necessary to transmit the necessary "fidelity" are of a much higher order than required for normal A-1 and A-3 transmissions. Present design is based on the minimum spectrum width consistent with system accuracy.

Third:—The FCC, per se, cannot "outlaw" Loran service. And, in fact, no foreign country has "outlawed" the loran type of navigational aid. Actually, Loran service is now available in all world areas which have a high density of sea and/or air traffic. There is no perfect electronic aid to naviagation. Some excel in one feature, others in another. Loran's principal virtues, good range, system accuracy and reliability are not, to my knowledge, possessed by any other existing system.

Fourth:—If and when a better system for long range electronic navigation evolves and loran or its successor moves to another part of the spectrum, I feel the amateur will be considered when 1800 to 2000 Kc/s is vacated. Surely, the amateurs have an excellent prior use claim.

Fifth:—I have been an active amateur for 45 years and I hold to the right of any citizen to write to his duly elected representatives in the Congress of the United States when he feels that his rights have been illegally abridged. But I honestly don't feel that this is one of those times. However that is my view and Mr. Reed is entitled to his.

E. B. REDINGTON, W4ZM

KWS-1

Dear Wayne:

Here is a brief but very important message to all KWS-1 owners.

Sooner or later (usually sooner) that 3TF4A ballast tube is going to burn out. When it does burn out, you should have a spare to plug in. If you do not have a spare ballast tube, you need not stay off the air. Break the burned out ballast tube and carefully trim the glass down so that the base button with the pins remains. Cut the two vertical wires that hold the mica spacers and ballast wire, leaving about ¾" above the base. Slip lugs 3 and 4 of a miniature 7 pin socket over these two vertical wires and crimp the wire around the pins to form a tight connection. Plug in any 7 pin miniature tube of the 6.3 volt, .3 ampere current rating into the 7 pin miniature socket. Plug this assembly back into the ballast socket and you are back in business. Immediately order spare ballast tubes!

Tubes that may be used include the following: 6AG5, 6AL5, 6AU6, 6AV6, 6BA6, 6BA7, 6BE6, etc.

Lloyd Jones, W6DOB
Santa Barbara, California

Dear Wayne:

Would it be possible to get permission to use the cartoon ideas in the New Mobile Handbook in our Club Newspaper "Splatter". I say 'IDEAS' advisedly since when I get thru cutting them onto a stencil for the mimeograph they may be very little like the original. Hi.

I made the mistake of taking Tommy Tomkins advice in his CQ article on club newspapers and, as our first year ends, I find myself woefully short of cartoons to steal. Tommy was good enough to send me old copies of the paper he edited with permission to grab anything I could use. I did. This is my first experience with newspaper work. In very small doses it's fun.

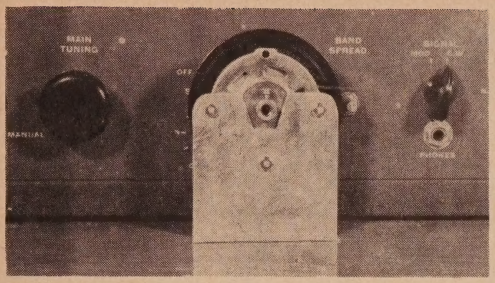
Marvin F. Hash, W7YHS
Billings, Montana

Ed: OK, steal 'em.

Bandspread Tuning the SP-400-X

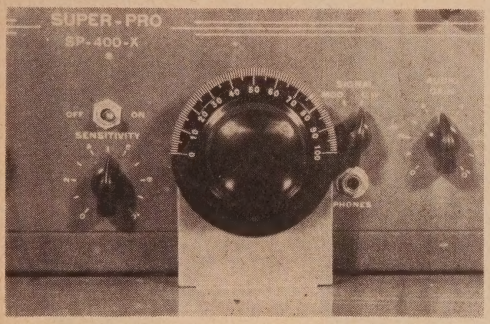
Gentlemen:

When I switched to SSB it became apparent that deciphering the "duck talk" was going to require some



genuine hairline tuning accuracy. The station receiver, an SP400X Super Pro, had good bandspread characteristics, but not quite the slow tuning rate and "feel" required for tuning SSB.

About fifteen minutes of simple work and a cash outlay of about $2.50 resulted in the device shown. It is adaptable to most any receiver having a one quarter inch bandspread shaft and requires absolutely no modification of the receiver. The results were a gratifying, smooth, sharp tuning of SSB and CW.



The heart of the attachment is a *National* Velvet Vernier dial which in this case had a four to one ratio (four turns of the dial resulted in one complete turn of the bandspread shaft). As can be seen in the photographs, a small metal bracket was cut and drilled to support the dial. Dimensions are not critical and the height will vary from receiver to receiver. A one half inch tab was formed at right angles to the bottom of the vertical support to provide a "foot" for the bracket against the operating table. This foot need not be screwed down if a careful fit is made. Thus the unit can be quickly detached for rapid band scanning occasions.

Kenneth R. Bell, W9OKB
Niles, Illinois

Gentlemen:

Having been disgusted with Ignition Interference on my Mobile Receiver—I took your advice, which appeared on the Cover of the 1956 October Issue—and went horsemobile.

Now, I am in trouble again—How can I get rid of interference caused by impact of horseshoe nails striking cobble-stones and street car tracks? Can I get non-metallic harness for horses?

Charlie, W3THU
Pittsburgh, Pa.

TBY Conversion

Gentlemen:

I have a problem which requires the utmost in technical knowledge. Could I convert my TBY-2 into a small boat anchor (October *CQ*, page 16) using ½" Manila line? Please enlighten me. Hi-hi.
P.S. How about a door stop?

Ed: While the uselessness of this equipment for radio purposes well qualifies it for anchor use I would suggest that it will perform more adequately as a door stop since it is of rather light construction. Certainly ½" Manila line will suffice . . . but be sure to remove all tubes for this conversion for they will have a strong tendency to bring the unit to the surface . . . this is

[*Continued on page 114*]

NOW! One Coil For— 10-15-20-40 and 75

Bassett ALL BAND VACUUM COIL Tops in Mobile

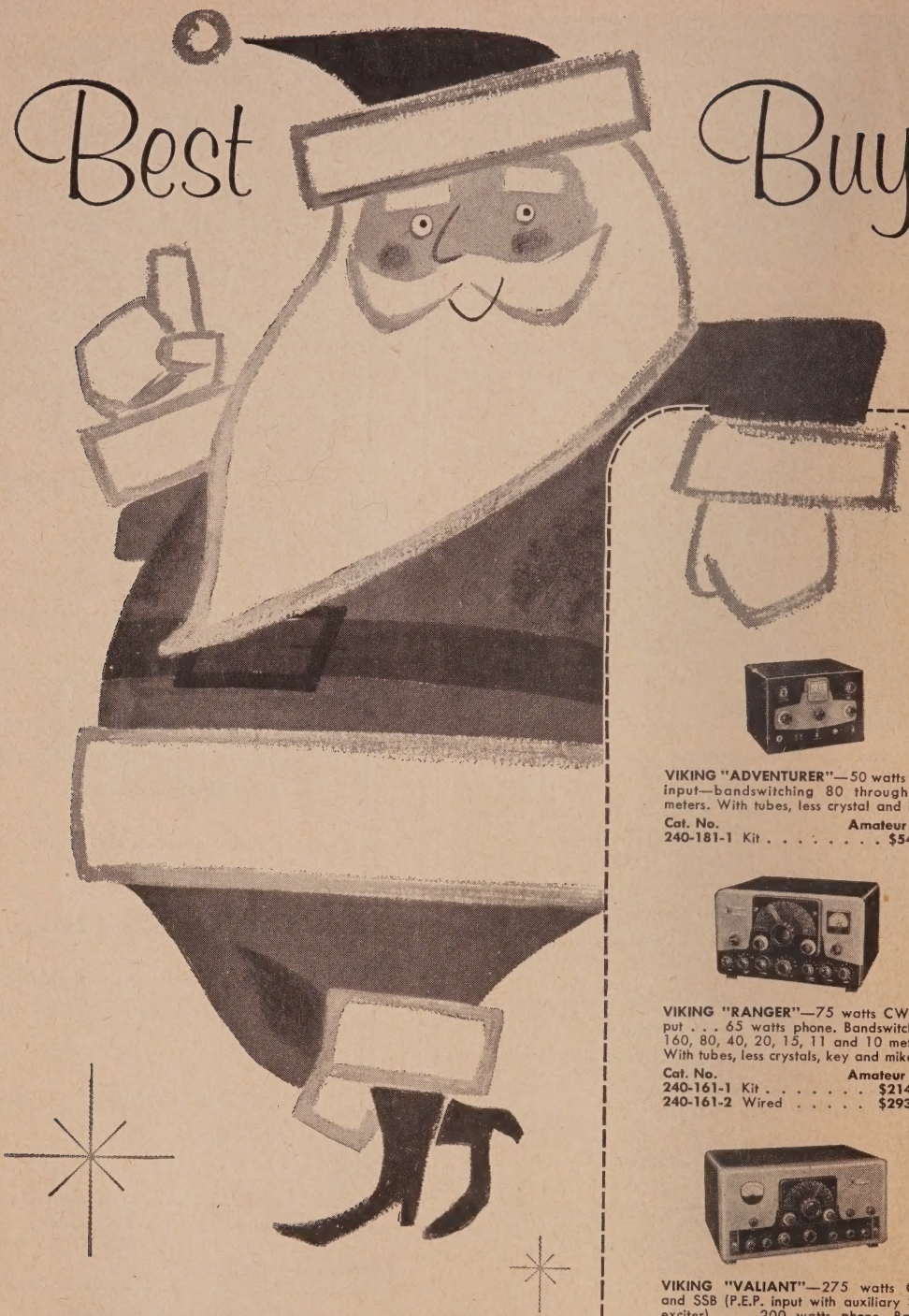


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- Instant band change
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- Standard ⅜-24 end fittings
- Use with your present 36 inch bottom rod and 60 inch top rod
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VIKING "ADVENTURER"—50 watts CW input—bandswitching 80 through 10 meters. With tubes, less crystal and key.

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

VIKING "RANGER"—75 watts CW input . . . 65 watts phone. Bandswitching 160, 80, 40, 20, 15, 11 and 10 meters. With tubes, less crystals, key and mike.

Cat. No.		Amateur Net
240-161-1	Kit	$214.50
240-161-2	Wired	$293.00

VIKING "VALIANT"—275 watts CW and SSB (P.E.P. input with auxiliary SSB exciter) . . . 200 watts phone. Bandswitching 160 through 10 meters. With tubes, less crystals, key and mike.

Cat. No.		Amateur Net
240-104-1	Kit	$349.50
240-104-2	Wired	$439.50

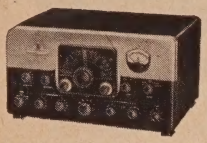
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Top performance isn't simply a matter of watts. Only carefully integrated equipment design can be counted on to develop effective power that punches your signal home, every time. That's what we call "communication power" . . . and your Viking transmitter 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 efficiency output circuits, Viking transmitters deliver *full* communication power!



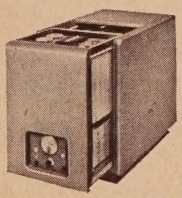
VIKING "PACEMAKER"—90 watts CW and SSB (P.E.P.) . . . 35 watts AM. Bandswitching 80 ,40, 20, 15 and 10 meters. With tubes and crystals ,less key and mike.

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



VIKING "FIVE HUNDRED"—600 watts CW . . . 500 watts AM and SSB. (P.E.P. input with auxiliary SSB exciter) Bandswitching 80 through 10 meters. With tubes, less crystals, key and mike.

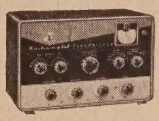
Cat. No.		Amateur Net
240-500-1	Kit	$649.50*
240-500-2	Wired	$799.50*



VIKING "KILOWATT" AMPLIFIER—1,000 watts CW, AM and SSB. Continuous tuning 3.5 to 30 megacycles. Wired and tested, with tubes.

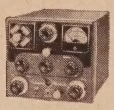
Cat. No.		Amateur Net
240-1000	Wired	$1,595.00

Matching desk and 3 drawer pedestal. **Cat. No. 251-101-1** FOB Cory, Pa. **$123.50.**



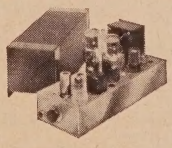
VIKING "6N2"—150 watts CW input, 100 watts AM. Bandswitching 6 and 2 meters. With tubes, less crystals, key and mike.

Cat. No.		Amateur Net
240-201-1	Kit	$119.50 *
240-201-2	Wired	$159.50 *



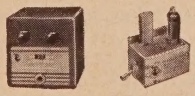
VIKING "MOBILE"—60 watts PA input. Bandswitching 75 through 10 meters. Less tubes, crystals, mike and power supply.

Cat. No.		Amateur Net
240-141-1	Kit	$99.50
240-141-2	Wired on special order only.	



VIKING AUDIO AMPLIFIER—Self-contained 10 watt speech amplifier. Complete with power supply and tubes.

Cat. No.		Amateur Net
250-33-1	Kit	$73.50
250-33-2	Wired	$99.50

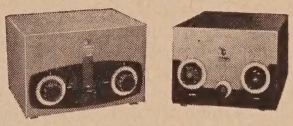


"SIGNAL SENTRY"—Monitors CW or phone signals up to 50 mc. Powered by receiver. With tubes.

Cat. No.		Amateur Net
250-25	Wired	$18.95

CRYSTAL CALIBRATOR—Provides accurate 100 kc check points to 55 mc. Requires 6.3 volts at .15 amps. and 150-300 volts at 2 ma. With tube.

Cat. No.		Amateur Net
240-28	Wired	$17.25

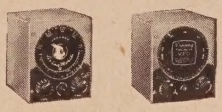


KILOWATT "MATCHBOX"—Handles unbalanced lines from 50 to 1200 ohms—balanced lines from 50 to 2000 ohms. Self-contained—bandswitching 80 through 10 meters.

Cat. No.		Amateur Net
250-30	Wired	$124.50

275 WATT "MATCHBOX"—Bandswitching 80 through 10 meters. Matches balanced lines from 25 to 1250 ohms—unbalanced lines from 25 to 3000 ohms.

Cat. No.		Amateur Net
250-23	Wired	$49.85

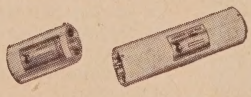


MOBILE VFO—Extremely stable, rugged, temperature compensated. Requires 6.3 volts at .45 amps. or 12.6 volts at .25 amps. and 250-300 VDC at 20 ma. With tubes.

Cat. No.		Amateur Net
240-152-1	Kit	$33.95
240-152-2	Wired	$49.95

TWO METER VFO—Replaces 8 mc crystals. Exceptionally stable. Power requirements: 6.3 volts at .3 amp. and 250-325 volts at 10 ma.

Cat. No.		Amateur Net
240-132-1	Kit	$29.50
240-132-2	Wired	$46.50



SWR BRIDGE—Provides accurate measurement of SWR for effective use of low pass filter and all antenna couplers.

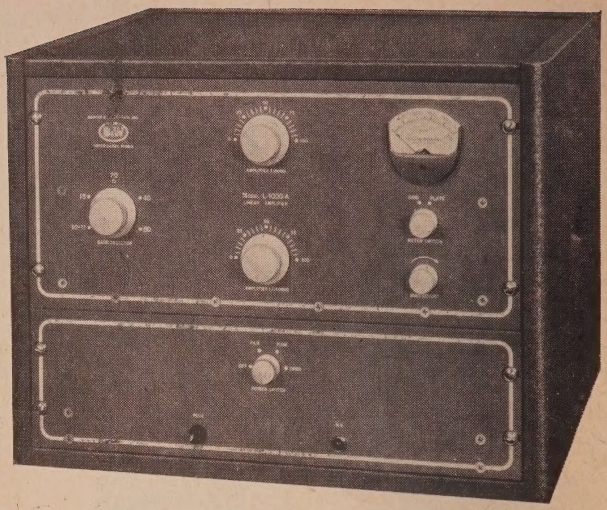
Cat. No. 250-24 . Amateur Net $9.75

LOW PASS FILTER—Handles more than 1000 watts RF—75 db or more attenuation above 54 mc. Impedance: 52 ohms.

Cat. No. 250-20 . Amateur Net $13.50

*Price subject to change at time of delivery

TABLE-TOP KILOWATT AMPLIFIER



The B & W Model L-1000-A is a carefully engineered, Grounded Grid Linear Amplifier with a power packing punch which will stand out in signal eloquence whenever the going gets rough. The clean design eliminates unnecessary circuits, yet all essentials have been included to give you long, dependable performance.

Just consider these features: 1000 watts input SSB, 875 watts CW, 375 watts AM . . . completely self-contained including power supply! . . . bandswitching on all amateur bands 80 to 10 meters inclusive . . . pi-network final . . . broadbanded input—requires no tuning . . . all operating controls of front panel . . . controllable bias supply . . . completely shielded for TVI suppression . . . requires only 80 watts excitation . . . ideal for use with any transmitter nominally rated at 100 watts such as B & W 5100 Series, Collins 32V Series, Johnson Viking I & II, etc.

Net Price $460.00

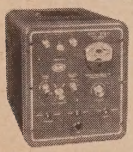
MODEL 5100-B A SUPERLATIVE AM-CW TRANSMITTER



• high level push-to-talk AM telephony . . . 140 watts input • clean CW keying – break-in on all bands . . . 180 watts input • sparkling SSB . . . 180 watts input . . . when combined with the 51SB-B single sideband generator • bandswitched throughout • integral VFO or crystal frequency control • coverage of 80 through 10 meter amateur bands • ideally suited to drive L-1000-A Linear Amplifier.

Net Price $475.00

MODEL 51SB-B GENERATOR FOR SUPERLATIVE SSB



• fully bandswitched
• voice operated control • push-to-talk • speaker deactivating circuit
• powered by 5100-B transmitter
• no wiring required
• TV1 suppression • unitized construction.

Net Price $265.00

MODEL 370 ADAPTER FOR RECEPTION YOU NEVER DREAMED POSSIBLE



• truly outstanding SSB reception, select upper or lower sideband at the flip of a switch
• true single signal CW operation suppresses unwanted heterodynes by 50db
• selects either sideband of an AM signal
• may be combined with any communications receiver
• normal operation of your receiver is not disturbed in any way.

Net Price $131.50

WRITE FOR LITERATURE OR SEE THESE FINE PRODUCTS AT YOUR DISTRIBUTOR'S

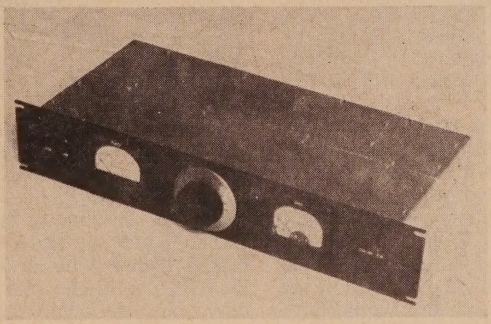
Prices subject to change without notice.

B&W **BARKER & WILLIAMSON, INC.**
Bristol, Pennsylvania

Bill Jenkins, K2HOD
2832 Burlington Ave.
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Jay Siegel, K2JVX
1308 Scott Ave.
RFD, Laurel Springs, N. J.

Medium Power on 2



We had been looking around for some ideas for a new two meter final to give us a little more power without getting into the kilowatt class, when we came across the 5894 tube. We are about to describe the use of it with 750 v. plate voltage and 200 ma plate current for a power input of 150 watts and, as near as we could measure with a *Bird Watt Meter,* 100 watts output. This seemed like exceptional efficiency, and a consideration not to be overlooked when contemplating any final for two-meters. Another important feature of this amplifier is its simplicity and the small amount of drive needed. Any exciter with an output of 3 watts or more will drive it. We have used a *Gonset Communicator* experimentally, (we don't happen to own one ourselves)—to drive it and in our own case we use a 2E26 which is doubling. Incidentally, a converted *522* supplied more than sufficient excitation to drive the 5894.

Most of the details of layout are clearly evident in the photos and drawings. One or two words of caution should be noted however. In all amplifiers at this frequency special attention should be given to neutralization. Much time was spent in the original design to come up with a system of neutralization both reliable and simple to adjust. We must emphasize the use of a Steatite socket (*Johnson 122-247* or

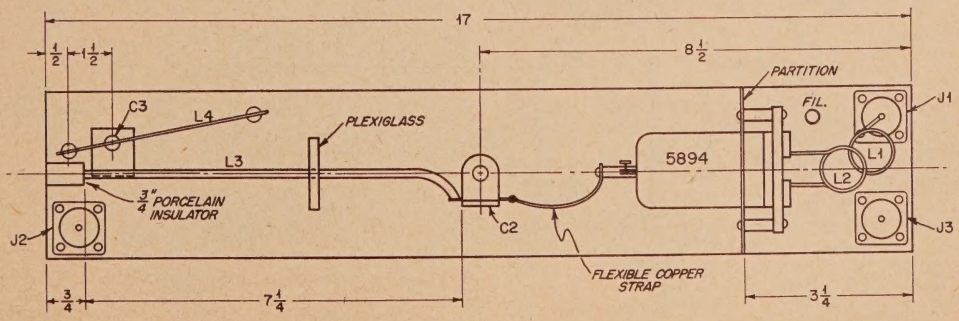
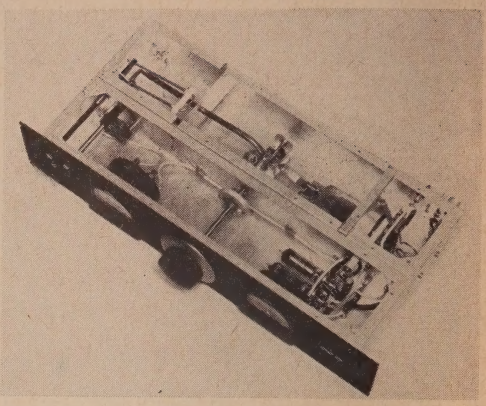


Fig. 2. The center to center distance between the two holes on the upper left should be 1", not 1½" as shown.

equivalent) with a separate aluminum base shield. The more common 829 socket (*Johnson 121-101* or equivalent) was tried at first. Our results were that we could not neutralize until the other type socket was used. Referring to *fig. 1* and *fig. 2* it will be noticed that the screen of the 5894 is bypassed to ground by a 240 μμfd capacitor *C1* with an *Ohmite Z50*, choke, *RFC1*, in series with the screen lead. In *fig. 2* is illustrated the mechanical layout of this arrangement. Using this layout and construction the amplifier should hold neutralization over the entire two-meter band with no further adjustment. It might be noted that in one case with one particular 5894, in order to hold neutralization a 270 ohm 2 watt resistor was substituted for *RFC1* in the screen circuit and similar results were obtained. The socket and all parts as shown in *fig. 2* were mounted on the partition as an assembly and mounted into the main chassis together. This will greatly simplify construction. Another point to be stressed here is the length of the output coupling loop, *L4*. This is 4½ inches long, as noted in the diagrams, and with *C3* will tune to give good coupling and impedance match to the 50 ohm output. For other than 50 ohm output the output link and reactance capacitor would have to be changed accordingly.

The schematic, *fig. 1*, shows a Phone-C-W switch in the screen lead. This switch is not really necessary but the schematic is drawn in that manner to simplify the explanation we are about to make here. If the builder does not contemplate any c-w operation the screen circuit can be made as in the phone position of *S1* and the 6AQ5 and OB2 can be left out entirely and the lead to the grid circuit left open at the point marked "x" in *fig. 1*. With the 6AQ5 clamp tube in the circuit, along with the OB2, as in the c-w position of *S1*, the *exciter* may be keyed for c.w.; and, when the excitation is removed, as in the key up position, zero plate current will result due to the clamping action of the 6AQ5 and OB2. We would recommend the use of the clamp circuit even though only phone operation is contemplated

Top view, cover off.



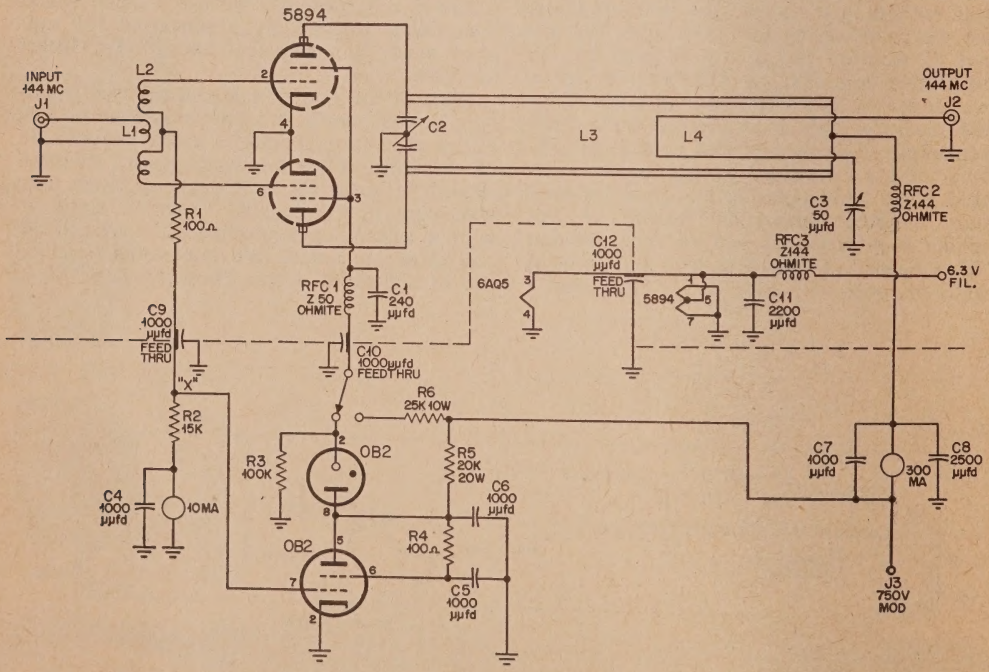


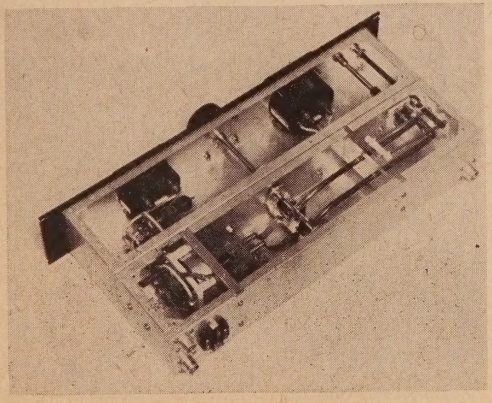
Fig. 1. The bottom tube is a 6AQ5, not OB2 as shown. The bottom pin socket of the OB2 is pin 5, not 8 as shown.

because of the protection afforded the 5894 in case of loss of excitation. In our final we used the phone-c-w switch because we wanted to check the modulation on the air in both conditions. It has been found that no difference in the sound of the modulation was noticed in either the phone or c.w. position of the switch and have been leaving the switch in the c.w. position for all transmissions for some time. We mention this in anticipation of some discussion as to whether the OB2 should be left in the screen lead during phone operation.

No mechanical difficulties should be encountered since standard chassis and parts were used throughout. The main chassis is made from two 4" x 17" x 3" aluminum chassis fastened together. A standard 3½" rack panel was used for the front panel. The only part that must be made by the builder is the partition on which is mounted the 5894 socket. This was made from 1/16" aluminum to fit snugly inside the main chassis. The main tuning capacitor was altered slightly to give a little more band spread in tuning. Two stator plates and two rotor plates were removed from both sections of *C2*. Grid, screen and filament leads were brought through the chassis partitions with feed-through capacitors. B-Plus is brought into the back of the chassis through a co-axial connector and passes through the grid compartment through a short length of RG 59/U cable. Where the B-Plus goes back through the partition, to the center of the plate lines, a porcelain feed-through insulator was used and *C8* bypass is mounted at this point.

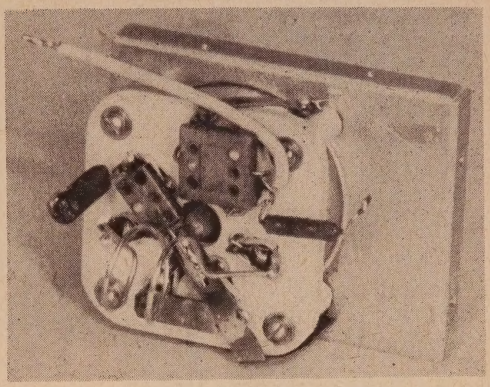
Tune Up

In the initial tune up and test, the first step of course is to turn on the filament voltage and check to see if the tubes are lit. Then with no plate voltage, and the filaments lit, apply excitation, with no plate voltage this should give 6-10 ma grid current. The drive can be adjusted to be fairly uniform over the entire band by squeezing or spreading apart the two turn coil, *L2*, in the grid circuit and by adjusting the input coupling link, *L1*. At this point the neutralization can be checked by tuning the plate tuning capacitor, *C2*, through the two-meter range and noticing any reaction on grid current. No reaction in the grid current indicates proper neutralization, although some slight reaction can be tolerated. Plate voltage can then be applied. We like to tune up with the aid of an external field strength meter. The field strength meter should be located in such position, however, to be sure we are reading antenna output. Proceed by tuning the plate tuning capacitor, *C2*, for minimum dip on the plate current meter, then tune the reactance capacitor, *C3*, for maximum indication on the field strength meter. Adjust the output coupling link, *L4*, until the plate current meter reads 200 ma. Then repeat all adjustments until all circuits dip and peak simultaneously. The grid current should be checked and readjusted to be between 5-6 ma. There are now three of these amplifiers in operation in Southern New Jersey and all have proven to be thoroughly reliable; and, as a real test of the 100 watts output, have been able to work anything heard including Aurora signals. ■



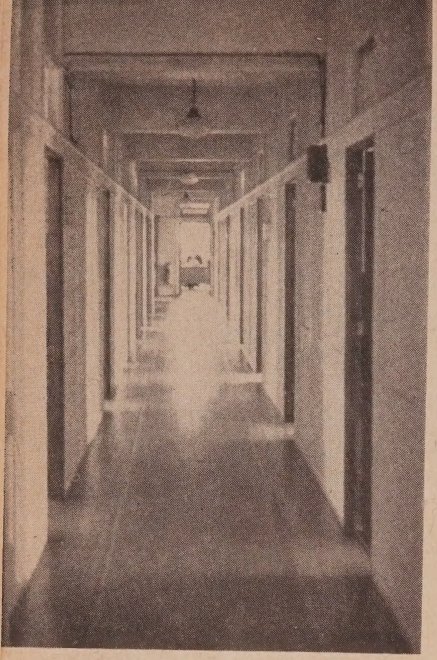
Top view, cover off.

The Seatite socket is mounted on a special bracket.



Parts List

C1—240 μμfd 500v., molded mica, *Erie K-1325*
C2—15 μμfd, *Hammerlund HFD-15-X*, with 2 stator and 2 rotor plates removed.
C3—50 μμfd, *Hammerlund HF-50*
C4, C5, C6, C7—.001 μfd 500v.
C8—.0025 μfd, *Cornell-Dubilier 9-22025*
C9, C10, C12—1000 μμfd, *Erie 327-102*
C11—.0025 μfd 500 v.
R1-R4—100 ohm ½ w.
R2—15,000 ohm 2 w.
R3—100,000 ohm ½ w.
R5—20,000 ohm 20 w.
R6—25,000 ohm 10 w.
L1—1T #14 tinned ⅞ in. diam.
L2—2T #14 tinned ⅞ in. diam.
L3—¼ in. copper tubing, 7¼ in. long, shaped as is *Fig. 3*, 1⅛ in. spacing
L4—4¼ in. long, #8 tinned, spacing 1 in.



Exposed: The hallway of ARRL's Executive Suite

Many people thought me naive when, upon taking over the editorship of CQ, I explained that I intended to keep any negativeness that might appear in CQ in a very light vein and had no intention of cudgeling the ARRL or any other group. This has, all in all, worked out reasonably well . . . with the exception of a couple of embarrassments at the Galveston and San Francisco conventions.

Wayne Green, W2NSD
Editor CQ

ARRL
Exposed



Exhibit A

While passing through a small New England town on the way back from the Concord N.H. Convention I ran across a well stacked brick building . . . see exhibit A. By a remarkable coincidence (ahem) I was met at the door by *CQ's* Associate Editor Art Brothers . . . see exhibit B.

Once inside we were met by Dick Baldwin, W1IKE (Republican), the Managing Editor of *QST* and John Huntoon, W1LVQ, the Assistant General Manager of ARRL . . . exhibit C. Dick took us from attic to cellar and in-

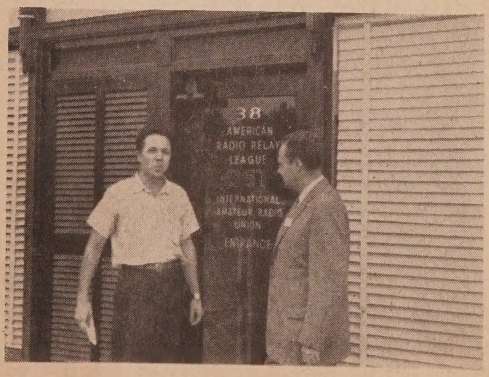


Exhibit B

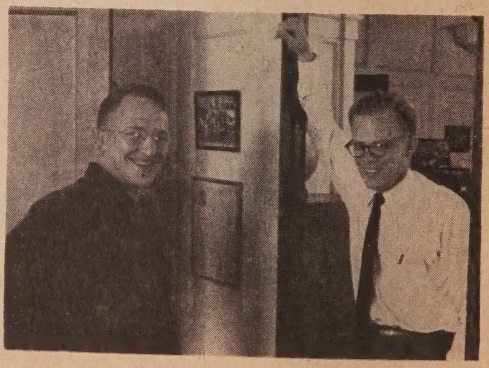


Exhibit C

Exhibit D



troduced us to the headquarters gang, all 65 of them. A bachelor like myself could never work efficiently with such a large group of good looking gals around . . . see exhibits D & E (photos taken between coffee breaks).



Exhibit E

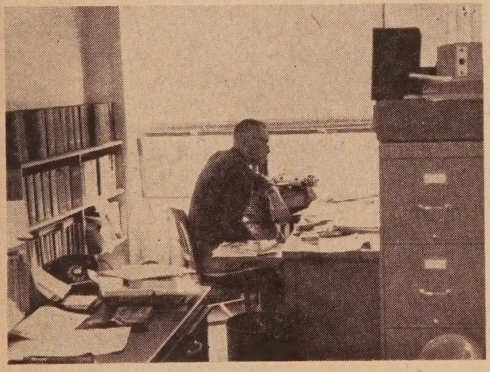


Exhibit F

We found Don Mix, W1TS, Assistant Technical Editor of QST with his slide rule still smoking . . . exhibit F. Ed Tilton, W1HDQ, VHF Editor . . . exhibit G, was hard at work on a 4X250B article. Back in the innermost sanctum was the Technical Editor George Grammer, W1DF . . . exhibit GG. George has

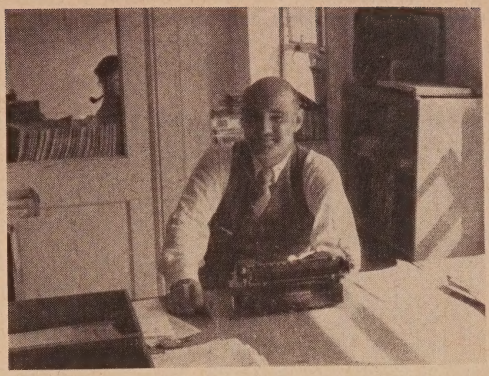


Exhibit G

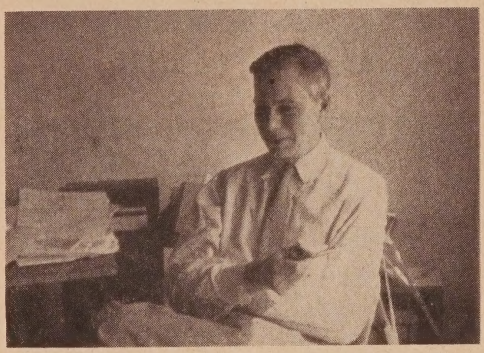


Exhibit GG

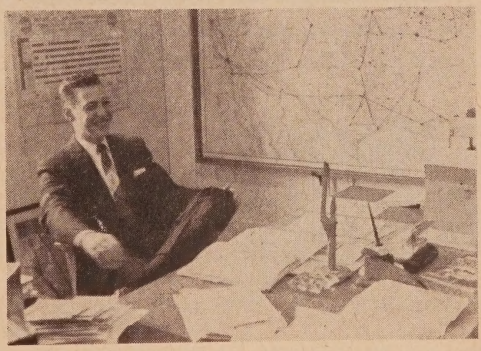


Exhibit H

a lot more to say about overall policy than his title might indicate.

Down at the end of the hall we were met by Lee Aurick, W1RDV, the Assistant Secretary of the ARRL . . . exhibit H. The map on his wall charts the travels of staff members of lecture tours, not the travels of the *CQ* editor. That was Lee's story, anyway.

Vernon Chambers, W1JEQ, displayed an 813

rig in one corner of the lab . . . exhibit I. Each member of the higher echelon of the staff has a section of the test bench where he carries out his experiments . . . exhibit J.

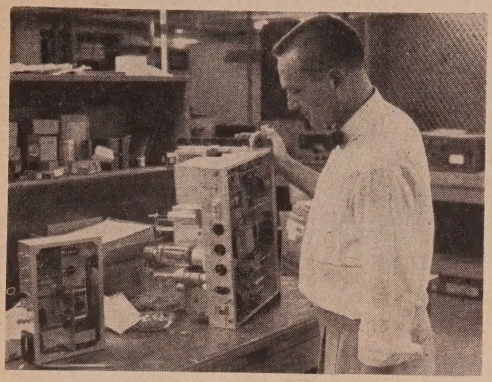
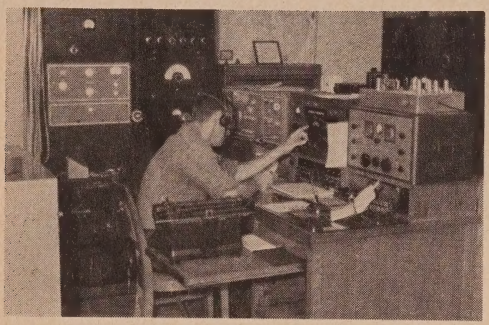


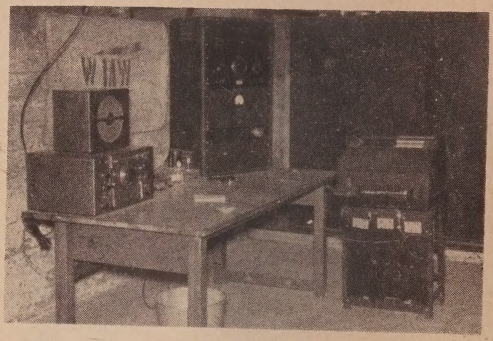
Exhibit I



Exhibit J



Exposed: W1AW, ARRL's Headquarters Station



Basement of W1AW

After disconnecting the dynamite from the ignition, we got in the car and headed back to the Big City. It was a nice visit. ■

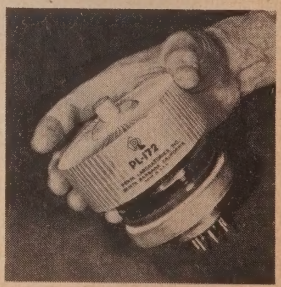


Hammarlund HQ-100

We could go on for pages telling you all about this $169 receiver, but that would spoil it for Mr. Hammarlund who is sitting back eagerly waiting to win you over with the strength and clarity of his arguments. He'll tell you all about the 10 tubes, the all band feature, the built in Q Multiplier, and like that. Just address your note to Hammarlund Manufacturing, 460 West 34th Street, New York 1.

Kool Kilowatt

Penta Labs, with a ham as Chief Engineer, has come up with a new pentode . . . one we have all been waiting for, the PL-172. This tube will deliver a good solid KW (1.5 KW is generally considered to be a good solid KW) *output* as a linear amplifier. In class C it will not grunt much at 3 KW input. We expect an article soon on a rig using this tube, but if you can't wait the address is: Penta Labs, Santa Barbara, California.



Helen Harris, W1HOY
P.O. Box 2502
Medfield, Mass.

A Free Dinner



Durng the early part of November one year, some people of whom we had never heard, contacted us to find out whether it was possible for Sam to arrange a schedule for them so that they might talk to their brother in French Morocco. It seems that the boy was terrifically homesick and his mother was afraid that he would go A.W.O.L., unless she could get word to him faster than he could receive a letter. Sam wouldn't promise a thing except that he'd do his best to get in touch with the boy. You know twenty-meters and QRM.

As luck would have it, the first time Sam tried for a contact in that vicinity he did get in touch with a fellow about seventy miles from the place we wanted. This nice soldier phoned the other station who came on the air at once and a sked was arranged for the following Sunday.

We phoned the family and they arrived in full force, the eight children who were still living close by with their own families and Mother White. I've never heard of any sked that went off so well each and every time. From November until the following June we kept these skeds every other Sunday and only twice did we have trouble with QRM.

The Sunday before Christmas was not a schedule day and my heart dropped when one of the many brothers in the family arrived just about sked time. I thought he wanted to sneak in an extra QSO with his brother and it wasn't possible because we had someone else there on the between Sundays for the same purpose. He came in, sat down and talked for a few minutes and then said he had something in the car that he wanted to bring in the house. He came back in a few minutes with a carton very carefully wrapped in fancy paper, went out brought in another wrapped the same way. This went on for four trips, and on the fifth trip he returned with a huge basket of fancy fruit, all done up to the queen's taste. Embarassing to say the least, but what could we do.

Thinking that the packages were undoubtedly something for the children I asked whether they should wait to open them until Christmas. He replied by saying that it might not be a good thing to wait, in fact it would be much better if we opened them as soon as he was on his way home. Then of course I practically threw him out 'cause I was just too-oo-o curious.

What a shock! The cartons contained the makings for a complete Christmas dinner, including turkey, potatoes, squash, celery, lettuce, cranberries, pumpkin, coffee, rolls, butter, fruit cake and anything else that is traditional at Christmas dinner. I was overcome.

The next time the schedule came up, we found out that the White family owned and ran the largest super-market within a twenty-mile radius. They had wanted to pay us for the QSO's and decided that we couldn't refuse the Christmas gift even though we had refused to take money. (Of course I had already purchased the same items of food that they had brought, so I put what I could of the extra food in the freezer for later use.)

We were worried to death that the sked for Christmas day wouldn't go through; actually to the boy overseas that one was the most important of all. During the contact he was able to tell his mother that his two year old son was on the road to recovery after a very serious illness, and that during the previous week his wife had given birth to a fine, healthy baby girl.

The following June the schedules came to an end with announcement from the boy in French Morroco that that he'd be leaving for home within ten days, his time in the army at an end. ■

Ed McGurk Makes W.A.S.—

on TWO Meters!!!

J. Frank Brumbaugh, W8WUN
Project Engineer, Heath Company
Benton Harbor, Michigan

Ed McGurk was a strange cuss, but then, most hams are a little odd at times. But Ed was different. For instance, he was a certificate collector. Oh, not just any old certificate would do. He didn't care for DX at all, wouldn't even answer when AC4RF called him on 20. But W.A.S., this was his meat. Since the war he had worked his way up the bands, and had W.A.S. on 160, 80, 40, 20, 15, 11, 10 and 6 meters. Had the wallpaper to prove it, too. Now he was determined to make W.A.S. on 2, despite the derision of his fellow club members.

How to do it

How he set out to do it was a bit funny to the rest of us. Just to make it harder, he decided he was going to work all states on two with ten watts and a dipole. We tried to tell him about the obvious necessity for the maximum legal power and all the elements on a beam he could persuade to stay in the air. Ed shrugged off all the suggestions we had to offer, including those who suggested he repair to a good psychiatrist forthwith. We sadly shook our heads at this awful state of affairs but, loyal hams that we were, offered him a pair of 4X250B's and a 5 KW Power transformer. When he refused to take these, we were sure old Ed had finally blown his overloaded main fuse.

We heard him on the air a few times after that, his wheezing, undermodulated signals barely nudging the "S" meter. He didn't appear at the next two club meetings, and we seldom heard his signals on the air. But during the last aurora when our KW and 220 element beam managed to eke out a QSO over a distance of 1453 miles, we thought we heard something that really shook us up. Sounded almost like our contact asked us to say hello to ED and thank him for the card. Of course, this couldn't have been right, so we shrugged it off, blaming it on the poor quality of aurora signals. But just in case, I decided, after the band closed up, to visit Ed and take a look around his shack. If he had been working out like this, it was a cinch it wasn't with ten watts to a dipole.

Ed's XYL met me at the door and invited me in, saying Ed was in the shack. I sneaked over to the door of the shack and glanced in. Ed was apparently in QSO with a station on the tip of Maine. He was so engrossed I didn't bother him, but just looked over the shack, including under the table, in the closet and even under the solder-spattered rug, looking for the big rig. True, I hadn't noticed any beam on his roof, just a folded dipole made out of second hand twin lead, hanging dejectedly from the TV antenna. I didn't find the rig, just the little ten watter on the table. I glanced at the "S" meter on Ed's receiver and did a double take; it read 40 DB over! This I knew was impossible, because I had read in CQ where this Maine ham was a Novice who had an old 522. And in my day the 522 couldn't even put out 10 watts! I guess I must have just stood there with my mouth hanging open, not making a sound, because Ed never noticed me. I vaguely recall him saying 73's and making a quick check over the band. All the signals I heard were W1's, nothing else. What a band opening this must be! ! I dashed madly out of Ed's and broke all the speed laws getting back to my place to get the rig fired up. I swung the receiver dial madly back and forth, but the only signals coming through were locals, and even they were coming through pretty weak.

This would bear some looking into. I shut the rig down but left the receiver running, and gave strict orders to the XYL to call me immediately if the band started to open. Told her I was going over to visit poor old Ed, just to see how he was doing with his ten watts.

Ed's wife looked at me rather strangely when I got back, but I mumbled something about a band opening and went in to the shack. Ed was still on the air. Unless my ears deceived me, this time he was working a W6. I sat down weakly on an old transformer in the corner and just sort of listened. This W6 was booming in like the W1 I'd heard before. Ed glanced at his watch and hurriedly ended the QSO, saying something about having a sched-

ule with a W7 in Seattle. This I had to see. I knew it was impossible, but I'd seen a couple of impossible things so far. When the W6 signed and told Ed the card would be in the mail that afternoon, he ambled over to a patch panel on the wall I hadn't noticed before, switched a couple of co-ax cables and picked up the phone.

"O.K. on that Seattle sked" he said, and put the phone down. He went back to the rig and growled a one-by-one call in the mike, then tuned the receiver. The W7 was calling Ed! ! !

sked. I wasn't even surprised when the W4 boomed in like a local. Ed must have worked a dozen states all over the country while I was sitting there paralyzed. Seems to me I heard him say, "Well, that's the last one," as he pulled the big switch.

I came to a bit when Ed saw me, and managed to say "Hello." He helped me up and we went into the kitchen where his XYL had coffee set out. Ed gulped a slug of coffee and grinned at me.

"Bet you're a bit curious, aren't you?" he said. "Who, me? Curious? Not me; I quit.



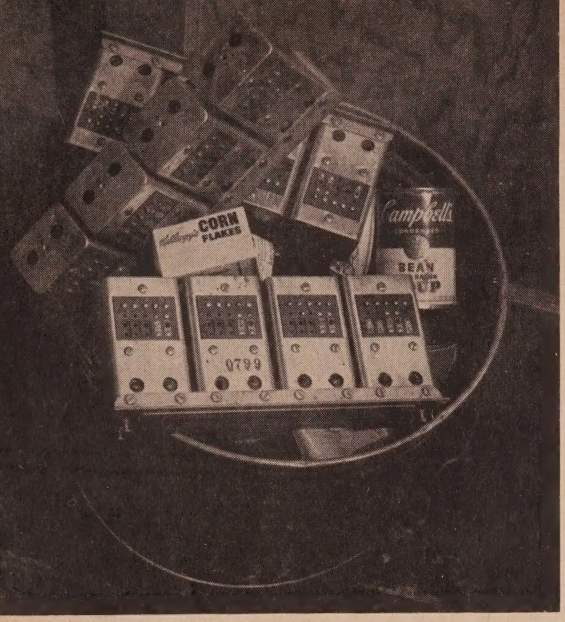
"Hi, Ed, good sigs up here today running about 50 DB over S9 on this stingy meter." There was more of this, but I didn't hear it; I was too busy getting to the phone. When the XYL answered I must have shouted some. After a few minutes I was out of breath and I heard her say "No, there's no band opening. Even the locals are way down in the noise. Here, you listen," and she held the phone up to the speaker while she swished the old inhaler over the band. Nothing. Just little blurbles in the noise level. The phone slipped out of my hand and I went back in the shack.

Ed was back at the patch panel again, and I heard him say something about a Florida Ham radio is getting too complicated for me. I'm taking up butterfly collecting."

"Well," Ed told me, "I finally made W.A.S. on two meters, and you were right, it wasn't a bit easy. In fact, it cost me quite a bit, too." We got up while the men carried out the rest of the kitchen furniture. Ed glanced sadly out the window, at the van being loaded with furniture, while the finance company man checked each item off his list.

Ed looked back at me again. "You know my brother is a lawyer, as well as a ham, don't you?" I nodded, and Ed went rambling on, telling me the whole story. A bit com-

[*Continued on page 111*]



an INTEGRATED Station

A. D. Mayo, W5DF
209 Conti St.
Jackson, Miss.

Most articles in ham magazines describe some one gadget around a station, and present a good idea on one subject. This article is a description of the general functions of a complete station illustrating a number of interlocking ideas that have been used at W5DF. Here the interest has been limited to CW operation on high frequencies, particularly CW DX.

The most unusual feature of this station is the ability to transmit or receive on any band from 80 to 15 meters, by turning only one switch with no retuning or peaking adjustments needed. Actually there is an exception to this statement as two switches must be thrown to go to 80 meters, making this a 2 second operation.

Antennas

Another unusual feature is that directional antennas are provided for all bands and the selection of direction is instantly made by the use of an 8 position switch, with 45 degree steps on most bands. The gain of the antenna system is 7 to 10 db. on 80, 40 and 20 meters, less on 15. The antenna system is very compact and is in the back yard of a 60 foot city lot. Relays perform all of the functions of changing frequency and direction, automatically when the one band switch is manipulated.

The operating position consists only of the receiver, keyer, and Ranger exciter. Nothing else is needed for communication except perhaps the log book and pencil at this point. The transmitter is remotely located since accessibility to it is not necessary for operation, and the liberation of much heat complicates air conditioning of the operating position.

The receiver consists of a HRO, with 80 meter coil and a few changes internally. On top of its cabinet is mounted an HRO cabinet that contains the accessories for the receiver and station. The accessory cabinet contains power supply, speaker, clock, band change switches, directional switches, crystal calibrator, 10 kc multivibrator and separate crystal controlled converters for 40, 20 and 15 meters.

The HRO operates on 80 at all times. When 80 meter reception is desired the antenna lead is fed into the HRO input. A common 6J6 mixer is used for the other 3 bands. The other half of the 6J6 is a pierce oscillator that has an appropriate crystal switched into it to cause the low end of each band to start at 3600 kc on the HRO dial. Therefore the HRO dial is directly calibrated in frequency starting at 3600 kc as 7000, 14,000 or 21,000 kc. The dial is calibrated in steps of 1 kc for the first 50 kc, and in steps of 5 kc for another 50 kc. In operation the nice thing about this is that the low end of all three bands can be checked to see if any dx is coming through in a few minutes. If any dx is heard, no further adjustment is necessary at the transmitter; it is on the same band with the receiver at any time. To call, it is merely necessary to push the key.

While this receiver has been called a monstrosity, it exists as the best homemade version we have been able to cook up in view of the fact that a satisfactory receiver is not available on the market at this time. There are perhaps 25 features that are neces-

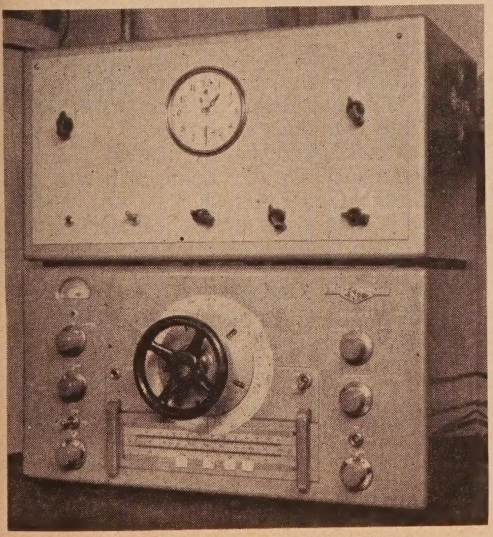
sary to good CW operation in a receiver. Assuming that the best sets manufactured have most of the features desired, there are three features that are absolutely essential. These three features are bandspread, stability and selectivity. Some of the sets costing over $500 have one or two of these features but I do not know any one that has all three. The HRO conversion above has achieved stability, and selectivity and its bandspread is still not quite adequate but further work is contemplated on this.

Adequate Bandspread Defined

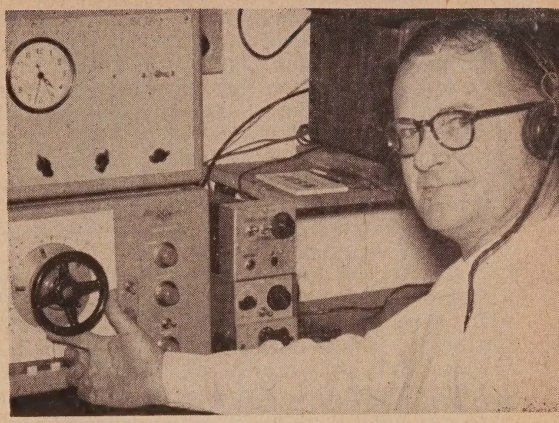
It should be possible to take a section one kc wide and examine this section in steps of at least 1/10 kc. It should be possible to identify frequency to 1/10 kc. There should be no back lash in the dial that would affect adjustment to 1/10 kc increments. Obviously this bandspread has to be accompanied by stability in the frequency determining oscillators and selectivity in the following circuits so this bandspread can be used in practice.

Many signals on the air will not stand high selectivity of this type because of frequency shift under keying, but many will and the stability of transmitted signals is improving.

A general statement that could be made here is that it is desired to cover a few kc well and not to cover a wide range of kc fast and poorly. Also, the new receivers seem to have gone backwards in some cases regarding bandspread and selectivity, as applied to cw. They are better for phone reception where straight sided selectivity of 2 kc or so bandwidth is desired. In cw straight sides are not desired because it is often advantageous to know what your competition one kc away is sending when tuned to a very weak dx station. Therefore the crystal filter with a sharp selectivity spike and wide skirts is more to be desired. 456 kc crystals are sharper than 1700 kc crystals.



The author's receiver showing the oversize tuning dial.



The author at the operating position.

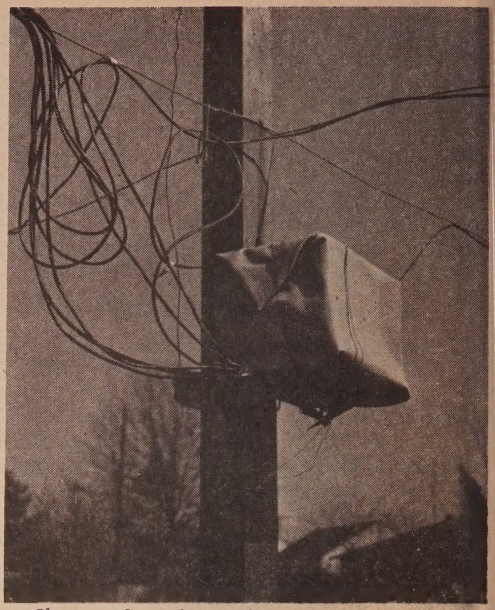
Many types of soup up were tried on the HRO IF strip to improve selectivity. It was found that the most important thing was to keep the original IF strip strictly in line. When it is lined up the selectivity is excellent and in practice reception is practically limited to a section 1/10 kc wide. However if it is lined up warm the set will drift out of line when it is turned off. A partial remedy has been to go into the IF cans and replace the capacitance of the air trimmers with negative temperature coefficient trimmers. An FL-8 surplus audio filter is installed in the HRO cabinet and is cut in with the switch that was originally a high-low tone switch. The set must be lined up as a unit with the FL-8 cut in. Very poor results will be obtained if the FL-8 is merely connected to an existing set.

Alignment is done just as the instruction book calls for. Audio gain all the way on, output meter connected to speaker, limiter off, FL-8 switched in, beat oscillator on, and adjust IF trimmers for maximum output. Regular service alignment oscillators do not have enough stability to furnish the signal for this alignment. Here we use a crystal oscillator (the Ranger exciter) that feeds through the RF section and the receiver dial is rocked for maximum on each trimmer. The BO dial is also rocked for maximum on each adjustment. After alignment with this method there is no noticable loss of signal strength, and no change of tone when the FL-8 is switched in and out. The increase in selectivity that occurs when this alignment is done every 30 to 60 days at W5DF is amazing. If you have not used an audio filter in this manner, try it and be surprised at the improvement.

In regard to stability of the HRO, under the conditions in my shack, it was not very good in its original form. Line voltage changes had a severe effect upon the frequency because a change in filament voltage changed the dial setting. This was severe on 20 meters and amounted to 2 or 3 kc change of frequency while transmitting. It was cured completely by the installation of a separate filament voltage transformer and a 60 watt voltage regulator in its primary.

The use of the 80 meter coil, on all bands improved the RF stability, but there was still a temperature drift of 7 to 10 kc when the receiver cabinet changed from about 50 degrees F to 100 degrees F, during the first hour of operation. My shack is normally not heated when unoccupied and such drift might be lessened in another heated location. This drift has been reduced to less than 1 kc by the installation of some negative temperature coefficient condensers inside the shield can for the oscillator coil. There are two air trimmers in the shield. One for series and one for parallel trimming. The series trimmer was shunted by 22 mmf and the parallel trimmer shunted by 15 mmf of 750 ppm/deg. C condensers. Then the air trimmers were adjusted to a new point near minimum capacity to restore tracking and alignment in the RF section.

The above changes in the HRO have been made without making any extra holes in the cabinet or marring the appearance in any way that would reduce its trade-in value, on that day a better CW receiver is produced. Needless to say the audio output as originally connected in the plate of the 6SJ7 is inadequate for fones. The fone jack is wired into an output transformer in the 6V6 plate. With increased audio gain hum shows up, originating in the grid of the 6SJ7. A carbon filament resistor in the limiter filament circuit must be shielded as it lies almost on the grid pin of the 6SJ7. The coupling condenser to the grid of the 6SJ7 must also be shielded, and in my case it was remotely located with shielded wires going to it. This does not change the performance except that there is adequate audio volume without hum.



Close-up of weatherproofed tuner and relay box.

The antenna system. Note relay boxes on each pole.



Transmitter

The transmitter is built in a six foot rack and consists essentially of four units: power supply and control system, a frequency multiplier, and two final amplifiers.

Mechanical arrangement of the cabinet is unconventional, since no knobs or meters stick out of the cabinet. A steel plate was installed on the normal front of the cabinet and the front turned to the wall. This leaves the door facing outward. There are supports inside the cabinet consisting of strips of angle iron from one side of cabinet to the other and these angle iron supports support the chassis units. When the door is opened any unit can be tuned, or quickly disconnected by means of plugs and removed for servicing. Normally the door is closed. There is free circulation of air from the bottom to the top of the cabinet, and a fan in the top of cabinet to help exhaust hot air.

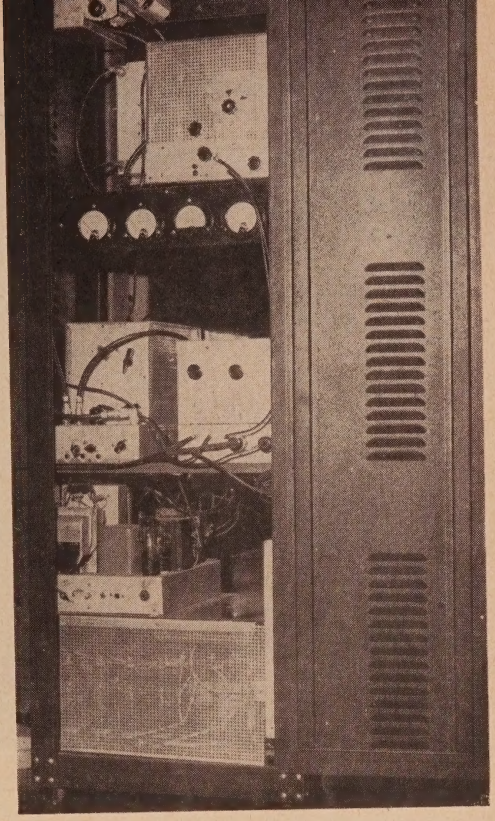
The power supply consists of various components mounted in the bottom of the cabinet. High voltage is brought through RG-8U cable to the two amplifiers. The bleeders are in a separate metal compartment and have a ventilating fan to exhaust heated air from this compartment so it does not go into the main cabinet.

The main amplifier is used on 80, 40 and 20 meters and consists of a pair of parallel 4-400A tubes with split grid circuit and pi network output. It is neutralized by a wire about 2 inches long which takes off the split grid tank and projects through the chassis between the two tubes. The grid circuits are switched for three bands by relays under the chassis. Each tube has its separate blower under the socket. The plate circuit is switched for three bands by means of two relays which short out a portion of the tank coil. The relays are *Advance*, with original insulation replaced by mycalex bars about ¾" thick. The original contacts and springs have been used and have stood up. The mycalex was sawed in a vise with a hacksaw, drilled under water in a pan on the drill press, and tapped dry for machine screws. The amplifier has operated at 4000 volts without breaking down the relays. The clearance in the relays is .090" on one and .250" on the other.

The tank condenser has a total capacitance of 65 mmfd. It is meshed about ¾ closed. The same setting is used for all bands. The total of the stray and tank capacities shunting this coil is about 70 mmfd on all bands. The Q would figure too high on 20 and too low on 80 but harmonic output is too low to be heard about a mile away on any frequency up to 42 mc. TVI is absent.

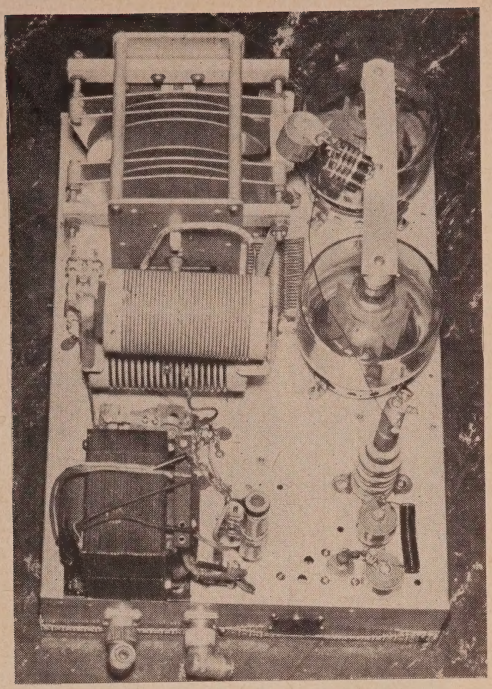
The amplifier is built on a 10 x 14 inch chassis. It has shielded d-c wiring and has a top and bottom cover. The covers were bent from Reynolds do-it-yourself perforated aluminum bought from a standard assortment in a hardware store. The aluminum is very thin but has sufficient strength when bolted together with 6-32 machine screws and nuts. The HV and antenna leads come through coax fittings. The other leads come out an octal socket, bypassed at the point of exit. The amplifier has more power capability than is necessary. It is operated unattended, remotely located and broadbanded for 100 kc on 14 and 7 mc and for 50 kc on 3.5 mc so some reserve of plate and screen dissipation is desired. The amplifier has been operated, in tune, at 2.4 kw feeding an electrical room heater as a dummy load without getting the tube plates actually red. The energy for all three bands leaves the amplifier through the same coax and goes to an antenna in the back yard.

A smaller amplifier using a pair of parallel 813's is also incorporated. It is capable of being manually switched to any band from 10 to 160 meters and it operates at about 600 watts input. It is left set up for 15 meters. This amplifier is automatically energized when the band switch on receiver is thrown to 15 meters. The plate and screen voltages are always connected to it but its filaments do not come on until 15 meters is selected, at the receiver. It feeds a separate beam that can be used for either 15 or 10 meters. This antenna is at present a 3 element vertical giving a choice of two directions, with a pattern 60 degrees wide in front or back at 3db down. It is planned to extend this antenna to cover 8 directions if dx activity on 15 meters improves. The 60 degree pattern is now centered on North Africa, covering essentially Europe and Africa in one direction and the Pacific generally in the other direction. The 813 amplifier can be used on any band as a spare, or disconnected and removed from the transmitter for TVI proof use at another location, with another power supply.



The transmitter at W5DF.

The RF frequency multiplier chassis contains two 807 frequency multiplier tubes, with much room left for the addition of other items as time goes on. This chassis is fed with 7 mc



Final amplifier. The transformer supplies the filaments.

energy from the Viking Ranger exciter, which only loads up to 50 or 60 ma. When operation is on 7 mc the coax goes straight thru relays to the 400-A amplifier. When a 20 meter setting is selected a relay puts a swamping resistor across the incoming coax from the ranger and an 807 doubler feeds the 400-A amplifier on 14 mc. When 15 meters is selected the other 807 comes in as a tripler and feeds 21 mc energy to the 813 amplifier. When operation is on 80 meters the 400-A amplifier is fed directly by the Ranger, and it is here that the Ranger band switch must be thrown to 80 meters. However it is not necessary to retune the Ranger as the circuits inside the Ranger have been adjusted so both 40 and 80 meters tune with the same dial settings. This is done by removing a turn here and adding a trimmer there to make the dial settings work for both bands. Since 80 meters is seldom used it was deemed unnecessary to spend any time eliminating the Ranger band switch operation from the 80 meter band change position.

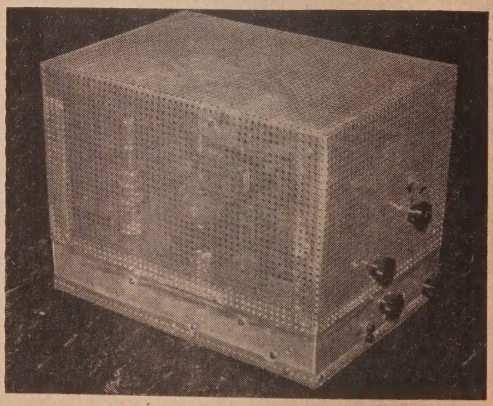
Antenna

The antenna used for 80, 40 and 20 meters consists of five vertical elements about 42 feet high. A center element is driven. Four parasitic elements are placed at the four 90 degree points each 10 feet from the center driven element. A tuning unit in a metal box with relays and tuned circuits is mounted at the center pole. It accepts the RG-8U coax from the transmitter and matches it to the antenna lead on the three bands. Most of the details concerning this have been covered previously in the September 1952 issue of QST.

The four equidistant, radially located parasitic elements are switched for frequency with tuning units at the base which contain relays and tuned circuits. When a parasitic element is switched to any band, it will normally be tuned to a frequency about 5% lower than the operating frequency. A relay is provided in each tuning unit to switch directions. This relay merely changes the tuning of a parasitic element from a frequency about 5% low to a frequency about 5% higher than operating frequency. Either one, or two adjacent parasitic elements can be changed to directors by making their freq about 5% higher than operating frequency.

On four of the 8 positions there will be one director, and on four there will be 2 directors. When two directors are used the direction of maximum radiation lies on a line running between them. The tuning of the units as reflectors (5% lower) is not critical. The tuning of the elements as directors (5% higher) is very critical. Each element must be tuned to the same frequency. This is to assure uniform loading on all directional positions. There is some change in loading (and in SWR on the feed line) when changing from one to two directors. This does not exceed 5% or 10% and is not considered objectionable. It takes a barrel of relays to perform all of these functions. Most of those used are 12 volt dc surplus relays, energized from a surplus copper oxide rectifier that provides about 10 volts dc. The r.f. in the parasitic elements is about as hot as you might expect in an antenna fed by a 50 watt transmitter so it is much more easily

[*Continued on page 119*]



Each unit is completely shielded.

Solving the Ladder Problem—

Electrically

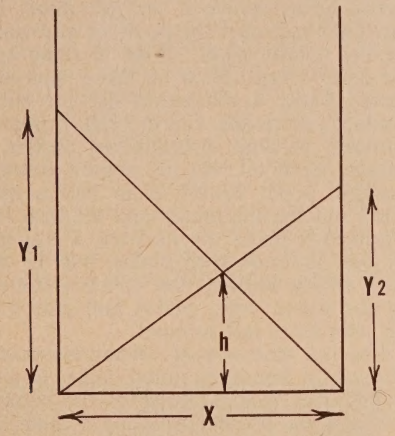
F. R. Bergseth, W7EXL
2722 E. 87 St.
Seattle 15, Wash.

Two ladders are leaning against the walls of an alley. One ladder is 40 feet long, the other is 30 feet long. The two ladders cross 10 feet above the alley. The butt ends of each ladder touch opposite walls. How wide is the alley?

—CQ, September 1956, p. 114

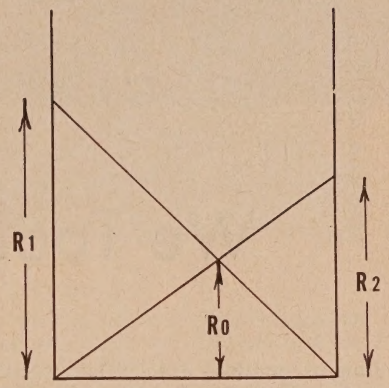
In playing around with the problem stated above one begins to wonder why such an apparently simple problem should offer any difficulty to such an apparently intelligent gentleman as the typical ham. The reason for this difficulty is not hard to see—the typical ham (except for a minority of antenna specialists) is not used to thinking about ladders—but just put the problem in electrical terms and he will not be long in coming up with the correct answer.

Fig. 1.



The first step in solving the problem is to draw a picture of the situation as in Figure 1. If the old timer sits and stares at this picture for a while he may remember a similar picture which has been used at times as a graphical means of finding the resultant of two resistances in parallel, Figure 2. In Figure 2 two perpendiculars are erected at the ends of any convenient base line. The two resistances are scaled off as R_1 and R_2 on these perpendiculars and the diagonals are drawn, looking for all the world like the ladders of Figure 1. The intersection of the diagonals gives the parallel resultant resistance, R_0, in terms of the height of intersection. (W6FIF gives a method which is a first cousin to this in August 1955 CQ.)

Fig. 2.



Now, reference to any convenient electrical handbook tells us that the parallel resultant of two resistors is given by the expression,

$$R_0 = \frac{R_1 R_2}{R_1 + R_2}$$

and, going back to Figure 1, we see that the same result can be expressed in terms of the dimensions given as

$$h = \frac{y_1 y_2}{y_1 + y_2}$$

Now all this is fine but unfortunately we don't know the values y_1 and y_2 and we seem to have lost sight of the object of the problem which was to find the width of the alley. Here our algebra and geometry come to the rescue. We simply let "x" indicate the unknown quantity, the width of the alley. The right triangle theorem (credit Pythagoras) tells us that

$$y_1 = \sqrt{40^2 - x^2} \quad \text{and}$$
$$y_2 = \sqrt{30^2 - x^2}$$

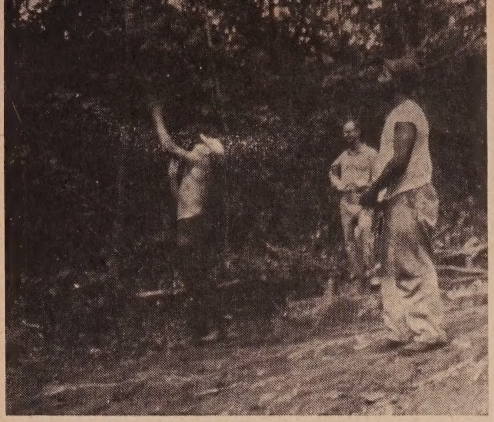
and substituting these values for y_1 and y_2 we find

$$h = \frac{\sqrt{40^2 - x^2}\ \sqrt{30^2 - x^2}}{\sqrt{40^2 - x^2} + \sqrt{30^2 - x^2}}$$

and, letting h equal 10 feet, it only remains to solve for x, the width of the alley.

When we start turning the crank, algebraically speaking, to solve for x we soon discover

[*Continued on page 108*]



Florence V. Collins, W3DBN
Box 16, Landenberg, Pa.

We Took To The Fields

June twenty-third dawned fair, hot and very humid in Eastern Pennsylvania. Some few hours later the dozen or so members of the Southern Chester County Amateur Radio Club crawled out of bed, rested, ready and eager for their first Field Day experience. This is a true and unexaggerated account of that experience!

We were scheduled to meet at the site at noon so around nine o'clock the OM, Jim, and I started getting things together. Before we got very far I realized that we should have started around nine 'oclock the night before. The list of things to remember kept getting longer and longer. "How about a first aid kit?" I rummaged through the medicine closet trying to foresee every possible emergency. Peroxide, merthiolate, band-aids, gauze and adhesive tape (might get a really serious injury—should have brought some splints from my boss's office—) aspirin, sun tan lotion, calamine lotion, absorbent cotton, Unguentine ("Jim, is that good for r-f burns?") and oh, yes sodium bicarb. One first-aid kit ready.

Then the log sheets and related stuff were assembled. "We'll need at least a dozen pencils. What happens to all the *pencils* around this house?" "Where's that pad of message blanks? Twenty-five points for a message sent, you know." "Lots more room in this box. What else could we use?" Scotch tape, string, thumb tacks, red marking pencil, insect repellent—"phew, if this repels insects half as well as it repels people, it'll do fine"—flashlights, camera, extra film, flash bulbs.

While I was running around talking to myself, Jim was soldering a remote control switch onto the transmitter, uncoupling the VFO and antenna coupler, rounding up all rolls of spare wire, and taking down my plastic clothesline, which I knew wouldn't get back up Sunday night. "Well, you'll probably be too tired to wash on Monday anyway." He seemed to have everything pretty much under control so I started tackling the food problem. Darn, things would be so simple if we just didn't have to eat. Let's see, peel the potatoes and start them for the potato salad. Throw in some eggs too, for deviled eggs. Heat up those cans of baked beans. Make a marketing list for submarine sandwich materials. Get out salt, pepper, sugar, mustard, ketchup, mayonnaise, pickles, olives, onions, olive oil, cheese, peanut butter, jelly, napkins, paper towels, soap and newspapers. Wash out the thermoses and fill with iced tea. Whoa, first make the iced tea. I was going to fill one thermos with coffee but we seem to have nearly finished the coffee already. Hunt up the paper cups, plates and plastic spoons left over from last summer.

Jim ran into a snag. What about a mike? My lovely boom mounted mike wouldn't be so practical with no base for the boom. "Call Bob and see about borrowing a mike, and his bug, too. And since we'll be using his call, ask about a message number."

At last we started loading up the car. In went the boxes, bags, extension cords, jackets ("it might get cold tonight"), folding tables, folding chairs—I put in a request for my folding chaise longue—thermos bottles, thermos bags, blankets, and so on and so on till the car was full and there was still the transmitter and rack and receiver to go. We stopped by Prince's house on the way over to the site and enlisted the aid of his station wagon while Irma, his XYL, and I took off for the supermarket. As we came out I looked at my change. Field Day is an expensive proposition. Now, off to our hill.

Bob and Chris had a half finished house on

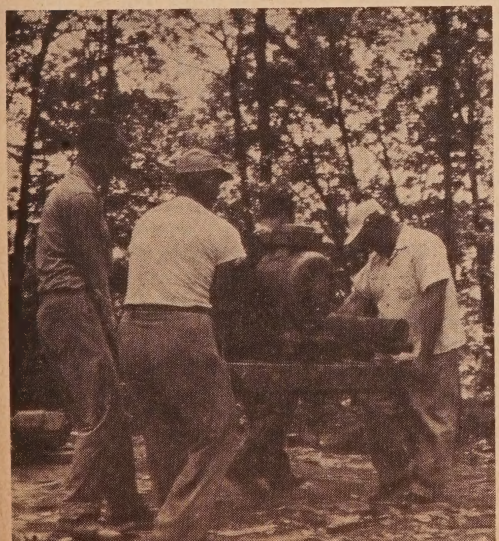
a high hill nearby and we had chosen their basement, which opened out onto ground level, as a likely place. With no electricity, water, windows or floor it wasn't too hard to imagine yourself in a hurricane battered house or a bombed out ruin. (No offense meant, Bob.) There were plenty of trees around for antenna stringing and soon it looked as though a giant spider had been at work in the treetops. Wires were coming from all directions. Joel, an old shotputter I'm sure, was literally throwing them up. Al had rounded up a thirty foot ladder which was a great help in getting those snagging branches out of the way.

Walt and Ike arrived with their generators. "So that's what a generator looks like." There didn't seem to be any such thing as a level place on the hill to set them up. Fortunately the carpenters had left enough good size boards for a platform.

Ted arrived with his little twenty-five watter, his young son, Bobby, a future ham, and also a tent. "Now we're ready to set up the station. We need places that are level and within the extension cords' reach of the generator." "Ain't two such places." "Start shoveling, boy. Time's awasting. It's after four. This shindig starts at five."

Four forty-five! Ted was ready to go. Jim loaded up our transmitter. About ten per cent modulation! I dashed back home and got our mike, boom and all. We hooked it on and the old needle kicked up where she belonged. The boom got tied onto the table. It was then five-thirty and since Jim and I were working the first shift, he flipped the switch and called "CQ, Field Day, this is W3WBD/3 in Eastern Pennsylvania" and we were off! Wait a minute, we weren't either. Lots of people on there when the receiver came back but nobody was calling us. I took over the mike. A W4 came back. Trust those southern gentlemen to answer a YL. Then a W8 and next a W3. "Man, listen to

Horsepower takes manpower.



At last, ready to go.



that QRM!" Jim ate while I operated and then he took over so I could eat. Ted ate with one hand and sent with the other.

So it went, until about nine o'clock that night. Then the static started building up. Sam came in and reported a thunder shower in the offing. Contacts were getting scarcer and scarcer. "Sorry, OM, worked you before."

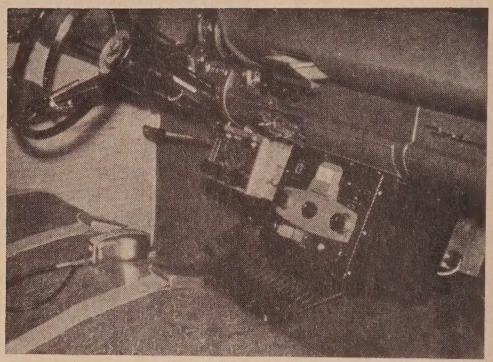
The midnight shift, Bob, Dom, Nick and Bill arrived just in time to give Ted a hand getting his rig in under cover before the rain started. We were all fully aware that it isn't really Field Day until it rains but this was more in the nature of a cloudburst. And that lightning was getting closer and closer. One antenna came down. Then another. We were temporarily QRT. It was close to two in the morning so Jim and I headed for home and bed.

It seemed as though we had just gotten to sleep when the phone rang. I opened one eye and was surprised to see bright sunlight. It was Bob on the phone. The transmitter wasn't loading properly. We jumped into our clothes with no thought for breakfast. When we got there I made peanut butter and jelly sandwiches while Jim pulled the transmitter out of the rack. "Well, I guess it isn't really Field Day unless you have trouble with your rig." Prince and Jim and Walt checked over everything. Chief errand girl was sent home for the VTVM, the dummy antenna and the transmitter schematic. When I returned I found them busily hunting down a sizzling sound. It turned out those B-29 mosquitoes and other bugs had insisted on sitting on hot wires.

Finally in desperation they put the rig back in the rack. "She lights up the light bulb O.K. Let's see what she does to the coupler." Nothing happened. Jim looked inside the rack and was

[*Continued on page 118*]

Viking Adventurer Mobile



William Howe, K6IBG
2309—24th Ave.
Sacramento 22, Cal.

If you live in an apartment and have a grouchy landlord; if you like to construct your own equipment, but there is no place to do it and you haven't got the tools; if your budget doesn't include a loose two hundred bucks for ham radio, you may be interested in a kit to go mobile that won't make the kids go without food for weeks.

Of the low power kits available in the Novice field, the *Viking Adventurer* is indeed an attractive package. Although its price seems a little on the high side, its physical size and chassis layout are ideal for the addition of a modulator that will plate modulate it to full output. For me, the attractive feature was the rear of the chassis. It has so many holes in it that parts seem to fall into place. As a somewhat lazy clod, nothing shakes me up more than to read in the directions for building some piece of gear "drill a 9/16-inch hole 2-inches from the rear lip of shield B." Let's face it. I hate to drill, bend, cut or mutilate sheet aluminum. I've done it, but everything winds up looking somewhat moldy.

The two hardest holes to manage are for the 6L6 octal tube socket and the gain control in the rear chassis lip. I use a tapered reamer for both holes and a borrowed brace and bit. The rest were drilled with a cheap hand drill as the photographs will show. As long as you are borrowing, you might slip off with a center punch, although a nail works fairly well.

The circuit is straightforward and uses two 6L6's in Class AB_1 (*A 25-Watt Mobile Modulator, The Radio Amateur's Handbook*, 1955). The input is suitable for either a crystal or dynamic microphone. All power connections and modulator controls were brought out the rear so as to keep from destroying the appearance of the front panel by poor workmanship.

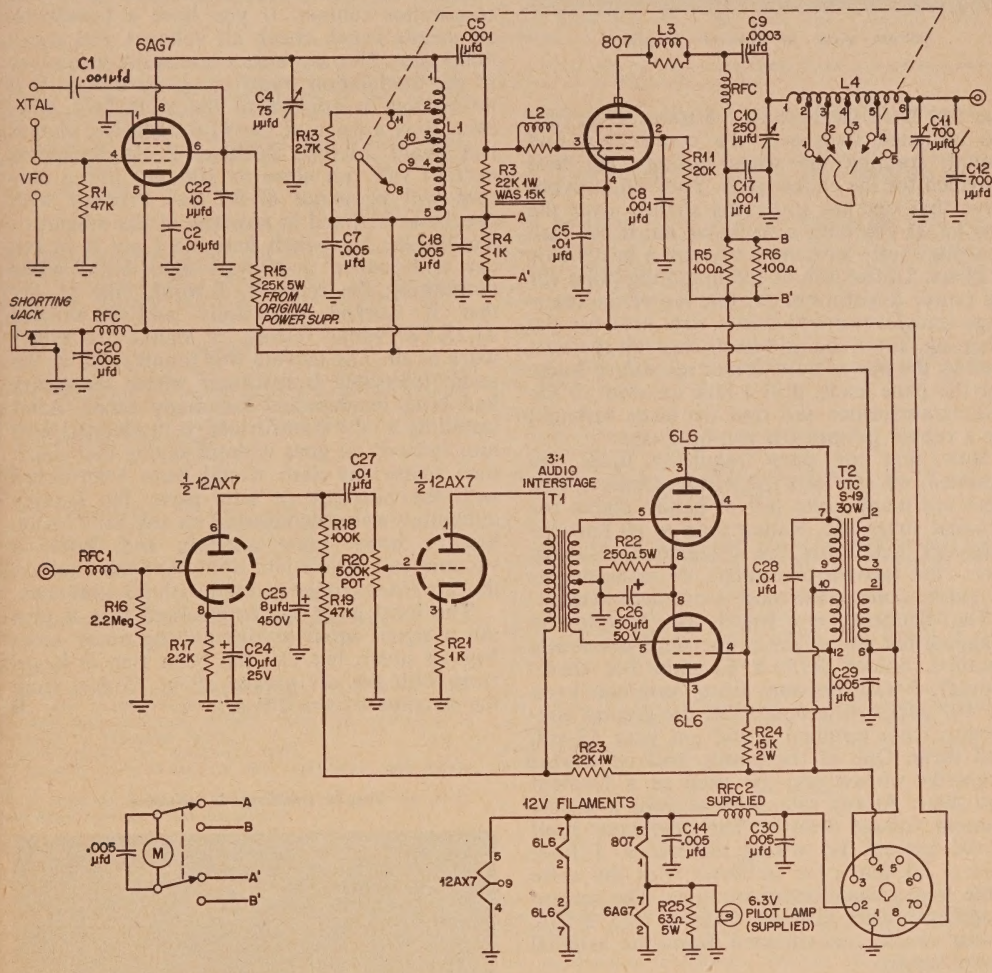
If you have already constructed the kit and perhaps have a General ticket clutched in your hot little paw, the biggest thrill is to open a can of Old Snort and rip the power supply out. Be sure and disconnect the power plug, however. Take the old parts, neatly tag them, and store them in a clean dry place, such as

the linen closet, under the sheets.

Now to install the sockets and parts. Under the power transformer utilize the hole that the primary leads were trained from and jump with glee when the miniature tube socket fits perfectly. Place the socket in the hole and mark the mounting holes with your nail. Next to the 5U4 tube socket are two small holes in line; place the tapered reamer in the one furthest from the 5U4 and grunt until your octal socket fits. Mount a standard mike connector in the hole provided for the power cord. Under this fit your gain control and (ugh) drill a hole and ream to fit. If it won't fit perfectly (mine didn't) keep on reaming until you can juggle it into position. With one of the smaller gain controls available today, there is ample room. You can mount and wire it later after the 12AX7 has been wired.

The modulation transformer mounts in the same position formerly occupied by the filter choke. Position it in place with one bracket lined up with a mounting hole for the choke and drill a hole for the other bracket at the

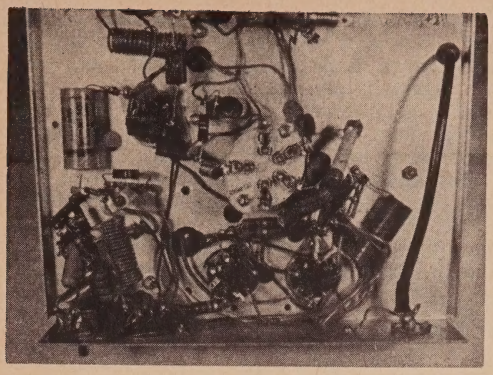
Modified wiring diagram



Parts List

In addition to the parts supplied with the kit: All resistors ½-watt unless otherwise specied.

R3—22,000-ohm, 1-watt
R16—2.2-meg
R17—2200-ohm
R18—0.1-meg
R19—47,000-ohm
R20 — 0.5-meg potentiometer
R21—1000-ohms
R22—250-ohm, 5-watt
R23—22,000-ohm, 1-watt
R24—15,000-ohm, 2-watt
R25—63-ohm, 5-watt
C24—10-μfd. 25-v.
C25—8-μfd. 450-v.
C26—50-μfd. 50-v.
C27, C28—0.01-μfd. 600-v.
C29, C30—0.005-μfd. disc ceramic
RFC1 — 2.5-mhy. r.f. choke
T1 — Interstage audio transformer, single plate to push-pull grids, secondary to primary ratio 3:1 (Merit A-2914)
T2 — Multi-match modulation transformer, 30-watts (UTC S-19)



Bottom view of rewired amplifier

rear lip. Wire the base of the transformer, put the insulated strip over the connections and mount, training the wires through the hole provided for the choke leads. You will now observe that one leg protrudes slightly over the rear lip. If you have a hacksaw, cut it off flush —or file it off—or bend it off with a heavy pair of pliers. Utilize one of the mounting holes for the power transformer for one leg of the interstage transformer and drill a new hole for the other leg. Train the grid leads through the hole used by the power transformer secondary leads. For the plate leads, drill a hole adjacent to the audio transformer and trail the leads through; use a rubber grommet if you have one.

Now that the parts requiring holes are mounted, we can start the wiring. Observe that there are many holes left at handy places for terminal strips, etc. Rather than to go into unnecessary detail for the placement of every wire: the actual placement of components should be done in the most convenient manner.

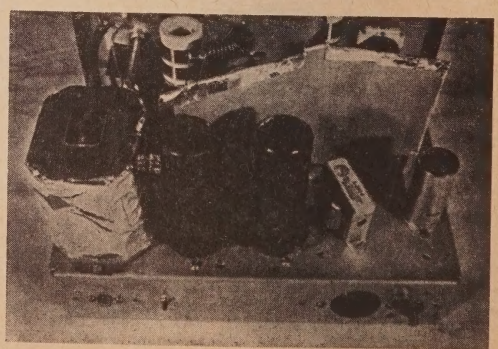
The filaments are wired for 12-volts by changing but one of the connections previously installed. Solder *R25,* a 63 ohm (or thereabouts) 5-watt resistor, from terminal 1 on the 807 socket to ground. Lift the ground connection from terminal 5 and put your 12-volt lead there. One of the power lead r-f chokes originally wound may be used as a filament lead filter. At any rate, wire as your available filament voltage dictates. The modulator itself should present no wiring difficulties. I have used a 2.5 mh. r.f.c. in series with the mike cable as a precautionary measure. The screen-dropping resistor (for the 6AG7), *R15,* a 25K 5-watt resistor, is obtained from the original power supply.

To shield the new modulator section from the r-f section, I used aluminum foil mounted on stiff cardboard. If you have a pair of tin snips, use sheet aluminum. To make a ground strap connection, fold over a piece about 6-inches by 3-inches until it is about ¾-inch by 3-inches, tape it firmly to the foil mounted on cardboard, punch a hole in one end and secure to the chassis, under a convenient screw. For rigidity, tape the shield to the old shield provided. I decided to mount all switches in a small aluminum box external to the rig, as it is better to ruin a little box than a fancy panel. Since I used a standard (cheap) mike without push-to-talk, the box was mounted within short reach of the driver's position.

To provide 360 volts, the optimum value for the plates of the 6L6's, use a 25-watt dropping resistor with 10-ohms of resistance for each volt above 360. My dynamotor put out 560 volts under load so I used a 2000-ohm 25-watt resistor. A convenient place for it, with a filter condenser, is on the rear of the transmitter cabinet. If you have a bench, by all means bench check all voltages and use a 4000-ohm, 25-watt resistor across the secondary of the modulation transformer. Be certain that no voltage is applied to the secondary however. Bias voltage at the 6L6 cathodes, should run about 24-volts positive. Peak modulator current will run close to 100-ma. Idling current will be about 80-90 ma. Proceed with checks as outlined in any one of the amateur's handbooks. No bench here, so I put it in the car and loaded a 40-watt light bulb, while monitoring the receiver. I would like to say that it worked beautifully and I worked ZL2XYZ while testing. I didn't. It didn't work at all. The trouble was found to be in the audio interstage transformer whose secondary had been manhandled too many times. After installing a new transformer, it modulated very nice indeedy. It goes without saying that much time under the dash would have been saved with the purchase of new parts. No loading difficulties were encountered on any band using, first, a home brew antenna and, later, a vacuum coil deluxe job. Both were mounted on the left front fender and fed with 52-ohm coax.

The local gang has commented that it puts out a signal equal to rigs costing many more bags of silver. No TVI has been seen or heard from with the car parked about 25 feet from the antenna of the TV set. ■

Simple shielding is effective



Contest Calendar

Frank Anzalone, W1WY

Phone Contest

Conditions in general were poor and erratic. However some good opening from time to time over the week-end especially on 10 and 15 enabled some of the boys to run up record breaking scores.

To quote a few: (This is all unofficial of course.) Both W2ATE and DL4MW claim better than 250,000 points in the All Band section.

W2UOL, K2GL, W6YY, CO2BL and G3AWZ, also All Band, claim 300,000 and better.

We have no estimate from the 4X4 boys but indications are that they will even exceed the above figures.

HC1ES and VQ4RF should show excellent Single Band scores.

CW Contest

Conditions also started out very poor (WWVU4) but built up to a respectable N6 by Sunday and the higher frequency bands paid off, especially 15. 40 and 80 were surprisingly good, especially during the time the other bands were not doing so good.

No estimates but it is predicted that W2WZ, Single Band, and K2GL, All Band ran up record breaking scores.

More next month.

73, Frank, W1WY

W2SKE ILL

We were disturbed to hear that Bill Leonard, W2SKE, had suffered a heart attack and was convalescing in a hospital during the phone contest. I know that the phone gang missed Bill and we all extend our sincere hopes for a speedy recovery.

WAEDC

The European (WAE) DX Contest is again sponsored by the DARC for the second time and will be made an annual affair. The object of the contest is for European amateurs to work as many stations outside of Europe as possible and visa versa.

Contest Period

Phone

1st	Half—Dec.	8, 1956, 1200 GMT to
	Dec.	9, 1956, 2400 GMT.
2nd	Half—Jan.	19, 1957, 1200 GMT to
	Jan.	20, 1957, 2400 GMT.

CW

1st	Half—Jan.	5, 1957, 1200 GMT to
	Jan.	6, 1957, 2400 GMT.
2nd	Half—April	6, 1957, 1200 GMT to
	April	7, 1957, 2400 GMT.

Scoring

a. Serial numbers will consist of the usual RS or RST report plus a progressive 3 digit number starting with 001, and will continue serially even tho operation is conducted on different bands.

b. ONE POINT per completed QSO.

c. A station may be worked once per band each week-end.

d. All amateur bands, 3.5 thru 28. mc may be used. Cross band operation not permitted.

Multiplier

a. Stations outside of Europe will get a credit of ONE POINT for each European country worked on each band.

b. European stations will get a credit of one point for each country outside the European continent on each band. In addition each call area of the following countries will also count as a country in the multiplier. W/K, CE, PY, VE/VO, VK, ZL and ZS.

Bonus Points

5 BONUS POINTS can be credited if the same station is contacted on three different bands. 10 BONUS POINTS if on four different bands. 20 BONUS POINTS if on five bands.

QTC Traffic Scoring

This is a complicated procedure but since it adds considerably to the over-all gain in points we will try to describe it to you. The general idea is, that after a number of European stations have been worked, a report of same can be sent back during a later QSO with another station and a credit of ONE POINT can be claimed for each QTC transmitted and confirmed.

December	8-9	DARC - WAEDC - Phone
January	19-20	DARC - WAEDC - Phone
January	5-6	DARC - WAEDC - CW
April	6-7	DARC - WAEDC - CW
February	8-10	ARRL - Phone
March	8-10	ARRL - Phone
February	22-24	ARRL - CW
March	22-24	ARRL - CW

Description.

a. A QTC is a report of a confirmed QSO which has taken place between a European and a non-European station.

b. A QTC can be transmitted only from a non-European station to a European station.

c. A QTC contains the time, call and QSO Nr. (Example: 1200/DL7AA/113).

d. A QSO can only be reported once; and of course not back to the same station even tho the contact was made on another band.

e. A maximum of 10 QTC's per station per band are allowed on each week-end. (Example: QTC 3/5. This means that this is the third series of QTC's being sent by the originator and that there are 5 QSO's in this series.) Therefore five more QTC's can be sent to the same station during a later contact.

Final Score

The QSO points, plus the QTC points, plus the BONUS points multiplied by the COUNTRY multiplier totals the Final Score.

Classification

1. Single Operator. Class A and class B.
2. Multi-Operator. Class A and class B.

(Operation on only one band is classified as "A" and on two or more bands as class "B".)

Awards

A certificate to the highest scorer in each country or country/district. In cases of sufficient participation, 2nd and 3rd place awards will also be considered.

The DXCC country list of the ARRL will be used by European stations. Non-European stations will use the WAE country list in which Sicily (IT) counts as a separate country. Also bear in mind that the Russian countries in Europe are a part of this list.

It is strongly recommended that contestants write to the DARC for their official rules and log forms. Include one IRC for regular mail or three IRC for air mail.

Logs must be mailed not later than Jan. 31, 1957 (Phone) and May 15, 1957 (CW). Mail to

D A R C — DX Bureau
Fuchsienweg 51
Berlin — Rudow
Germany

DX

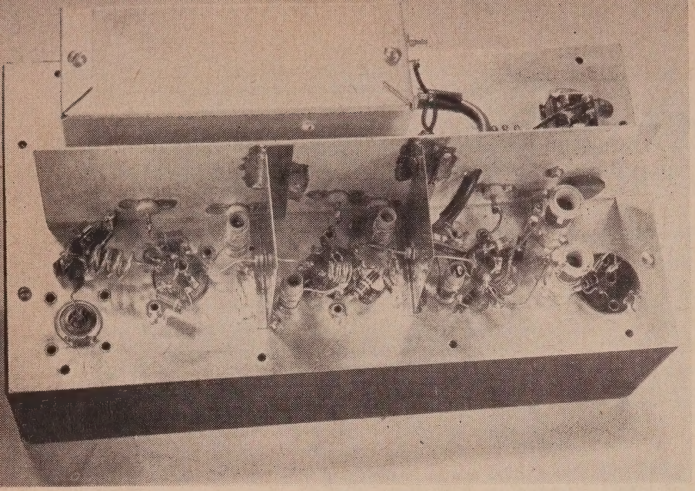
In a very recent letter I (W1WY) was informed by Derek Fisher, secretary/treasurer of the Royal Air Force Habbaniya Amateur Radio Club, that YI2AM is no more. Their license expired some months ago and they are experiencing considerable difficulty in getting it renewed.

During its four years of activity YI2AM accounted for 170 countries and 37 zones. (Confirmed 155/35). They did not make WAS, having worked 34 states so here's hoping that the renewal will eventually come thru so that they can get those other 14 states.

Derek also advised us that YI2DX and YI2RM are active but mostly on 40. Cards for either one can be sent to GI3KEV who is YI2DX. Recent activity by YI2DF will be QSLed 100 percent.

There is other YI activity, some of which is undercover and some is *not* located in Iraq.

73, Frank, W1WY



F. S. Harris, WIFZJ
VHF Editor

Testing the Tapetone XC-144

Testing new equipment can be fun or hard work depending on how satisfactorily it performs the job for which it was designed.

Contrary to the practice of some magazines we do not write reviews on every piece of equipment we can get our hands on. We do make tests on every new item we can obtain. When the results appear in *CQ* you can be sure that the device described has in fact been given a thorough test, both on and off the air and that in the opinion of the *CQ* staff it rates a place in your hamshack. While this is no guarantee that you will be satisfied, it does at least give you a first hand account of performance.

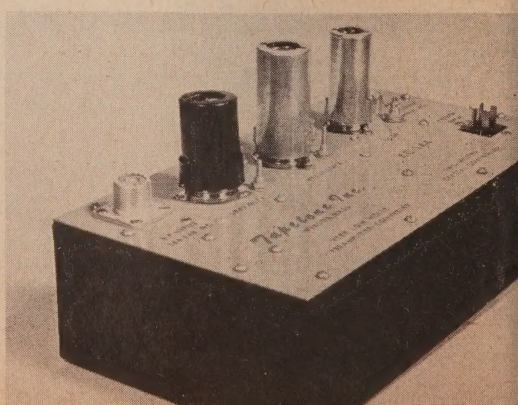
Testing the *Tapetone* Model XC144 was, I assure you, a pleasure. For the first time since the war it is possible to buy a two-meter converter which will outperform almost any home-made effort. This doesn't mean that a better one cannot be built. It means that the average two-meter converter using TV type tubes is good for a four to ten db noise figure. The serious VHF man who uses a 417A in cascode may get a noise figure of 3 db. The Tapetone converter is shipped with a 2.8 db or better limit. The painstaking effort required to come up with this kind of performance is necessarily reflected in the price. You can't get Cadillacs for Ford prices, and this thing is the real Cadillac of the converter field. The designer made a sterling effort to consider all the factors affecting the performance of a converter. He accepted no design compromises. He left nothing out which could in any way contribute to better performance. The results of his uncompromising attitude are lots of grey hairs for the manufacturer and a downright out of this world two-meter signal sniffer for you.

Circuit

Circuitwise there is not too much to tell. The r.f. end consists of a 417A grounded grid, followed by a cascode 6BQ7A. First detection takes place in a 6CB6. A 12AT7 oscillator multiplier is used to provide local oscillator signal. Output from the mixer is from a transformer through a 6 db pad. Impedance looking back into the pad is 50 ohms. The entire converter operates from a 150 volt 60 ma supply (preferably regulated). Filaments require 6.3 volts at 1.3 amperes.

Mechanical

It is in the mechanical layout and construction that the XC-144 starts to look like a winner. For example, the entire oscillator multiplier circuit is enclosed in a completely separate box of its own. Output is fed from this box to the mixer compartment through a short piece of coax. This ensures, with the help of proper circuitry, that



the only signal arriving at the mixer is the one you want. (This is the first step in eliminating birdies from your receiver). This oscillator treatment also prevents the injection signal from reaching the input of the converter, where, with the aid of a little nonlinearity, it is apt to beat with any old signal that happens to be present.

Chassis and shield partitions are all silver plated. Shield partitions are between each stage, and signal coupling is accomplished in such a manner that unwanted signal feedthrough is virtually eliminated. By this I mean to imply that if your receiver doesn't pick signals with the antenna terminals shorted, it won't pick them up with the converter connected. Tuned coils (of which there are seven) are wound on ceramic coil forms. While they are adjustable from the top of the chassis they are factory adjusted and the only thing I could accomplish on the one which I tested was to wish I hadn't. Incidentally the unit which I tested was manhandled at the Providence ARRL convention by curious VHF'ers for a period of at least twelve hours with no detrimental effects.

Performance

The XC-144 more than meets the performance specifications outlined by the manufacturer and listed below. The noise figure on the unit I tested when used in front of a National NC300 was 2.5 db.

(1) Power Gain: 2000 (33db)

(2) Noise Figure: 2.8db.; .085 microvolts will produce a 2 to 1 signal to noise ratio when used with a 5 kc bandwidth i.f.; .025 microvolts when followed by a crystal filter.

(3) Image Frequency Rejection: 60 db.

(4) All Other Spurious Responses: greater than 80 db down.

(5) Rejection of Signals at Intermediate Frequency: 90 db.

(6) Intermediate Frequency Tuning Range: 14 to 18 Mc.

(7) Input Impedance: 50-75 ohms nominal

(8) Output Impedance: 50 ohms nominal.

By now you have probably gathered that I am enthusiastic about the converter. If you haven't, then let me tell you now that I am. Despite some opinions to the contrary, a noise figure of 2.8 db or better is worth paying for. It makes your receiving setup capable of receiving moon scattered signals when used in conjunction with a reasonable antenna. (For instance a fifteen element Telrex). It gives you a decided edge in the reception of any scatter type signals. It doesn't eliminate the need for an antenna but it is a step in the right direction. More than the excellent noise figure is involved however. The rejection of spurious signals whether they are caused by local TV stations or loud locals is a boon to people living in crowded, high activity areas.

My advice to you is: don't hesitate, buy it now before they are all gone and you have to build your own. ■

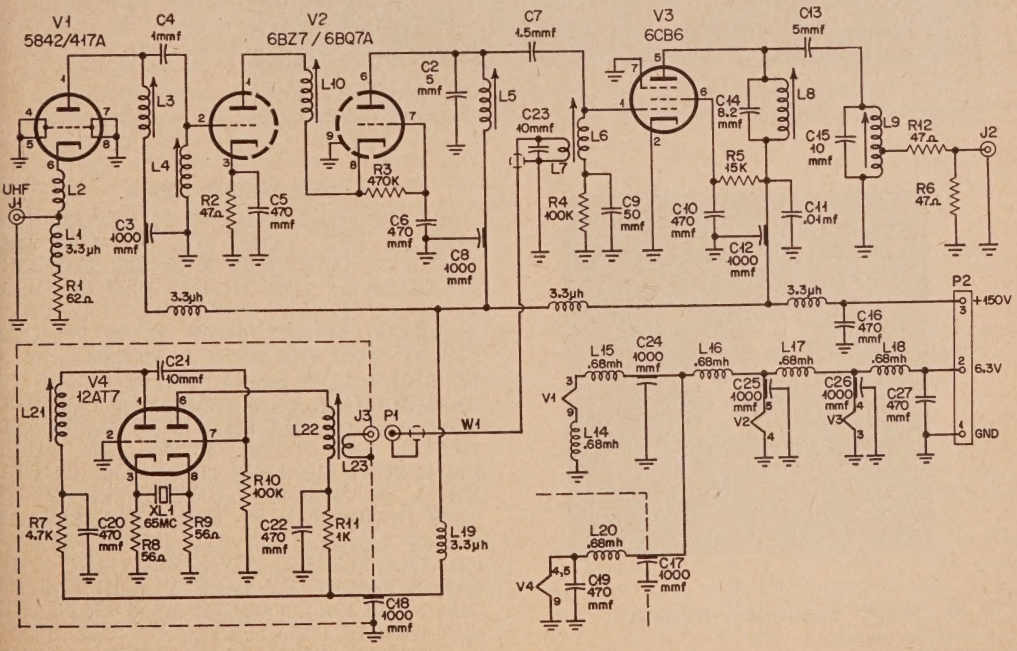
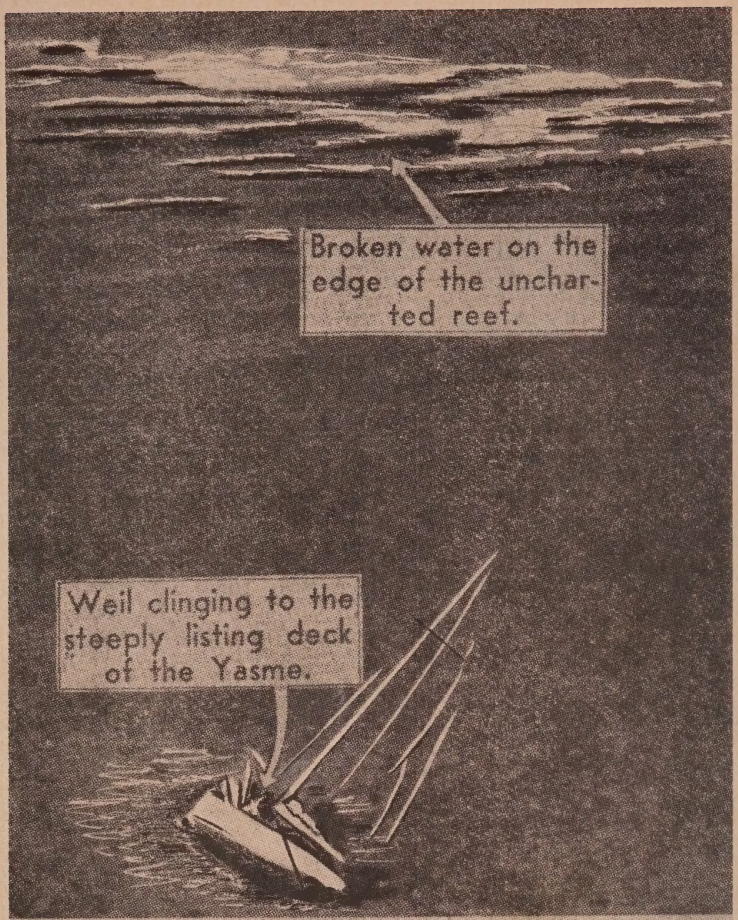


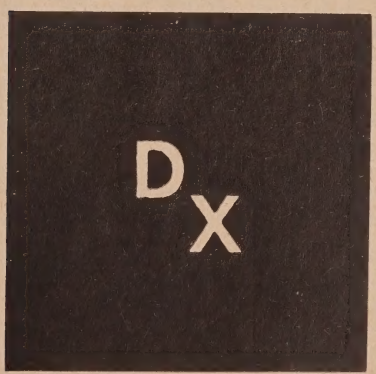
Diagram of the XC-144



From the Australian Newspaper Sun Times of Canberra.

This picture, taken from the R.A.A.F. Lincoln bomber which located the stricken yacht, shows Weil clinging to the edge of the sharply listing deck.

The front cover is the last taken of Yasme as she left Port Moresby. The power of the new Genoa sails is evident.



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

Last Minute Items

WE ARE MOST UNHAPPY TO REPORT THE LOSS OF THE "YASME" ON OCTOBER 24th. THE DX FRATERNITY WILL BE SHOCKED TO KNOW OF THIS MISHAP WHICH OVERTOOK DANNY JUST ONE DAY OUT OF PORT MORESBY. HERE'S HOW IT HAPPENED. DANNY WAS HOLDING A COURSE IN A STRAIGHT LINE FROM PORT MORESBY TO BRAMBLE CAY. THIS COURSE, ACCORDING TO ALL AVAILABLE DATA, WAS CLEAR AND DEVOID OF OBSTRUCTIONS. 130 MILES FROM PORT MORESBY THE YASME RAN UP ON A SUBMERGED, UNCHARTED REEF. THIS OCCURRED, IN THE DARKNESS, AT 8:35 PM LOCAL TIME. THE IMPACT STARTED THE PLATING TO SPRING AND THE YASME BEGAN TO TAKE WATER FASTER THAN THE PUMPS COULD HANDLE IT AND SHE STARTED TO SETTLE ON THE REEF. A DISTRESS SIGNAL WAS SENT ON THE

RADIO AND THE PORT MORESBY AIR-SEA RESCUE SERVICES WERE ALERTED. A PLANE WAS SENT OUT AND DANNY WAS QUICKLY LOCATED. A RUBBER DINGHY WAS DROPPED FROM THE PLANE AND DANNY SWAM 200 YARDS TO IT THROUGH SHARK INFESTED WATERS. AT THIS TIME THE TIDE WAS RISING AND THE YASME WAS SUBMERGED. AFTER SEVEN HOURS IN THE DINGHY, WAITING FOR DAYLIGHT, A CATALINA AIRCRAFT WAS SENT OUT, PICKED UP DANNY AND TOOK HIM TO PORT MORESBY. THUS ENDS THE GALLANT AND INTERESTING TRIP OF THE YASME. WE KNOW THAT ALL HAMS WILL BE GLAD TO KNOW THAT DANNY WAS SAVED AND MUCH CREDIT MUST BE GIVEN TO THE ALERT AND EFFICIENT ACTION TAKEN BY THE AIR-SEA RESCUE SERVICES WHICH HAVE TWICE PULLED DANNY FROM MOST PRECARIOUS SITUATIONS. ALL WAS LOST IN THIS MISHAP. THE YASME CARRIED NO INSURANCE AS THE PREMIUMS, FOR THIS TYPE OF VENTURE, WERE PROHIBITIVE.

As we write, Danny is being well taken care of by the VK9 gang and will probably accept invitations to visit VK-2-land.

All stations we have contacted, following this accident, have been most enthusiastic on the idea that Danny might be provided with a new boat and gear so that he may continue his voyage. We are most optimistic about this and ways and means are being explored (perhaps we may have come up with something as this is being read). Bill, KV4BB, reduces it to simple terms, he says let 2000 DX hams contribute ten dollars apiece. Another way would be to interest some newspaper, radio company or society whose advertising budget would hardly feel the strain of financing YASME II. Such newspapers or firms would be repaid by articles from Danny plus all the attendant publicity. We call on all hams who might have an "in" with such firms or those hams who have any ideas or suggestions towards getting Danny on his way again to communicate with us. It is felt that Danny could procure a suitable craft in Australia. (Salvage of the YASME was deemed impossible as prevailing currents will quickly tear her to pieces).

Our heartiest congratulations go forward to the following stations upon their achievement of WAZ!

No. 326 GENE P. ERCKENBRACK W7VY 40-264
No. 327 HOMER H. BIEDEBACH W6GFE 40-251
No. 328 DICK SPENCELEY KV4AA 40-263

W7VY is the 19th W7 to gain this coveted award while W6GFE is the 119th W6 (!) and KV4AA the first KV4.

A total of sixteen WAZ certificates were issued in 1956. The others going to W1GKK, W7GUV, W8KIA, W9FKC, W8SYC, W9YNB, W9FID, W9HUZ, HB9J, W8WZ, W8TTS, PY2CK (phone) and DL1IT. Ten stations made the grade in 1955.

We also welcome the following as newcomers to the HONOR ROLL:

I1OJ	**39-188**	**W9UXO**	**38-207**
W1ZZK	**38-163**	**W4NBV**	**38-152**
W8TLL	**37-128**	**G2HKU**	**36-132**
F8CW	**35-168**	**KP4JE**	**35-155**
W4HKJ	**35-143**	**W3UXX**	**35-133**

As 1956 draws to a close we wish to acknowledge, and salute, the efforts of the following DX stations and Expeditions which have added much zest to 1956 DX chasing and who have been instrumental in giving many of us that, much sought for, "new one":

Aden	VS9AS (G3ANK)
Andorra	PX1EX (F8EX, F31B, F3AT)
Antarctica	KC4USA, KC4USV, UA1KAE, FB8YY, VK1GA
Ascension Island	ZD8SC
Aves Island	YVØAA
Balearic Islands	EA6AW
Cameroons	FE8AE, FE8AG
Cocos-Keeling Is.	VK1RW
Comoro Islands	FB8BR/FB
Dominican Republic	HI8FR, HI8FG, HI8WL
Dutch St. Martin	PJ2MC (W6ITH), PJ2ME
Easter Island	CEØAD
Fanning Islands	VR3B
Formosa	BV1US
French St. Martin	FS7RT, FS7AA
French Somaliland	FL8AB
Gough Island	ZD9AD, ZD9AE
Guadeloupe	FG7XC, FG7XD
Ital. Somaliland	15REX, 15RAM
Luxembourg	ON4QX/LX, ON4CK/LX, DL3AO/LX, DL9CI/LX
Maquarie Island	VK1IJ
Marion Island	ZS2MI
Monaco	3A2BH
New Hebrides	YJ1RF, YJ1AA
Reunion Island	FR7ZC
Revillagigedo Is.	XE4A (WØAIW, WØEIV, WØMAF, WØOJW, WØUQV)
Russian prefixes	UD, UF, UG, UH, UI, UJ, UL, UO, UP, UQ, UR, UA9 and UAØ
San Marino	M1B, I1DCO/M1, I1BRN/M1
Sierra Leone	ZD1FG, ZD1DR
Spitzbergen	SM8KV/LA/P (SM5KV)
South Sandwich Is.	LU2ZY, LU3ZY
Swan Island	W4EMF/KS4
Timor	CR1ØAA
Togoland	FD4BD
Yasme Expedition	VR1B, VK9TW, VR4AA (Danny)
Zanzibar	VQ1JO (ZE3JO)

We hope that 1957 will bring forth an equally imposing galaxy for DX'ers to chew on—!

DX Jottings

Firstly, a reminder that a Tannu Tuva DX'pedition has been scheduled to appear on or about December 1st. This will consist of UAØ and UB5 hams and they will be active until January 1st. Tannu Tuva is not a separate country but it will be much in demand as Zone 23. The QTH will be Turan, 45 miles north of Kyzyl (you pronounce it) and the call will be UAØKTT. Operation will be on the 14, 21 and 28 Mc bands. Equipment will consist of a BC-312 plus converter and a homemade

PP 807 transmitter. All QSL's, each with two IRC's, should go via Post Box 27, Stalino, Ukraine, USSR. . . . Another expedition to Tannu Tuva is planned for next Summer by UP2AS. A 100 watt mobile rig will be constructed and used. . . . YASME EXPEDITION: As this is read Danny should be in Darwin, Australia, and has expressed the desire to spend Xmas there. Operation from Portuguese Timor, with the call of CR1ØAB, is scheduled for early January but it is entirely possible that CR1ØAB, will be on the air at an earlier date should Danny decide to cut his Darwin visit short. About 750 contacts were made by VK9TW, Port Moresby, Papua, as this QTH was not considered too rare and much time had to be spent effecting repairs to the YASME as a result of her rough trip from Guadalcanal. A few SSB contacts were made with the 100A rig under the call of VK9FN. Happily we were able to have a rapid delivery made on his new mainsail which enabled him to leave Port Moresby on October 21st. Had this not been made Danny might have been stuck at that QTH until March due to adverse weather conditions. . . . We ponder the authenticity of two nice ones (if good) ZA1AB who contacted a great many stations near 14020, gave his name as Wlad (and Obilis) and said QSL via Box 88 Moscow. The other was UA1KTO/FJ who appeared on October 11th with a 599 signal. His name was given as Vlad, UA1-8808, and QTH as



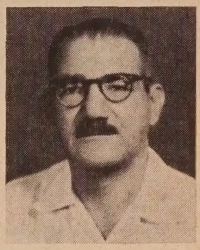
An extremely popular DX catch is FL8AB, French Somaliland. Op Guy Depagne has given many that sought for "new one".

Franz Josef Land. He said there would be much activity from this spot soon. Heard in QSO were: W2BJ, W2BOK, W1ADM, W2OKM, W6GPB, W1HA, W1FH, WØYTL, W1LHZ, W2HQL, W8CQ W3LMA, W2HMJ and W8KML . . . Dave, ex-PAØUN, was heard keying from ZS6UN on 15 . . . 4S7PT salis for England on December 1st. See QTH's . . . Augmenting the info given in other issues regarding the "TAHITI-NUT" raft expedition we have just received the following from F9RS: This bamboo raft is scheduled to leave Papeete, Tahiti, on October 15th and, making use of prevailing winds and current, attempts to reach the coast of Chile following a course south of Easter Island. The call FO8AP/MM will be used and the operator's name is Michel Brun. Contacts will be made with hams, CW only, on the following frequencies: 7015, 7030, 14042, 14103, and 21042. Calls will not be accepted on these frequencies but FO8AP/MM will advise where he is listening via QLM etc. It is requested that no calls be given FO8AP/MM between the following hours at which times he will be scheduling station FUM in Papeete with wx information: 0030-0100, 0630-0700 and 1815-1850 GMT. To aid this expedition the REF, Box 42-01, Paris-RP, is issuing a map which may be obtained from them for 16 IRC's. This map may be used to mark the various positions of the raft, QSO's etc. After the trip this map may be sent to Valparaiso (address to be given) and the members of the crew will sign and return it. F9RS requests that any info regarding the raft be QSP'ed to him . . . FB8YY, Adelie Land, Antarctica, was active for a few days in October and then left for an expedition to the south. He will be active again in January just before returning to France . . . There will be a permanent station on Anjouan Island, in the Comoro group, operated by A. Lienard. No word as to when he will start up . . . EI4A worked VQ9JO in October and was told that he would be active for two weeks. To date we have no supporting evidence . . . Another one is CR3AC who claimed to be on Manuel Island 900 miles east of Madagascar (???) . . . YI3AC was QSO'ed on 14034. Ron is with the Cable and Wireless Co. in Baghdad and says he will be there for a year or so . . . HI8WL, 14078, came on in Mid-October and said his QSL QTH was: Radio HI8WL, Cuidad Trujillo, Dominican Rep. Bill said he had been on before from W5-land . . . We are advised by VK5AB that JZØACK is active from Biak Island, Dutch New Guinea. He is rock bound on 21275, phone, but should have more power plus a three element beam shortly. See QTH's. He is on from 0930 to 1130 GMT daily and skeds VK5AB at 1000 GMT . . . If anyone has heard DJØAA on 3.5 Mc it's G2DHV on holiday in Germany with a special call-sign . . . PJ2ME continues activity on 7020 and 14040, xtl, but should have VFO by now. He requests that W stations don't call him between 0200 and 0300 GMT as this period is reserved for DX . . . YJ1RF, now active on 14 Mc, advises that he was VK1RF on Macquarie in 1950/51 and on Heard Island in 1952. His logs are still intact and he will be glad to furnish any missing QSL cards (We suggest a couple of IRC's accompany such cards to ease the load) . . . OQØVN, now active from Usumbura, Ruanda-Urundi, Van presently runs 50 watts to a 7 foot high indoor antenna and operates on 14 CW only. Much better antennas will be available soon and his stay there may be of three years duration . . . 3A2BH spent a couple of weeks in Monaco and went QRT on October 11th . . . VK1RW continues activity from Cocos-Keeling and may be heard around 1500 GMT. He will be there for three years . . . PK7ADM says his call was issued by authorities by mistake and he now uses JZØADM . . . ZC3AC has been on, usually 14080, T8, but pileups frighten him off . . . Via W6YY: ZS8I is

the only Basutoland station on phone at present but ZS8O, at a QTH 11,000 feet up, will soon get started. Norm, ZS8P, from CR5SP is to get Secret of getting QSL's from CR5SP is to get Jo, CR6AI, to do the chore for you. CR5SP's QTH is OK in the book however . . . KAØIJ, Iwo Jima, is now back on the air on 14 phone and CW, VFO . . . VQ1JO made 350 contacts in 45 countries during his recent jaunt to Zanzibar . . . ZD2GWS is active from Buea in the British Cameroons. This is still a Trust Territory and could very well be considered a separate one like its French counterpart FE8. We suggest "ZD5GWS"! . . . Paul, K2DCA, advises that HB portable stations in Liechtenstein now use the suffix "/FL". He worked HB1IM/FL . . . Via the So. Calif. Bulletin we hear there will be a new station on Pitcairn Island signing VR6TC (Tom Christian) using a DX35 Heathkit. Should be on shortly but we don't know if he will use CW or phone. FI8BB is active from Saigon, 100 watts, QSL REF . . . Two new "old men" have now received their tickets in Egypt. SU1IM runs 80 watts on CW and 15 on phone and SU1KH run 10 watts on CW only. This now makes four active stations in SU-land with SU1AS and SU1IC . . .

DX'ploits

Chas, W1FH, adds IT1AGA, OQØDZ and VK9TW for 271 while Don, W6AM, also hits 271 with IT1TAI, OQØDZ and ZC3AC . . . Andy, W6ENV, makes it 269 thanks to ZC3AC as Bob, W3GHD, hits 265 with such as VK1RW, SVØWN (Crete), IT1AGA, OQØCZ, YVØAA, XE4A, VK9TW and SM8KV/LA/P. On phone his total is 209 with YK1AC, UP2AS, VR4AA, YJ1RF, I5RAM plus UA9DN for a new zone . . . Glenn, W8KIA, goes to 265 with OQØDZ and IT1AGA while Frank, W6AOA, reached 265 with VQ1JO and FL8AB . . . Howy, W2AGW, nabbed VK1RW (Cocos), OQ5CZ and IT1AGA for 264 as Dick, KV4AA, entered WAZ thanks to a UAØKCA card . . . Ozzie, W9VND, rises to 261 thanks to PJ2ME, OQØDZ and IT1AGA while Dewey, W6VE, goes to 260 with ZC3AC, UH8KAA and ET3AF . . . Roger, W3EVW, now has 259 on CW and 173 on phone thanks to SM8KV/LA, OQØDZ and IT1BXX as Gene, W6EBG, goes to 257 with VK1RW and ZC3AC . . . Horace, W6TI, never pausing, climbs to 252 with AP2AD, ZD1FG and UI8KAA while John, W7GUV, comes up to date with such as I1DCO/M1, VK9TW, PX1EX, UJ8KAA, ZC3AC, I5RAM, SM8KV/LA, PJ2MC, YVØAA and XE4A for a 251 total . . . Gordon, VK2DI, makes things current by adding 45 to rest on 249 as Bill, ZL1BY, hits 242 with such as VP2GN, FW8AB, SM8KV/LA, XE4A, PJ2MC, VS4BA and HKØAI . . . Guy, W6DLY, moves to 240 with VK9TW, XW8AB, IT1ZCY and OQ5DZ while John, W6EFM, is 240 with VK9TW, I1DCO/M1, YVØAA, PJ2MC, ZD3A, XE4A, HI6EC, YA1AM and FB8ZZ . . . Pierre, F8BS, is 239 with FS7RT, FL8AB and YVØAA as Jack, W6NTR, keyed with YVØAA, SM8KV/LA, UF6AB, VQ1JO, VR4AA and UJ8AF for a 239 total . . . Ed, W6LDD, rises to 239 with such as UI8KAA, ZD1FG, UF6KAF, CR5SP, OY7ML, FR7ZC, UG6AB, UJ8AF and SM8KV/LA while Dick, W6BZE, comes up with 66 additions setting him on 231 . . . Bert, G8IG, miked with VK9TW giving him a 223 CW and 198 A3 total as Thor, W6LN, slip to 219 with MP4BBE, XE4A, FS7RT, HI8FR, ZS2MI and VS4FC . . . Josef, OK1HI,



SU1IM, Ibrahim Mohamed, of Cairo, Egypt, recently came on the air with 80 watts. He is an excellent CW man.

submits new list for a 213 total while Burney, ZS2AT, goes to 197 with UJ8KAA and UR2AK . . . Vip, W6ID, hits 196 thanks to IT1AGA, ZS9P, HB1MX/HE and YJ1RF as Norm, W9YNB, snagged VR4AA for 192 . . . George, W6BIL, rises to 175 with such as VR4AA, VK1IJ, VK1RW, ZD6BX, VK9TW, UR2KAA, ZD9AE and YVØAA while Mario, W6DUB, comes up to date with 74 additions putting him on 163 . . . Bill, W5ASG, adds SM8KV/LA, VK9TW, YVØAA, OQ5DZ, AC3SQ, AC5PN and XE4A for an imposing 266 on CW. His phone total moved to 197 . . . Al, W2WZ, goes to 253 with OQØDZ, IT1AGA, VR1B, VK9TW, SM8KV/LA, YVØAA and VK1RW while Stan, W1CLX, nabbed YK1AC and XE4A for 248 . . . Joe, W8UAS, got new beam going and nailed UL7KBA and FL8AB for 247 as Weldon, W2NSZ, went to 244 with YVØAA, PJ2MC and VK9TW . . . Howy, W2QHH, is 244 with IT1TAI and OQØDZ while Gus, W2HMJ, hit 237 with IT1ZGY, UI8KBA, UL7CB, VQ1JO and SM8KV/LA . . . Hal, W3OCU, has moved to new QTH. He adds XW8AB, SM8KV/LA, VK9TW, HKØAI etc. for 237 Roger, W1JYH, goes to 236 with IT1TAI, YJ1AA, OQØVN and FL8AB . . . Buzz, W9ABA, ups to 236 with UL7CB, VK1RW, OQØDZ and IT1AGA while Clif, WØAZT, moves to 226 with such as UI8KAA, LU3ZY, VR4AA, VK1IJ, UJ8AF, ZD9AE, PX1EX, SM8KV/LA and YVØAA . . . John, W4HA, also is 226 with YA1AM, UI8KAA, and UN1AA plus UA9KYB for a new zone. His phone total is 212 with VQ8AR and UB5WF . . . Bob, W1KFV, nabbed KC6UZ, AP2RH, ZD1FG and UL7CB for 222 while Ev, KP4KD, went to 216 with VK1RW and VR3B . . . Glenn, W7ADS, adds 16 plus UAØKJA for zone 19 to rest on 216 as Pat, W2GVZ, goes to 216 with ZD9AE, IT1TAI, OQ5CZ, VR2AA, and SVØWN . . . Paul, K2GFQ, nipped

[*Continued on page 92*]

NOVICE

Walt Burdine W8ZCV
Waynesville, Ohio

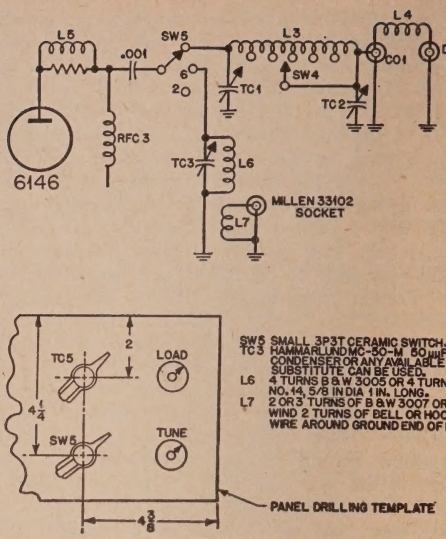


Diagram of Globe Scout conversion to 6 meters

Globe Scout

For you who need the diagrams to convert your Globe Scouts to six meters as per instructions in last month's column, here they are . . .

Reflection

The year 1956 is drawing to a close and it is time to stop and take inventory of our new year, 1957. We can improve a lot of our operating procedures, thereby making more use of our operating time. A little time spent scanning the amateur bands with the filaments of the transmitter cold (actually listening) will show up quite a few of our poor operating defects. Take notes, make use of these notes when operating your station. How often do you hear a phone operator using c.w. terminology when he could just as easily have laughed or said, "wait a minute please?" Is it any wonder that some new-comers to ham radio can't understand what it is all about? Listen for two hours on any of the crowded ham bands and then stand in front of a mirror and ask yourself a few questions.

The International Geophysical Year, IGY, will soon be in full swing and we may be called upon to help in some small way. If you are called to help get in there and give it all you have. We are working to gather information that may make the world a happier and a safer place to live, so let's help all we can. This is one project where the world has forgotten all of its petty grievances and are united upon one main project, the betterment of the knowledge of the world. You and I will both benefit from this research.

New Certificate

The Worked All North Carolina Counties (WANCC) is given for working 40 of the 100 North Carolina counties. All contacts must be made on the Novice bands. Send names, dates, calls, QTHs and counties to Bob Beatty, KN4IEX, 2025 Radcliffe Avenue, Charlotte, North Carolina. This was received from the Charlotte Novice Club. There is a new one for you to fight for, it probably will be pretty hard to get.

Net News . . .

The Eastern New York Novice Net (EYNN) will meet at 3:00 p.m. on Monday and Friday on 3731 kc. To join this net get in touch with Robert Kimball, KN2SHM, net manager, 58 Ford Street, Ballston Spa, New York. Anyone is welcome to join.

New Amateur Operating Aid

I have just tried out a transistor code oscillator and c-w monitor that I recommend highly. By following the instructions enclosed with the unit you can take the battery out, replace it with a diode and a .01 mfd condenser, couple the oscillator to the final of your transmitter and use it for a c-w monitor. This is an interesting feaure of this code oscillator which should help you improve your sending. Newcomers will find this a good code oscillator (and it sells for only $7.95). Another attractive feature is that the battery will last for its shelf life. The Transistor Code Oscillator and Monitor is manufactured by the *Jackson Electrical Instrument Company* of Dayton, Ohio.

Parts List for 6 Meter Globe Scout

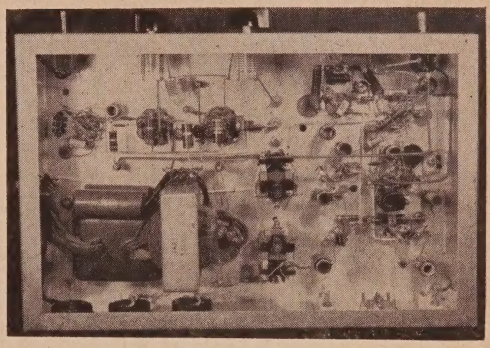
SW5—Small 3P3T ceramic switch

TC3—Hammarlund MC-50-M 50 mmfd condenser any available substitute can be used.

L6—4 turns B&W 3005 or 4 t #14 ⅝" dia. 1" long

L7—2 or 3 turns of B&W 3007 or wind 2 turns of bell or hookwire around the ground end of L6

Bottom of combined 2 and 6 meter converter with 6 meter x-mtr and power supply included.



I hope by now you have your Globe Scout working on 6 meters. Following is a transmitter for two meters that uses the Scout power supply and modulators. Built on the same chassis are converters for reception of both 6 and 2.

Two meter transmitter

The transmitter used with the Globe Scout for two meters was redesigned from the article that appeared in the December 1952 *CQ*, page 28. A 6146 was substituted for the 2E26, as this would match the output impedances of the modulation transformer. You use the same plate voltage and plate current as you did with the Globe Scout. (I run mine at 110 ma.) The lineup is a 6CL6 oscillator tripling from an 8 mc crystal to 24 mc, tripling in the 6AG7 plate to 72 mc, and doubling in the 6146 to 144 mc. The modulator was switched from the Globe Scout to the plate of the 6146. The layout shown in the pictures will give you the best placement of parts and the shortest lead lengths. No neutralization was necessary because the plate circuit of the 6146 is used as a doubler stage.

Parts list for the two-meter transmitter

All condensers are ceramic

C1—10 mmfd

C2—100 mmfd

C3, 4, 5, 6, 7, 8, 10, 11 —.001 mfd

C9—35 mmfd (Hammarlund HF-35)

C12—35 mmfd (Hammarlund HF30X)

R1—100k

R2—22k

R3—68k

R4—1200 ohm 2 watt

All resistors ½ watt except as noted

R5—1.5k

R6—47k 1 watt

R7—47 ohm 1 watt

R8—18k 1 watt

R9—7000 ohm 10 watt

R10—20k 20 watt

L1—750 uh r.f. choke National R 33.

L2—14 turns #28 Enamel wire on ¾ inch dia. iron slug form

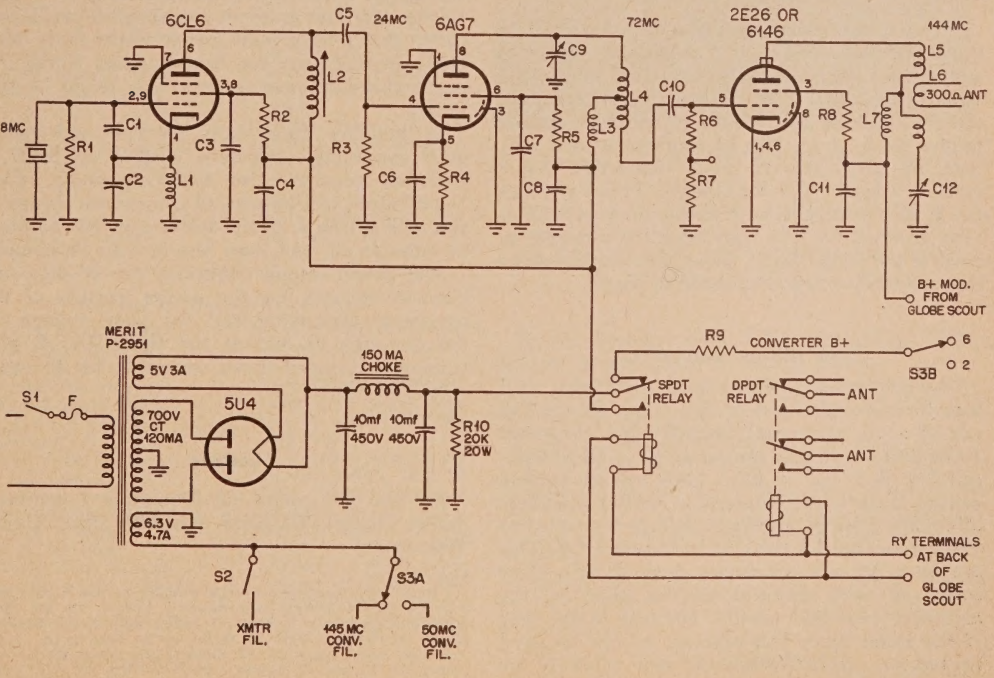
L3—6 turns #18 Enamel wire wound on ¼ inch drill to fill 2/3 inch

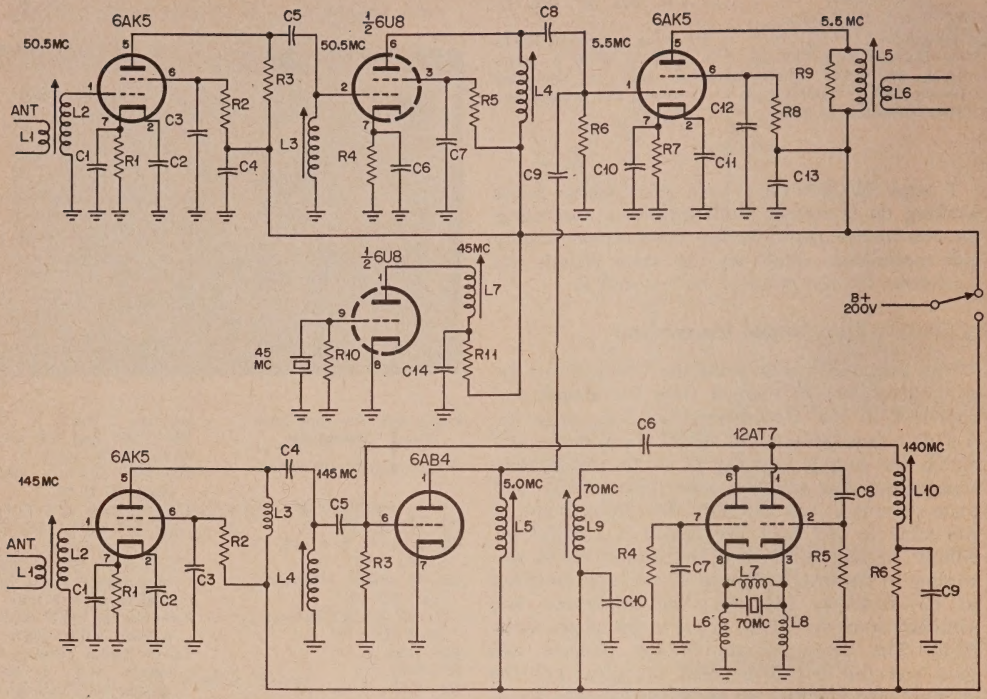
L4—7 turns B&W center-tapped. B&W 3003

L5—I used a surplus 522 output coil. 4 turns #12 to fill 1 inch space, center tapped and a ¼ inch space in the center for link

L6—Variable link, 3 turns #14 wire ⅞ inch in diameter

Schematic of two meter transmitter





Schematic of 2 and 6 meter converter.

Six Meter Converter

The six meter converter was first described in the November 1955 *CQ*. A 5 mc i-f stage was added for additional gain and sure helps the signal readability. The r-f and mixer coils are tuned to 50.5 mc and 245 mc crystal was selected to give the 5 mc i.f. This i-f amplifier is used with both the two and six meter converters. SW-3 switches it from one to the other. The relay switches the B plus voltage from transmit to receive. This relay receives the 117 volts from the terminal on back of the Globe Scout, being thus controlled by the send-receive switch on the front panel.

Two Meter Converter

The two meter converter shown has been used here for some time and is easy to get going. The use of a 70 mc crystal simplifies the frequency multiplication. It may appear to be a bit complicated at first, but so far I have had no trouble getting these high frequency crystals to oscillate at the first attempt. Oscillator voltage is coupled to the mixer stage by the small condenser C6. This can be a gimmick condenser, made from a short length of wire fastened to the plate of the multiplier tube and another fastened to the grid of the mixer tube. The capacity can be changed by twisting or untwisting the two wires, or by cutting the twisted wire, *after* shutting the B plus voltage off. This is about the simplest small converter that I have built and it works fairly well. Don't let that keep you from building it and trying it ahead of your receiver, you might be surprised.

In building these units be sure and follow good construction practices, keeping all leads as short as possible. Use solder sparingly, don't "blob" it on, and be sure all connections are clean and well soldered; a cold-solder joint has no place in radio at all, and even less in v.h.f equipment.

The power supply furnishes the B plus and filament voltages for the exciter portion of the two-meter transmitter and the plate voltage for the converter in use at the time. The B plus voltage is dropped down somewhat for the converter, by R9.

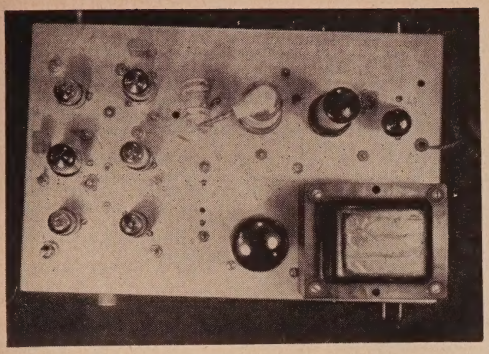
Letters

For the DX award for December I nominate Walter Dangel, WL7BUS, Box 219, Sitka, Alaska. Walt writes.

Dear Walt:

I have been wanting to write a letter to the *Novice* section of CQ Magazine ever since I picked up my first issue and saw your column. I enjoy very much reading about the fellows that do write in so here goes.

I have been busy on 15 meters and have worked 31 states. On 40 and 80 meters I have worked the west coast



Top view of two meter transmitter (on right top of chassis), power supply, six and two meter converters (left side of chassis). This with your Globe Scout and Receiver make a truly all band station.

and Hawaii. Of course I have worked a few WL7s and KL7s.

The rig is an AT-1. The receiver is an NC-183 and I use an all-band doublet on 80, 40 and 15 meters. I have a one element 15 meter rotary which helps when the QRM is bad.

I have had my license since May first and have made about 250 QSOs. My favorite band is 15 meters and my favorite state is California since the W6's and KN6's boom in here in Alaska. I suppose you have heard this before, but about 75% of my contacts say that I am their first WL7. There are many active WL7's but I suppose that there are many more active KN6's.

Parts List for Six meter converter

C 1, 2, 3, 4, 6, 7, 10, 11, 12, 13, 14—.001 mfd.
C6—.004
C5, C8, 9—50 mmfd mica or ceramic.
R1—220 ohm ½ watt
R2—33k ohm ½ watt
R3—10k ohm ½ watt
R4—1k ohm ½ watt
R5—33k ohm ½ watt.
R6—100 ohm ½ watt
R7—180 ohm 1 watt
R8—33k ½ watt
R9—8k ½ watt
R10—100k ½ watt
R11—18k 1 watt
All forms for coils are CTC LS3 forms ⅜ inch, iron slug units.
L1—4 turns 24 E. cw on ground end of L
L2—10 turns 24 E, cw.
L3—8 turns 24 E. close wound.
L4—CTC 5 mc. LS3 coil
L5—CTC 5 mc. LS3 coil
L6—4 turns plastic covered hook-up wire on ground end of L5
L7—14 turns 24 E. wire on LS3 form

Parts list for Two meter converter

C1, 2, 3, 9—.001 mfd.
C4—5 mmfd ceramic
C5—50 mmfd ceramic
C7—.005 disc ceramic
C10—500 mmfd ceramic
C6—2 mmfd ceramic or a gimmick
C8—25 mmfd ceramic
R1—150 ohm ½ watt
R2—10k ½ watt
R3—1 megohm ½ watt
R4—10k ½ watt
R5—20k ½ watt
R6—100 ohms ½ watt
L9—CTC LS3, 50-190 Mc coil
L10—CTC LS3 50-190 Mc coil
Coil data for two meter converter
L1—2 turns #20 Enamel wire at ground end of L2
L2—5 turns #20 Enamel wire 5/16 inches long on ⅜ inch CTC LS3 coil form
L3—1 watt 1 megohm resistor wound full of #32 Enamel wire.
L4—Same as L2
L5—CTC 5 MC LS3 coil
L6 & 8—35 turns of #30 Enamel wire close wound on ¼ poly rod ¾ inch long
L7—15 turns #24 Enamel wire close wound on ¼ inch poly rod ⅞ inch long

I have a Hallicrafters HT-9 which I shall put on the air as soon as I get my General.

Thanks for a swell column Walt and keep up the good work. In case this is published, I take this opportunity to say hello to my many ham friends. I QSL 100% and have received 95% returns.

My wife, Marge, is WL7BYA. 73 . . . Walt.

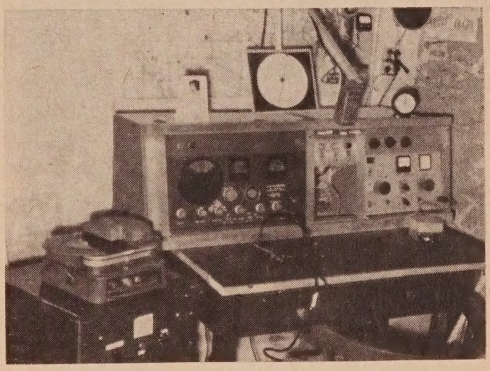
Reports of 9 plus to Jack Shipman, W5DAU, Box 1443, Hobbs, New Mexico for this nice communication.

. . . I just finished your October column and would like to tell you about another cheap and efficient antenna that most of the boys can use on 40 if they are interested. I bought 33 feet of 3 inch down-spout from Sears for $4.20 and had it soldered together by a neighbor. I stood it on a big ginger-ale bottle sunk 3 inches in the ground. I guyed it with stranded clothes wire guys broken with egg insulators at 120 degrees, three guys total. I have had 70 mile winds; it has stood the test. I buried 4 radials of #10 aluminum clothesline 34 feet in length in the back-yard radiating from the ginger-ale bottle insulator.

I feed it with 52 ohm coax and tune the rig by hooking a 25 watt bulb across the coax at the base of the antenna. If I tune the rig by the meter I can barely discern any glow in the bulb, but by tuning around I can usually get the bulb up to close normal brilliance—then I really get out with 150 watts input.

When I finish rebuilding my rig to vfo all-band, I will be up in the Novice bands a couple of nights a week to give them New Mexico contacts. At present I am rock-bound on the low end of 40 meters.

I enjoy reading your column and hope you continue your help to all of us. 73 . . . Jack, W5DAU.



Douglas Blakeslee, W1KLK/WN1KLK, 937 Broad Street, Meriden, Connecticut says with this nice layout and the "drooping doublet" (CQ, February, '56) he can work 700 miles even at 8:00 on Saturday night. You had better start reading those back issues of CQ too.

Jimmy Duncan (16) KN4 Jims Gone Nuts, Box 26, Horse Cave, Kentucky writes:

. . . I have not seen too many letters from old Kentucky in your column, so I thought I would write you one. You are doing a fine job with *Novice Shack* and helping a lot of us new hams.

I hope to have my General soon, as it has been 4 weeks since I took the test. I have worked 20 states so far. I will be using 2 6146s when I get my General. At present I have an SX-43 and a home-brew 6146 rig running 75 watts. I received my Novice ticket the day school was out so I got two good things the same day, vacation and a ticket. I have worked 9 call areas, but the QRM is rough and so far I haven't been able to work a W1.

I QSL 100% and anyone working me will get one of my cards, I am always glad to QSL. I will have a 20 meter doublet up when I get my General. I now have a 40 meter doublet.

That is about all for now Walt, and I will sked anyone needing a Kentucky station for WAS.

73 and DX. Jim.

Barry Diamond, KN4KVJ, 2018 S.W. 13th Street, Miami 45, Florida sends this nice letter, he has the ham's interest at heart.

. . . . After being an SWL for about six months, I finally took my examination for Novice license and got my call. After taking the Novice test I went ahead and took my General test before my Novice came through.

In one month I have worked 18 states and all call areas except W6. My best DX is Washington, which I have worked twice. I QSL 100%.

My rig is a Viking Ranger, SX-99 and a DB23. My antenna is a 40 meter folded dipole. As an addition my General rig will be a Globe King running 500 watts and a 3 element 20 meter rotary beam on a 50 foot tower.

Miami is very limited in its help for the beginner in either code or theory. For this reason, I will be joining W4IYT with code classes on ten meter phone next summer. For the theory I think the *Ameco* Theory Course which sells for four dollars from any mail order house is the best way out. It is full of theory and fills the bill adequately.

I will sked anyone needing Florida for WAS and would like a sked with California.

Keep up the good work Walt and 73 . . . Barry.



Walter Dangel (Walt) WL7BUS, Box 219, Sitka, Alaska will furnish you with a WL7 card if you sked him on 15 meters. Walt has worked 31 states on 15. He is also active on 40 and 80 meters. He QSLs 100% and has received a return of 95%, How do you do it, Walt?

5-9 plus to Bill Reinhardt, KN2TBQ, 445 Independence Drive, Burlington, New Jersey for this communique.

. . . Every time I get my hands on a copy of *CQ* the first thing that I turn to is your column. You sure do a good job. I notice that the letters are really pouring in from New Jersey so I thought that I would get into the act too.

The transmitter here is doing a fine job; so far I have worked 15 countries but I am having trouble getting QSLs out of them. I have worked 40 states and have 37 confirmed.

My DX so far is ON4, XE1, SP3, GI3, GW3, G3, FA8, WH6, WN7, VE3 KP4, KV4, F8, PAØ and KN6.

The rig is a *Heath-kit* DX-35 running 65 watts to a 15 meter folded dipole antenna. I am on 15 meters almost every day, and will be glad to sked anyone needing New Jersey. Well Walt, the DX here has been very good but the KN/WN QRM is terrific here on 15 meters.

I QSL one hundred per cent when I QSO with another station. Well Walt I guess I will say 73 now and please keep the Novice section as good as it is now.

73 . . . Bill.

John Booker, KN2SKB/K2SKB, R.F.D. #1, Brooktondale, New York sends this nice letter.

. . . I thought I'd just drop a line to tell you about the equipment here and offer several tips for using single tube Novice transmitters on 15 meters.

The receiver is an ARC-5 40 meter job and the transmitter is a 6L6 tritet oscillator. My preacher is going to lend me his *Hallicrafters* S-40 receiver for a while and then I can get on 15 meters.

On 15 meters power is not the main requirement and under good conditions fairly good results may be had with only 2 or 3 watts.

If you have built one of the one tube transmitters described in "How to Become a Radio Amateur" or a similar transmitter the only modification needed are new cathode and plate coils. In the case of the 6L6 transmitter the coils are as follows.

Cathode. 8-1/3 turns of *B & W* 3014 used with the original 470 mmfd condenser.

Plate. 3 turns no. 18 D.C.C. wire 2 inches in diameter as per original.

Antenna. 2 turns no. 18 D.C.C. wire 2 inches in diameter.

For 15 meters use either 7 mc crystal and triple or use 10.5 mc crystals and double. In a two tube transmitter only the plate coils need be changed. I hope this will help some one to get on 15 meters.

73 and lots of DX . . . John.

Missouri has sent a representative this month by letter from Chuck Daringer, KNØGRS, 401—7th Avenue S.W., Oelwein, Iowa writes:

. . . I just thought I would drop you a line to tell you I think you are doing a swell job. Keep up the good work.

I'm 15 years old and in the tenth grade.

I would like to know if there is a linear amplifier that will boost the power of the DX-35 to 200-250 watts. I have worked 23 states confirmed and a VE3 in two months. I would like to have a sked with any KN7's and KN1's.

I have sent out all of my first batch of cards, with only 75% return. Please QSL, fellows. I think 15 meters is the best band, the 40 and 80 meter bands are too crowded. 73 . . . Chuck.

Chuck, if you will look through the back issues of CQ you can find a number of good articles on the grounded grid linears by W6GEG. They are very good articles and I am planning to use a modification of these on a grounded grid linear for six meters and also one for two meter phone. They have appeared within the last 16 months. Good luck. Walt.

Are you guilty of anything like this? Have you read the part of the handbook that the RST table has to explain how signal reports are given? Here is a letter received from A. L. Eggers W4BUU, Glen Alpine, North Carolina.

. . . This is just too good to keep. A KNØ cut the QSO short because my report to him (RST 459x) indicated that I wasn't getting a thing he said. Golly 5-9-9x. 73 . . . A. L. Eggers.

Help Wanted

The listings below are the names of people desirous of a little help in obtaining their ham licenses and some of them would like to know a ham to give license exams or to help them with information on setting up a neat, efficient ham station. If you can offer any aid, please accept my thanks and I know that you will get greater enjoyment out of your own station for your labors.

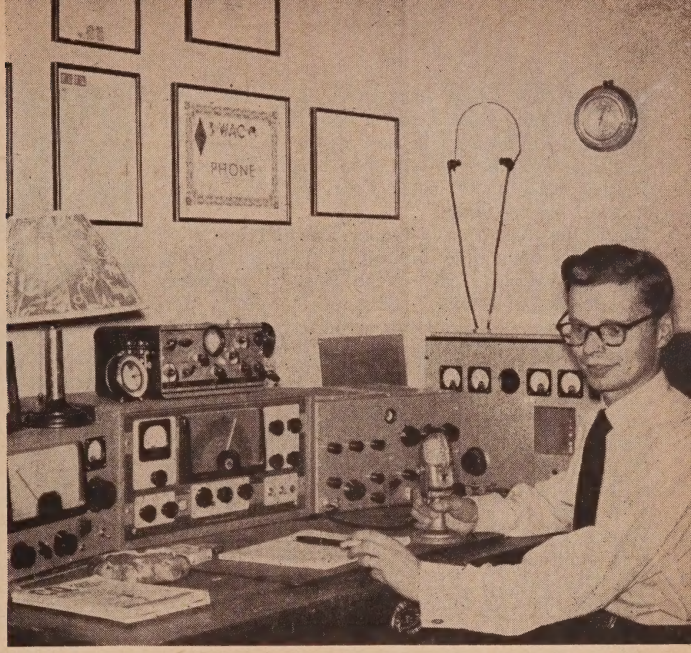
Myron L. Braun (32), 202 Howard Street, Bellevue, Ohio wants to meet a local ham who will help him get started and give needed advice.

Paul Reinhart (14), Box 81, Pavilion, New York needs help with code and theory.

Bob Biggs, 1245 Louisiana, Lawrence, Kansas wants to meet a local ham to get information and help with code and theory.

Roni Hyman, 3112 S.W. 21 Terrace, Miami 45, Florida wants to meet a local ham to see just how a ham station is set up.

[*Continued on page 116*]



OH2OJ

COUNTRIES WORKED (Two-Way SSB)			
DL4SV	56	VE7EL	49
K2DW	55	ZL3IA	48
ZS6KD	55	W6IAL	48
W8DNY	54	W2CFT	46
K2AAA	54	ZL3PJ	46
VK3AAE	51	W8QNF	43
W2GG	51	OH2OJ	43
W2JXH	50	HR2WC	39
W3ZP	50		



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

This month's big news is the first WAC during a round-table. We were almost successful several times this month but finally on October 28 at 0800 on 14320 kc VK3AEE, CN8GD, DL4SV, G3HRO, KA2FC, PY2JU, ZL3PJ and W5SVP turned the trick. All signals were 100%. Congrats fellows. Cyril, VK3AEE QSO'd all continents the night before but the others in the round table were unable to do so. Another first for SSB!

We are happy to welcome Arthur Godfrey, K4LIB to our ranks. Arthur is on 20 with a KWS-1 and practicing the "humility" he preaches on his TV and Radio shows. A QSO with K4LIB is a very pleasant one indeed.

The Voice of America station at Munich has changed over to "Compatible Single Side-Band" transmission with input power of one million watts. This is the first broadcast station to employ SSB.

Wayne, HR2WC is up to 39 countries. He may be off the air for a while, because of the new government in his country. Empty, ZS6KD has completed 536 successful contacts with Butch, W9EWC during the past two years. A testimony to SSB consistency. Williard, W3DQ and Pete, W2MDQ enjoyed a visit in Copenhagen with Peter, OZ3EA. (See photo) The R.E.F. held a Convention in Paris this month attended by many SSB hams including: W3DQ, W4API, F7EM, F7BN, F8RQ, and F9HF.

We welcome the following SSB stations: GM3CIX, XE2JK, TF2WBI, JA1AEA, TG9AQ, DJ1XD, I1LOV, KG1FR, TI4JG and VP7NQ.

Jim, DL2TH has now worked 37 countries. VK3AHR is working into the USA with less than one watt input. JA1AEA is active on 40 meter

SSB. DL1UX whose ham shack is twelve miles from his home rides a motor-bike between when he wants to Ham. He is now up to 32 countries. EI6W advises that he will soon be on 20 meters. He has been on 80 since February 1954. Hope it won't be too long.

The Collins SSB Mobile Trailer, WØREP has been creating considerable interest in SSB during its visits in various parts of the country. Speaking of mobiles, Al W8DLD continues to put a tremendous signal all over the world from his station wagon. Reg, W6ITH has received QSL cards from 100 countries contacted on his SSB transmitter. Of course all of them were not on SSB, but it shows the interest in foreign countries in SSB.

Dave, ZL2AUJ wrote to say that there are now 20 active ZLs on SSB with others in the process of building rigs. He also is hearing plenty of W-K SSB on 75 meters. Lloyd W6DOB and Wayne HR2WC called attention to some countries omitted in our list, so add the following: CE, DL, CP, GI, VP7, TG, KZ5, TI, YN, VS6 and OA. Thanks fellows. KR6AF is very active on 20.



W3DQ, OZ3EA and W2MDQ at OZ3EA's shack, Copenhagen

Dave, W6VX snagged the following on 15 using only his final: HR2WC, PJ2MC, CE2HV, VP7NQ, VP7FU, KH6AQ, KX6ZB, CP5EK, VQ4EU, KC4USV, KL7BGA and DL4YU. What when 15 really opens? W6CEM suggests a simple way to go on SSB—"Just tape up half the mike."

This month we feature the station of Sam, OH2OJ in Helsinki, who in the short time he has been on SSB has worked 43 countries, and 40 of the 48 States. Sam's 153 W-K stations worked include 12-W1, 40-W2, 11-W3, 17-W4, 3-W5, 21-W6, 11-W7, 20-W8, 7-W9 and 11-WØ. OH2OJ runs 150 watts to a 4-65 from a phasing type exciter. His receiver is an Italian Gelosa with slicer. Sam uses three ground-plane antennas on 10, 15 and 20. He is on every day from 1600-1700 to give the SSB gang a Finland contact. Each month we hope to include photos of active SSB stations and operators.



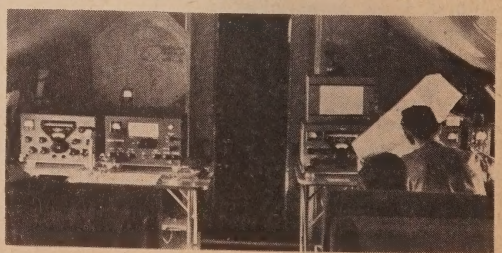
Captain Walter Browne, MARS director operating /AM

The third global SSB test by the Strategic Air Command, utilizing two amateur installations aboard a C-97 was conducted in October in a flight over the Atlantic to Africa and Europe. As in the previous flights to the Far East and over the North Polar region, the C-97 contacted over 1000 amateur stations in all parts of the world. A total of 31 countries were worked.

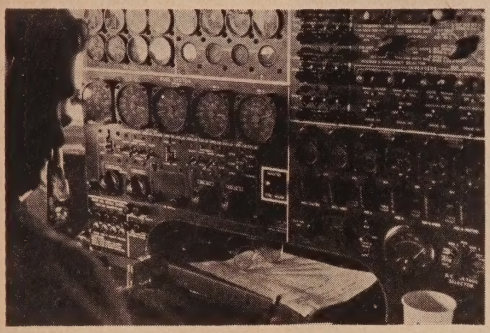
Accompanying Major General F. H. Griswold, KØDWC, Vice Commander, SAC, and Art Collins, WØCXX, President of Collins Radio, was Captain Walter Browne, Director of the Military Affiliate Radio System (MARS). Frequent operation on the MARS frequencies during the trip gave stations in the system greater opportunity to observe and participate in the SSB tests than previously. In addition to the Collins KWs-1 and 75A-4, a second station was installed in the passenger compartment as shown in the photograph, consisting of a 100 watt Eldico SSB-100 MIL transmitter and a Collins 75A-4 receiver. Antennas of 60 feet and 37 feet were used with antenna tuners, tape recorders, and an R-390A Receiver completing the equipment complement. Both stations operated simultaneously.

The aircraft maintained constant communication with nets in the United States. The stations

Two stations in the plane are the Collins at the right (14 mc) and the Eldico operates MARS frequencies.



worked primarily on 14,297 and 21,430 kc. on the ham bands and on 14374 and 20994 kc for MARS. During flights over countries where the airborne station did not have authorization for ham activity, all operation was transferred to MARS and Air Force frequencies. Call letters were WØCXX/M and KØDWC/M on amateur frequencies and AFØCXX/M and AAFØDWC/M on MARS.



Part of the engine controls

The flight originated at Offutt AFB, Nebraska October 2 with a gas stop at Kinley, Bermuda, and an overnight stay at Loges, Azores.

During the hop from the Azores to Sidi Slimane, French Morocco, the plane was struck by lightning. Later on the ground, inspection showed an end of one of the antennas had been burned, although the radio equipment was unharmed and operation was not affected. The No. 3 propeller was all pitted and had to be replaced at Sidi Slimane. The flight continued over Stuttgart to Wiesbaden Germany for an overnight stop. The itinerary continued to London, Thule Greenland, Sondrestrom Greenland, Goose Bay Labrador and then non-stop to Offutt. As previously the C-97 worked the two Operation Deepfreeze ham stations, KC4USA and KC4USV on several occasions including a QSO during take-off from Thule. Total flight time was nearly 60 hours, covering 14,000 miles. In addition to communication throughout the flight the stations worked for twelve hours on the ground at Thule. We have shown pictures of Captain Browne operating one of the stations in flight and also of the flight engineer at his engine panel.

The new certificates for working two-way sideband contacts with fifty or more countries are now ready to issue. Your conductor only needs two more cards to qualify. How do you stand?

As announced last month we will conduct a World-Wide SSB DX Contest in January. It will be held over two week-ends with a total of 24 hours in each period. A point system was devised to enable the W-K stations to pick up points by working other W-K stations. We believe this will make up for the lack of DX stations available. The following rules apply:

I—CONTEST PERIOD:

1800 GMT, January 12 to 1800 GMT, January 13, 1957.

1800 GMT, January 19 to 1800 GMT, January 20, 1957.

II—BANDS:

The contest will be in all amateur bands but no multiplier points will be allowed.

III—SERIAL NUMBERS:

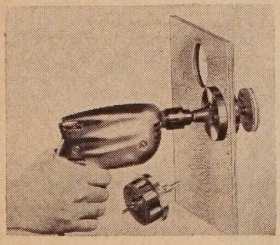
To qualify as a contact each station will exchange serial numbers, the first two numerals being readability and strength reports and followed by the number of the QSO, counted consecutively, for example '59235' indicating Q5-S9 and contact number 235. The first QSO you make would be '591'.

IV—POINTS:

Contacts between SSB stations on different continents count 3 points. Contacts on same continent but in different countries count 2 points. Contacts in the same country count 1 point.

Certificates will be awarded to the ten top scorers in the world. Logs must be sent in to CQ as in other contests. Let's talk this up on the different bands fellows and make it a real success.

Merry Christmas and 73, Bob, K2DW

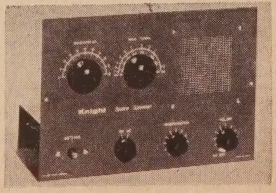


Hole-Saw

The Arco Hole Saw does just that. This contraption fits on your drill or drill press and zips out roundhunks up to 2½" from wood, plastics, sheet metal, etc. (Not *all* etc.) You give Arrow Metal Products, 140 Broadway, New York 13 a hint that you are interested and see what happens.

Trap Those Youngsters

Been wondering how to get the junior op sucked into radio? Fill his Xmas holidays with construction . . . put one of these Knight kits under the tree. It tunes from 6-18 mc plus the broadcast band, regen (of course), and is a.c. operated. It will only set you back $13.95 (plus a few hundred dollars when he eventually gets his license). Allied Radio, 100 N. Western, Chicago 80, Illinois.





In July 1955 YLs in the Portland, Ore. area organized their YL club. Known as the Portland Roses, the club now numbers 11 members, nine of whom are pictured here. L. to r., front row: W7's QKU, RVM, QXH, WFO; center: W7's ZKY, TVU, REU; rear: WN7CCF, W7SPC.

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

With the YL's column in the last three issues of CQ devoted to special features, general news has fallen by the wayside. We'll break the long-time YL series to catch up. Biggest news at the moment concerns the election of . . .

New YLRL Officers

A team of Third District YLs will head our Young Ladies Radio League this coming year. Congratulations to them, and to all the others serving YLRL.

The new president is W3PVH, Betty Frederick, of Acme, Penna. Betty has been licensed since 1949, operates phone on most bands, checking into the YL nets and working contests and DX. Before she and her OM, W3NBN, were married they kept skeds when they didn't have a date. Now they have three sons—Robert, Jonathan and Timmy, all pre-schoolers.

Incoming vice president is W3YTM, Mildred Wright, of P.O. Box 1088, Pasadena, Texas. The sound of CW intrigued Mildred and spurred her to getting her ticket in 1954. Now she calls into both the phone and CW YL nets and enjoys the contests. Her OM is W3RRI.

Treasurer for the coming year is W3MSU, Ethel Smith. Ethel is well-known in Ham radio and has



W9UXL, Lois Zehr, publicity chairman for YLRL.

often graced these pages via photo and printed word. She is probably best known as the founder and first president of YLRL. She also helped organize the Washington (D.C.) Area YLARC and was their first president. Ethel has recently bought a home in Virginia so we'll have a new call and QTH for her soon.

Publicity chairman for 1957 is W9UXL, Lois Zehr. It was to please her OM, W9OQI, that Lois got her ticket in 1952. Now she operates all bands, phone and CW, and enjoys the YL nets. She has twin jr. YLs, Sharl and Carol, aged 8, and her QTH is Flanagan, Ill.

New District Chairmen, who will take office Jan. 1, 1957, as will the above officers, include:

W1RLQ, Grace Swenson, P.O. Box 333, Morningdale, Mass.
2nd district: A tie, to be announced later.
W3OQF, Barbara Houston, 109 Seneca Dr. S.E., Washington, D.C.
W4AJV, Pearl Milholland, P.O. Box 225, Hiddenite, N.C.
W5ZPD, Cindy Dougharty, P.O. Box 677, Almeda, Tex.



W3PVH, Betty Frederick, president of YLRL for 1957.

W6DXI, Gladys Eastman, 735 Glen Ave., Glendale 6, Calif.
W7RAX, June Truax, RFD 2, Box 450-C, Albany, Oregon
W8RIR, Beth Koch, 2911 Dartmouth Dr., Midland, Mich.
W9RUJ, Mary Meyer, Rt. 4, Box 568, Waukesha, Wis.
KØBFS, Helen Hagen, RFD 3, Box 311-A, Mound, Minn.
VE3DTW, Ethel Williamson, Adm. Bldg., Welland Canal, Lock 1, RR 2, St. Catherines, Ont., Canada
KH6AFN, Jeanette De Long, 634 Prospect St., Honolulu, T.H.
KZ5VR, Virginia Harvey, P.O. Box 15, Balboa Heights, Canal Zone
KL7ANG, Nancy Walden, 1707 Illiamma St., Anchorage, Alaska

Send your news to the chairman of your district for publication in *YL Harmonics*.

A new YLRL appointment is that for WAC/YL Custodian. W3OQF, Barbie, is taking over this job. Address your applications and QSLs to her at the QTH given above.

2nd National YLRL Convention

The second national YLRL convention will be held in conjunction with the next ARRL national convention. This will be on Labor Day weekend,



W3YTM, Mildred Wright, new vice president of YLRL.

September, 1957, at the Palmer House. W9LOY, Cris Bowlin, who has just completed a year and a half as YLRL president, now takes over the duties of chairman of the 2nd YLRL convention. Watch for further details as plans progress. Start planning for it now!

AWTAR Radio Net

The 1956 All-Woman Transcontinental Air Race, from San Carlos, Calif. to Flint, Mich. July 7-10 went off smoothly. Though we haven't space this year to detail all the activities of the radio net, credit should at least be given to those operators who spent long hours handling communications.

The YLs participating included W2JZX, radio net chairman; W6FEA, Calif. chairman; W6's QPV, BDE, QGX, AVF, EWV, K6IKF; XYLs of W7's OPY and BFA; jr. YLs of W5LFT; W5HWK, co-chairman Amarillo; KØACC, chairman Wichita; KØBFH, WØ's OMM, VZM, KNØECI; K9AMD, W9RUJ; W8ATB, co-chairman Flint; W8's FPT, KLZ, QOM.

[*Continued on page 106*]



W8ATB, Esther, and W8GJH, Gary, co-chairman for Flint, finish line of the '56 AWTAR, in the radio trailer at Bishop Airport. They also handled communications for the S.M.A.L.L. race from Flint to Pelliston held after the AWTAR.

RTTY

Byron H. Kretzman, W2JTP
9620 160th Avenue,
Howard Beach 14, N. Y.

AMATEUR RADIOTELETYPE CHANNELS

National, FSK	3620, 7140, 27,200, 29160, 52,600 kc.
National, AFSK	27.2, 147.96, 144.138 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

CHICAGO—The second annual Chicago RTTY Meeting was held on Sunday, October 30, 1956. Actually, festivities got under way on Saturday with the early arrival of W6FDJ, W8GRL, W9KUJ, W9GRW, W9SPT, and Rudy Couppez. Bob, W9JBT, was host to this gathering.

The formal meeting and technical session was held Sunday at the *Hallicrafters* plant, through the courtesy of Fritz Franke. 51 RTTYers signed the registration sheets. At 1345 CDST, George Boyd, W9SPT, called the meeting to order, and introduced Boyd (BeeP) Phelps, WØBP, the technical director and master of ceremonies. BeeP outlined the program to follow, spoke briefly on the theory of RTTY, and then introduced the other speakers.

Dave Chapman, W9DPY, led off, with a talk covering work he had been doing in oscillator stability and channel filter design. Dave uses surplus FL-5 radio range filters as his raw material. He pointed out that for good copy the TU bandwidth must be sufficient so that the pulses come through square and not rounded off. Needle-sharp filters, which some terminal units have used, degrade the pulse shape sufficiently to cause misprinting. He also emphasized the fact that the area under the bandpass curve for the *mark* and *space* channels should be as equal as possible if the noise cancelling advantages of FSK and AFSK are to be realized.

Dave also showed some construction practices using relay rack mounting with complete access to the circuitry through a cut-out in the panel. Photographs of this type of construction were passed around.

BeeP then brought up the subject of narrow shift, suggesting that now was the time for all good RTTY men to set some standard narrow shift that the amateur could adopt. Suggested were shifts of 180, 170, 160, 90, 60, and 30 cycles. Norm Krohne, W9SKF, said that it would be advisable to keep away from multiples of the power line frequency to eliminate possible trouble caused by ripple and hum pickup in the amplifier stages. Jim Lomasney, W9LZV, described his experences with very narrow shifts, 8 to 20 cycles, in conjunction with putting a communications channel on a short-wave broadcast carrier. The TU used for this purpose had 100 cycle bandwidth, carrier limiting, and a.f.c.

After much discussion, it was decided that it was too early to settle yet on any specific standards for narrow shift because of the throttling effect it might have on further development. It was voted that NFSK in the region of 160 to 170 cycles would be best. 170 is one-fifth of 850 cycles, the present "wide" shift standard used by RTTYers. 160 is the difference between 440 and 600 cycles, the standard tones transmitted by WWV.

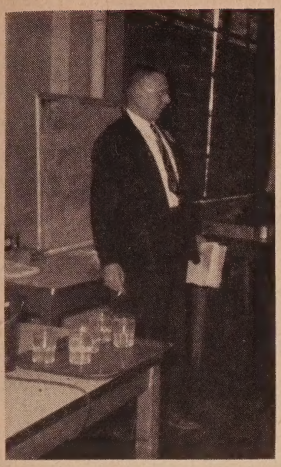


Chicago RTTY Meeting.

Edwin O'Brien, W6LDG, unfortunately could not be present so his paper on "An Audio Frequency Discriminator Converter" was presented by Bob, W9JBT. Diagrams with circuit constants were passed around and Bob gave the address of W6LDG for those who had any questions.

BeeP gave an account of his experiments with various printer magnet currents, and the importance of the series resistance and the high voltage source. This he illustrated with pictures of the 'scope patterns which showed armature movement and bias distortion.

Fritz Franke of *Hallicrafters* gave a talk on the advantages of the i-f type of converter, and gave out schematics of some circuits he had developed. Some *Hallicrafters* receivers, the SX-88 for exam-



Boyd Phelps, WØBP, Master of Ceremonies and Technical Director of the Chicago RTTY Meeting.

ple, have an i-f jack on the rear for just such purposes.

The Model 26 was discussed by Ray Smessaert, W9MDQ, of the *Teletype Corporation*. Ray pointed out the printing ability of this machine on a 9 millisecond interval. He also answered questions about oil, grease, and maintenance.

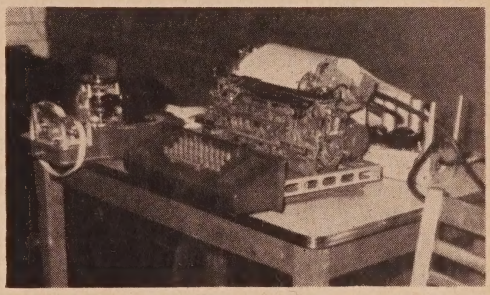
W9NOE described his transmitter-keyer that he made from a stepping switch. This gadget sends CQ and signs his call in teleprinter code. (This I would like to know more about. How about an article for *CQ*, OM?)

Bob Weitbrecht, W9TCJ, demonstrated his low frequency autostart system. This he has been using with BeeP on 3620 or 7140 kc—at a distance of 370 miles. A 5-second 60-cycle buzz is used to start up the printer at the other end and a 5-second space signal is used to stop it. Standby power drain of the receiver and TU is only 35 watts. An accuracy of 50 cycles at r.f., is required. BeeP, of course, had a simplified version. His unit doesn't print the message like Bob's, but it rings a bell, lights a light, and starts a clock if anyone sends a string of twenty letter "O" characters within 2 kc of his listening frequency!

A brief question and answer period wound up the technical session and then the prizes were drawn. Ray Morrison, W9GRW, donated polar relays (W9TCJ did *not* win one); and Merrill Swan, W6AEE, provided RTTY Call Books and subscriptions to the *RTTY* bulletin.

Sunday evening 29 of the group attended the banquet. Activity reports were received from representatives from various parts of the country. It was announced that in all probability the meeting next year would be combined with the national ARRL convention to be held in Chicago Labor Day.

Fifteen of the group toured the *Teletype Corporation* plant Monday. The unusually clean production lines were viewed where Model 15's and 28's were being progressively assembled. Fascinating to all was the precision "dance line" run-in at 60 or 100 wpm, multiplex gear, and the "monkey-on-a-string" unit, wherein the transmitter does not stop when the tape is all used up from the bin but gets up and runs down the tape right to the punch!



Model 28 Innards. This is a rebuilt job belonging to Ray Morrison, W9GRW, of Skokie, Illinois.

In addition to the 600 wpm gear and the printing-upside-down Model 28, the demonstration rooms included a museum of ancient *Teletype* equipment—the stuff we are now using!

As mentioned last month, your RTTY Editor didn't get to go this year (a new jr op was due and came—a boy) so we are greatly indebted to George Boyd, W9SPT; Elston Swanson, W2PEE; and to BeeP for contributions to the above account. Special thanks go to George for supplying the pictures.



Jim Lomasney, W9LZV, Discusses Very Narrow Shift: 10 cycles.

Things Technical

This month we are omtting the usual "RTTY Principles & Practice" section in order to give you the dope on the receiving system used at W2JTP on 80-meters for the past year or so. The heart of this system is a linear or product detector. (Quite a bit of space was devoted to this type of detector by *CQ* last month. Did you *read* it?)

The particular receiver used has a 460 kc i-f amplifier of two ordinary stages using 6SK7 tubes.

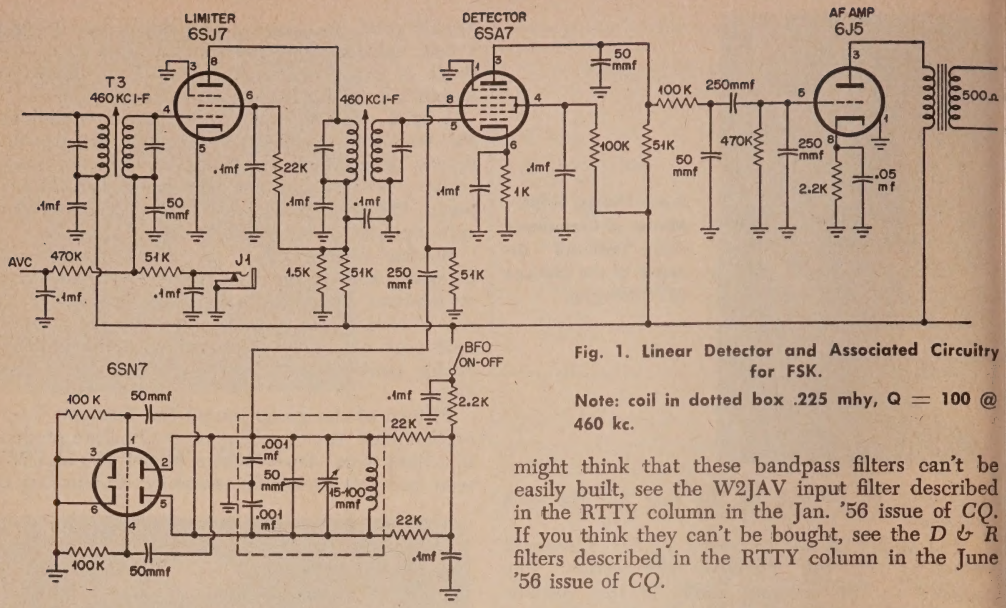


Fig. 1. Linear Detector and Associated Circuitry for FSK.

Note: coil in dotted box .225 mhy, Q = 100 @ 460 kc.

Fig. 1 shows that a 6SJ7 limiter, at i.f., precedes the 6SA7 linear detector. AVC to the r-f and i-f amplifier is derived from the limiter grid circuit. This arrangement provides an a-v-c action like nothing ever experienced before. Audio output is *flat,* really flat—within a fraction of a db, with r-f inputs from 0.5 uv to 1.0 volt. Like an FM set, atmospheric static has little effect on weak signals and is not even noticed on stronger ones. On 80-meters operating was strictly a no-pain deal this past summer.

In this type of receiver, one designed for use with an a-f type of TU, stability of the h-f oscillator and b.f.o. was an important consideration. Stability of the h-f oscillator was most simply solved by crystal control. (This is no handicap on 80-meters as everybody sticks closely to net frequencies.) Stability of the b.f.o. was more of a problem. The usual slug-tuned coil had to be discarded due to thermal effects. Settled upon as the most stable arrangement was an air-core small 5-pie coil of litz wound on a hollow ⅜" form. An air-trimmer is used for tuning, and temperature compensation is provided.

It will be noticed that quite a few .1 ufd capacitors are used. All through the receiver liberal decoupling and bypassing assures stable operation of the i-f amplifier. Plate supply is nominally 250 volts, except that the screen bus and the b-f-o plate supply is 105 volts—regulated by a VR tube.

A bandpass filter should be used between the receiver and the TU so as to pass only about 1800 to 3200 cycles. WØBP reminded us at the Chicago Meeting that audio limiters, such as usually used in terminal units, have a high harmonic content. This means that heterodynes roughly 1500 cycles or lower would have audio harmonics that would get into the *mark* and *space* filters. In case you might think that these bandpass filters can't be easily built, see the W2JAV input filter described in the RTTY column in the Jan. '56 issue of *CQ*. If you think they can't be bought, see the *D & R* filters described in the RTTY column in the June '56 issue of *CQ*.

Across the Nation

Activity in New England is increasing these days. W1PBS in Barre, Massachusetts, is running 250 watts to a 150-B. Dave uses an HRO-5-RA to feed an FRA converter. W1PIL in Worcester runs 500 watts to a 250TL. Will has an HRO-50, also feeding an FRA. His location consists of 8 acres on a hill, especially picked for hamming. Future plans include 2-meter RTTY. W1EFF in Gray, Maine, is poking out a fine signal with his surplus TBW (813 final) transmitter. Carl is another RTTYer who struggled, this time for about a year, trying to get a beat-up Model 12 going. A1, W1FGL, finally came to the rescue and helped him obtain a Model 26.

Speaking of W1FGL, A1 heard W2JAV on 2-meter RTTY one night and promptly started construction on a 24-element cubical-quad antenna. W1WEW, Ranny, finally received his 2-meter high power final amplifier (4-125A's), through the kindness and effort of W2JAV, and is now in the process of setting it up.

Ed Handy, W1BDI, at West Hartford, Connecticut (ARRL Communications Manager) has been doing a fine job taping official ARRL bulletins and sending them out Wednesday nights from W1BDI on the East Coast RTTY Net on 3620 kc. Ed deserves a vote of thanks from all of us. We all know how much time he puts in preparing these tapes.

W1AFN, Tom Howard, demonstrated RTTY at the recent Providence, R. I., hamfest. W1BGW, Jack Berman, is moving to a new home—with better facilities for RTTY, no doubt! Jack will be off the air for a while until he gets set up again.

Roger Wixson, W6FDJ, an ardent RTTYer and SCM from the East Bay Section of the Pacific Division, recently paid a visit to W2JTP. W2PEO is a

[*Continued on page 102*]

Widespread six meter DX openings occurred between almost all areas of the United States and South America on several days during the last two weeks of October. European TV signals between 41.5 and 45 mc were also received on many days on the east coast of the U.S.A., as far south as Texas and as far west as California.

LAST MINUTE FORECAST—Exceptionally good short-wave propagation conditions are forecast for the period December 6 to 10. The periods December 12 to 14 and 19 to 21 are expected to be unstable or disturbed. During the remainder of the month conditions should be normal.



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

New Sunspot Record

Scientific history is expected to be made during December as a 207 year sunspot record is broken. While it will be another six months yet before we are sure that record breaking sunspot activity occurred during this month, scientists at the Swiss Federal Solar Observatories and the U.S. Central Radio Propagation Laboratory are in agreement in forecasting a smoothed sunspot number exceeding 159 for the month of December. Previous record high sunspot numbers were recorded during June, 1778 when a smoothed number of 159 was observed and during June, 1947 when the smoothed sunspot number reached 158.

With the occurrence of record high solar activity we may be entering a new period in ionospheric propagation research . . . a period for which no previous scientific data is available. There appears to be two schools of though concerning the affects of exceptionally high solar activity upon short-wave radio propagation conditions. One theory is that a linear relationship exists between the degree of ionization of the reflecting layers and the smoothed sunspot numbers, and that this relationship holds for exceptionally high sunspot activity (in excess of SSN 125) as well as for less intense periods. If this is so we can expect *maximum usable frequencies* to continue to rise as the cycle soars towards a maximum, which may still be a few months off. On the other hand, several equally competent ionospheric researchers express the belief that while a linear relationship exists between ionospheric conditions and the solar cycle, it does so only until exceptionally high solar activity occurs. During periods of exceptionally high solar activity they consider the ionosphere as "saturated", with a further increase in the solar cycle not necessarily followed by an increase in the degree of ionization of the reflecting layers. If this be true, MUF's will not vary much during the next few months, except for the usual seasonal effects. Whichever theory may be correct we can be certain that MUF's will be as high this winter, or higher, than ever observed previously and that scientific data collected during this unprecedented rise in solar activity will give us a more complete understanding of the relationship that exists between sunspot activity on the surface of the sun, ultra-violet radiation and the subsequent ionization of the earth's upper atmosphere and shortwave radio propagation conditions.

The Zurich provisional monthly sunspot number for September, 1956 was 182. This results in a 12-month smoothed sunspot number of 109 centered on March, 1956.

Winter Solstice

December is a month of typical *winter-time* shortwave propagation conditions in the Northern Hemisphere, and on December 22nd the *winter solstice* will occur. This is the day on which the sun reaches its most southern point in its apparent travels from northern to southern skies. It is also the time of year when the distance between the sun and the earth is minimum. During the winter solstice the sun is approximately 91,500,000 miles away from the earth, which is 3,000,000 miles closer than at any other time of the year. The nearness to the earth during the winter months results in the sun's ultra-violet radiation sweeping across the ionosphere at more intense levels than at any other time of the year. This results in a very strong *daytime* ionosphere capable of reflecting much higher frequencies than during other seasons.

On the other hand, since the sun is low in the sky the longest periods of darkness occur in this Hemisphere during the winter months with the *shortest day* of the year co-inciding with the day of the winter solstice. During the hours of darkness ultra-violet radiation from the sun cannot illuminate the layers of the ionosphere and the layers de-ionize and become weaker electrically. With the long hours of darkness during the winter months extensive de-ionization takes place and nighttime MUF's are lower than during other seasons. Another result of this extensive de-ionization, is that daytime MUF's, while at peak seasonal values, are usable for shorter periods of time than during other seasons.

There is generally a considerable decrease in ionospheric absorption during the winter months, and also in atmosphereic noise or static levels. This results in stronger signals and improved signal to noise ratios, especially on the lower frequency bands.

While the occurrence of sporadic-E propagation reaches a maximum during the summer months, a minor peak is generally observed during December. The existence of sporadic-E clouds during December should permit some medium distance, short-skip openings on the 6 and 10 meter bands for distances up to approximately 1300 miles.

Propagation Conditions, December

The following is an over-all picture of band conditions forecast for December, 1956, with a brief discussion of the qualitative changes in each amateur high frequency band from month to month. For specific times of band openings for a particular DX circuit, refer to the *CQ Propagation Charts* on the opposite page.

6 Meters:

Observations made at several ionospheric sounding stations during October show that the intensity of ionization was strong enough to support 6-meter propagation from the southern area of the United States southwards on several days during the month. With a continued rise in MUF's expected for December, the 6-meter band should open for distances greater than 2000 miles on at least 10% of the days. Conditions favor the southern part of the country with the optimum time being between 8 AM and Noon for openings towards the south and east and during the late afternoon for openings towards the south and west. On several days, short-skip openings between distances of 1000 and 1300 miles may occur as a result of the seasonal minor peak in sporadic-E propagation.

10 Meters

Excellent world-wide openings can be expected almost daily from shortly after dawn through the late afternoon and early evening hours. While the band will close a bit earlier than during the fall months, signals will be somewhat stronger because of the seasonal decrease in ionospheric absorption. Short-skip openings, between 750 and 2400 miles, are expected to occur almost daily from before noon until early evening.

15 Meters

While closing somewhat earlier in the day than during the fall months, conditions on 15-meters will nevertheless be excellent for world-wide communications. The band is expected to open shortly after dawn and remain open until through the early evening. Signals from an easterly direction will peak shortly after noon-time and those from the west and south during the late afternoon and early evening hours. The peak on 15-meters usually occurs an hour or two after the same circuit peaks on 10-meters. Short-skip propagation, between 600 and 2400 miles, should be possible on most days from a few hours after sunrise until after sunset.

20 Meters

Signal levels on 20-meters are expected to get stronger during the month as a result of a seasonal decrease in ionospheric absorption. The band is forecast to open shortly before sunrise, and remain open through the evening hours. When propagation conditions are exceptionally good, 20-meters may remain open around the clock on some circuits. Peak conditions for most circuits will occur during the early afternoon and evening hours, following the peak on 15-meters by an hour or two. Short-skip openings are forecast from shortly after dawn through the early evening hours, with the minimum skip as short as a hundred miles or so near noon-time and extending outwards towards 2400 miles later in the day.

40 Meters

Fairly good propagation conditions are expected on 40-meters to many areas of the world from an hour or so before sunset until shortly after sunrise on at least half the days of the month. Because of increased ionospheric absorption associated with the peak of the sunspot cycle, the band will not open as early on long distance circuits as it did during previous winters, and signals may be weaker than during other phases of the solar cycle. On the other hand, the increased ionization should result in the band opening *more often* than it did during previous years, especially when the entire circuit is in darkness. Static levels will be seasonally lower, and on some nights signal to noise levels should be exceptionally good. Short-skip propagation is expected around the clock, with the skip distance as short as a few miles during the noon period, in-

ALL TIMES IN EST

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

ALL TIMES IN CST

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

creasing to beyond 2400 miles as the hours of darkness approach.

80 Meters

Propagation conditions will be better than during any other season of this past year but the influence of peak solar activity will limit long distant openings to a small percentage of the nights from a few hours after sunset until dawn. During the daylight hours, ionospheric absorption will limit maximum range to about 250 miles. The skip should increase to beyond 2400 miles during the late afternoon and evening hours.

ALL TIMES IN PST

WESTERN USA TO:	10 Meters	15 Meters	20 Meters	40/80 Meters
Europe & North Africa	6A-11A (3)	5A-8A (2)	2A-8A (1)	6P-12M (1)
		8A-10A (3)	8A-10A (2)	
		10A-12N (2)	10A-12N (3)	
			12N-2P (1)	
Central & South Africa	8A-3P (1)**	6A-10A (2)	10A-12N (1)	5P-7P (1)
	6A-11A (2)	10A-4P (4)	12N-3P (2)	
	11A-4P (4)	4P-8P (2)	3P-7P (3)	
	4P-6P (2)		7P-9P (1)	
South America	5P-8P (1)**	5A-8A (2)	1P-3P (2)	6P-8P (2)
	6A-12N (3)	8A-12N (1)	3P-7P (4)	8P-3A (3)
	12N-3P (4)	12N-5P (4)	7P-9P (3)	8P-2A (2)*
	3P-5P (3)	5P-7P (3)	9P-6A (2)	
Guam & Pacific Islands	12N-3P (1)**	10A-3P (3)	6A-9A (2)	2A-7A (2)
	11A-1P (2)	3P-8P (2)	9A-12N (1)	4A-6A (1)*
	1P-4P (4)		8P-10P (1)	
	4P-7P (3)			
Australasia	9A-4P (3)	7A-11A (3)	6A-10A (3)	12M-7A (3)
	4P-6P (4)	11A-6P (1)	10A-12N (1)	1A-7A (1)
	6P-8P (2)	6P-8P (3)	7P-9P (1)	
		8P-10P (2)	9P-12M (3)	
Japan, Okinawa & Far East	2P-4P (1)**	12N-4P (3)	7P-9P (4)	12M-8A (3)
	1P-3P (3)	4P-6P (4)	9P-11P (2)	1A-6A (1)*
	3P-5P (4)	6P-8P (3)	11P-4A (1)	
	5P-7P (3)		8A-11A (2)	
Philippine Islands & East Indies	9A-11A (2)	9A-11A (3)	6A-10A (2)	2A-8A (1)
	1P-4P (3)	11A-2P (2)	10A-12N (1)	
	4P-7P (2)	2P-6P (1)		
Malaya & South East Asia	9A-11A (2)	9A-12N (3)	4A-8A (1)	5A-9A (1)
	3P-7P (3)	2P-4P (3)	8A-12N (3)	
		4P-6P (1)		
Hong Kong, Macao & Formosa	2P-7P (3)	1P-6P (2)	1P-6P (1)	12M-6A (2)
		6P-8P (3)	6P-8P (2)	1A-5A (1)*
			8P-4A (1)	
India & Central Asia	4P-7P (2)	3P-8P (3)	2P-6P (3)	2A-7A (2)
			6P-10P (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 time of possible six-meter openings
* Indicates time of 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 January 15th, 1957. These forecasts are based upon ionospheric data published by the CRPL of the National Bureau of Standards, Boulder, Colorado.

160 Meters

During the present sunspot cycle considerable new data will be collected concerning the relationship between solar activity and shortwave radio propagation conditions. Major emphasis has been placed on the upper part of the high frequency spectrum and lower VHF range. However this winter the 160-meter enthusiasts will also have an opportunity to contribute data useful in furthering our knowledge of ionospheric propagation. This

[*Continued on page 102*]

SURPLUS

the BC-645

a 420 MC. Transceiver for the Technician

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It begins to look like this column has gone on a high frequency "kick". Fortunately, (or unfortunately, depending on where your interest lies) most of the better pieces of war surplus equipment were designed for operation on the higher frequencies. The frequencies that were thought of as "unusable" a very few years ago were well used during the last war. However, my spies tell me that very soon there will be several desireable low frequency units appearing on the surplus market. When they do appear, we will try to present them in this column.

The ASB-5 receiver featured in the October issue of CQ was designed for use by the serious 420 mc dx'er. As a matter of fact, several Southern California hams have installed WE-416's (Gm-50,000- wow!) in the r-f amplifier cavity in order to pull in the weak ones. Be that as it may, the BC-645 is intended to interest the ham who just wants to putter around on the ultra-highs. Without an r-f amplifier and a crystal controlled transmitter, you are not likely to break any distance records or earn a DXCC certificate. However, if you want a small self-contained rig that will provide dependable communications for 15 miles or so, the BC-645 is just what the doctor ordered. If you connect quarter wave dipoles (6½") on the front panel, the rig will only cover a half mile, give or take a few feet. A 13 inch dipole on your roof might transmit your signals 4 or 5 miles. A corner reflector or yagi antenna should produce reliable communications for 15 miles or more. Some time ago, I used a converted BC-645 for communications between San Diego and Los Angeles, a distance of more than 110 miles! The BC-645 can be used successfully for mobile work. A quarter wave whip mounted on the center of the automobile roof will radiate the signal for 5 or 10 miles, when used in conjunction with a high gain antenna at the fixed location.

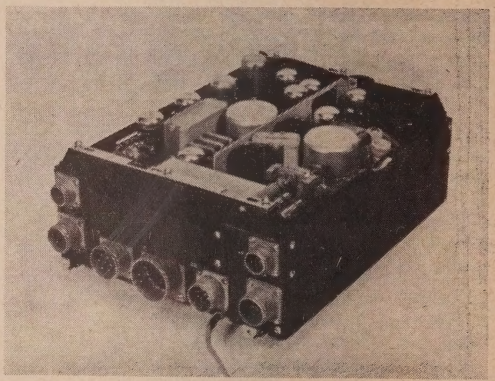


Fig. 2. The BC-645 IFF Transponder before the application of screwdriver, pliers, hacksaw, and soldering iron. (Photo courtesy of *G & G Radio Supply*.)

The experiments that one can perform with the BC-645 are fabulous! Do you realize that you can construct a yagi for the 420 band that will produce a gain of 10 db and the chances are pretty good that it will fit on your operating desk! For an electronics class, the author constructed a yagi with elements that would slide back and forth on a 3 foot boom. By adjusting the elements for maximum gain or best front to back ratio, it made an easy task of teaching the principles of Dr. Yagi's famous antenna. This antenna, driven by a BC-645, was capable of "pegging" a 100 amp. meter more than 50 feet away. It is also possible to light a 2 volt lamp connected to a dipole located a short distance in front of the yagi.

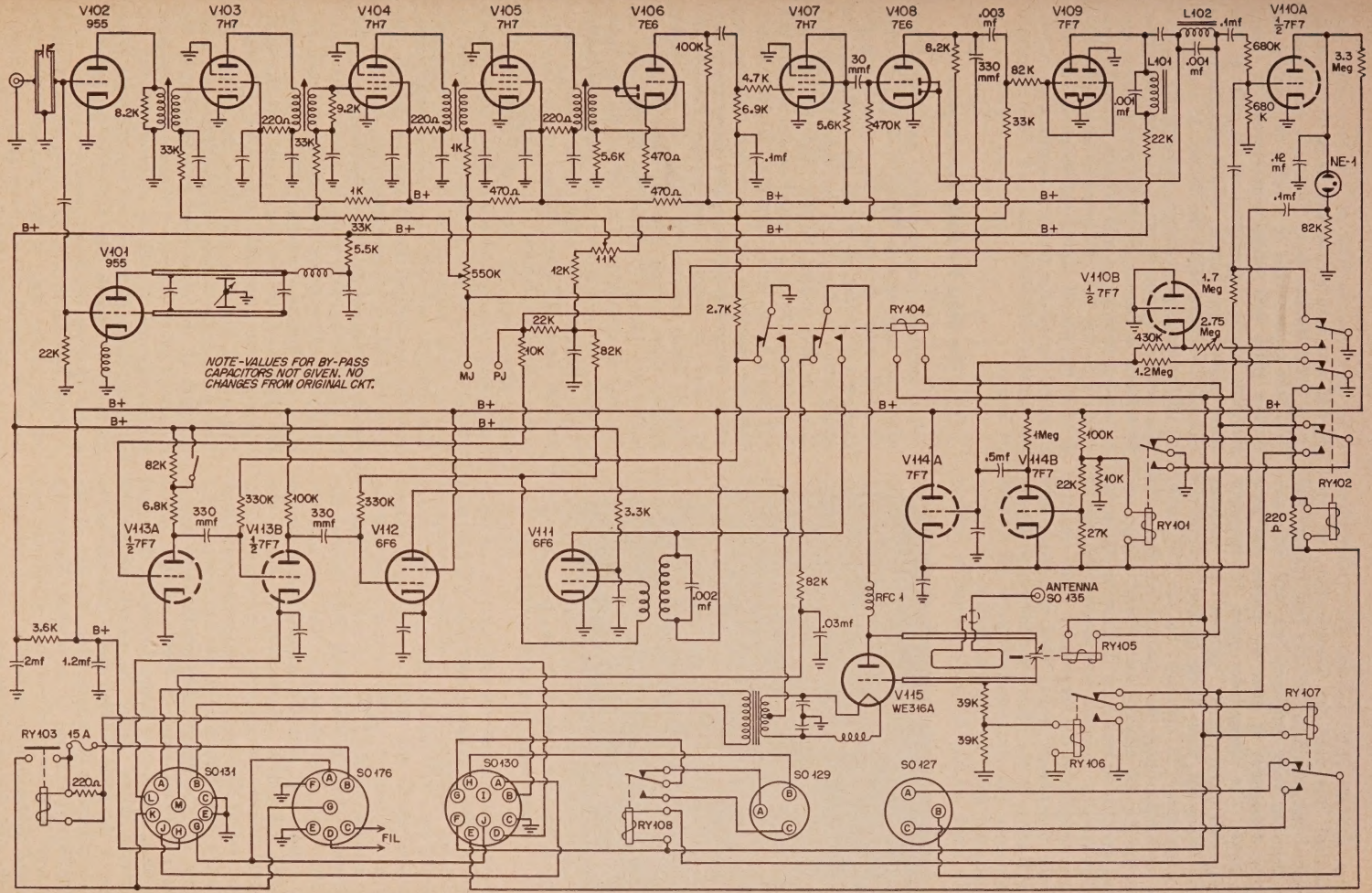


Fig. 3. Schematic diagram of the BC-645 before the conversion. Note that V-102, the 955 mixer, is operated without plate voltage.

The BC-645 IFF Transponder (transmitter-responder) was used for identification, as was described last month. Since very few readers will put them in their airplanes, we will skip any lengthy description of what the pulses did here and there. The transponder used 15 tubes, 8 relays, plus many other "goodies" to perform its job. Obviously, many of the original components are unnecessary for operation on the 420 band. The conversion does not use any of the extra parts just for the sake of using them. As an example, there is no reason for duplicating the audio section for the receiver and transmitter, for it simply complicates the conversion. After cleaning out the unnecessary items, there was more than enough room on the chassis for the power supply components. The complete transceiver *(fig 7)* uses the original 955's for the oscillator-mixer. Three 7H7's make up the 44 mc i-f amplifier with a

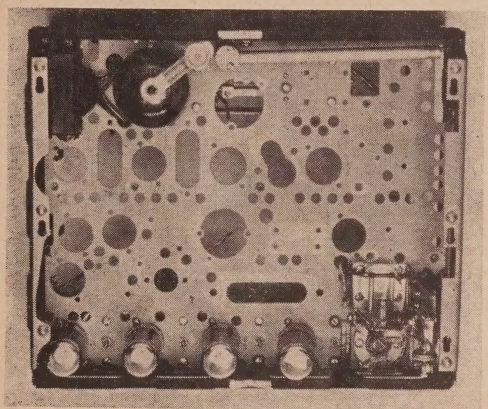


Fig. 4. Top view of the BC-645 ready to add the power supply and audio circuitry.

7E6 serving as a detector and receiver 1st audio amplifier. The transmitter uses the WE-316 as a modulated oscillator. The modulation voltage is provided by a 7F7 pre-amplifier and a 6F6 power amplifier, which also serves as the audio output tube for the receiver. A 5Y3 rectifier rounds out the tube line-up, making a total of only 10 tubes.

There is quite an interesting story behind the BC-645 unit. Did you know that you can not buy a used one? After the original design for the BC-645 was peeled off the drafting board, the General Electric Company was contracted to construct several thousand for the government. Quite naturally, the whole project was top secret. If the enemy got the design, they could build similar units and install them in their airplanes. About this time, one of two things happened, there are conflicting stories. Either the enemy did get the plans or the brass decided not to risk the safety of our planes on the transponder. Not one of the BC-645's was installed in an airplane during the last war! They were stored in a warehouse and released to the surplus market in great quantities shortly after the end of the war.

To give you an idea of just how secret the BC-645 was, take a close look at *fig 2*. Notice the heavy wire leading away from the front panel? This wire is connected to a series of jacks on the bottom plate into which was inserted a dozen thermite bombs. Application of 28 volts to this wire ignited the bombs which completely destroyed the wiring below the chassis. In addition, it set off the magnesium chassis, reducing the BC-645 to a smoldering pile of ashes. You may remember an episode in Detroit, Michigan several years ago. A surplus store there sold several BC-645's complete with the "do it yourself" destruction kit. It took the Sheriff and State Police several days to round up all the thermite bombs. Fortunately, the current BC-645's have all been disarmed (I hope!)

The Step By Step Conversion

The conversion was started by removing all the tubes and tube shields. The WE-316 (VT-191) "doornob tube" is removed by un-screwing the knurled nut as far as it will go, lifting up the spring strip, and pulling the tube straight up. Next, unplug relays RY-101 and RY-106 and discard them. Directly behind connector "R" you will find a brown mica capacitor (.01-2500 volts). Clip the wires to this capacitor, remove and discard. Removing this capacitor allows you access to a pair of binder head screws through the chassis. These are used to secure the fuse holder. Remove these screws, clip the wires to the fuse holder and discard. Unscrew the knurled caps on the rear of connector "TA". Slide the cap back, unsolder the center wire and remove connector "TA". Remove the dust cover over relays RY-103 and RY-104. These relays are located directly behind the center of the front panel, see *fig 1*. Near V-101, on the front panel, you will note a ceramic feed-through with a red/white and a bare wire connected to it. Cut these wires off at the the feed-through. Near RY-104 you will see another feed-through, and this connection should also be clipped. Remove the bolts from connector "RA". Unsolder the wire to the center pin. It will be necessary to drill out the bottom lock nuts to release the silver plated grounding strap from the front panel. Remove and discard connector "RA". Also, remove the black cover on the front panel and the wire-wound resistor contained inside (3.6 K, 50 watts). Remove all the nuts and bolts that secure the front panel to the chassis. Pull the front panel away and clip all the wires that are connected to the remaining panel connectors. Remove all parts from the front panel. It will be necessary to drill out all of the rivets, slides, etc. so that the front of the panel will be smooth. This will allow you to mount a new plate on the front panel.

From here on in it is just a matter of cleaning out the center area of the chassis. Notice that below the chassis the receiver section is divided into 4 compartments. The lines for the transmitter

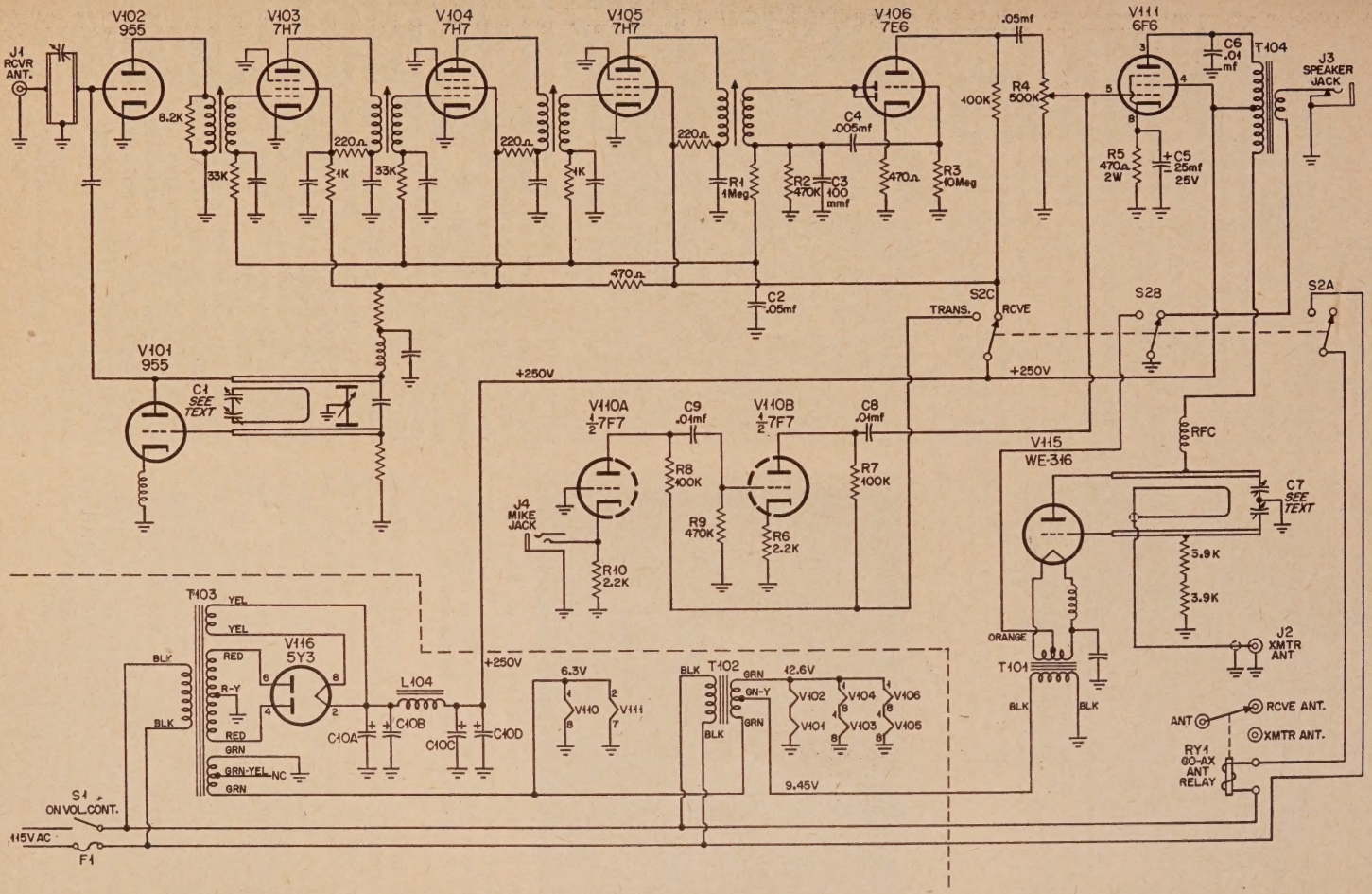


Fig. 6. Schematic diagram of the converted BC-645 transceiver.

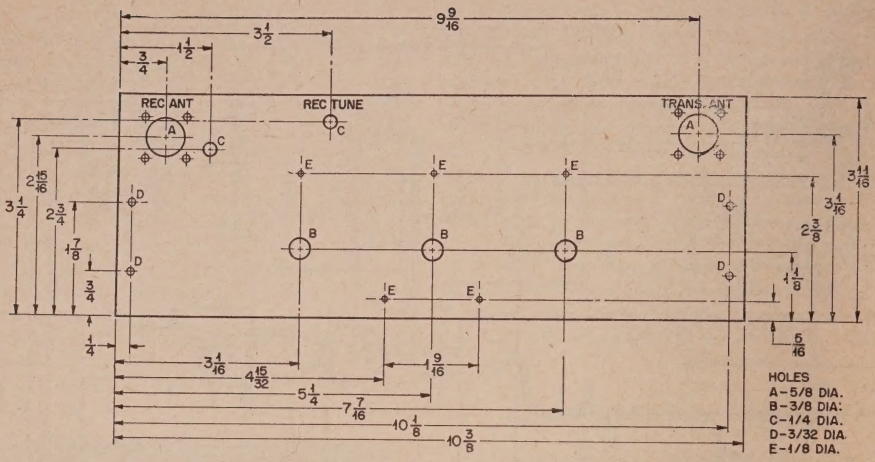


Fig. 8

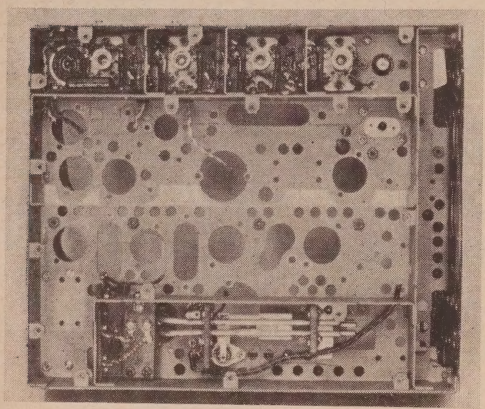


Fig. 5. Bottom view of the BC-645. Notice the location of the wires mentioned in the text. The receiver AGC resistors are hidden below the mounting brackets for the bottom.

tank circuit are contained in another compartment. By removing the components in the center area, there will be more than enough room for the power supply and the audio section. As you are clipping out the wiring and components, be careful not to clip short any wires coming out of the transmitter compartment or the 4 receiver compartments. The resistors that come out of the receiver compartment to potentiometers "S", "MG", and "T" should be no shorter than a quarter of an inch. Also, do not clip the two black wires that are connected to the terminal strip near the rear of the transmitter compartment.

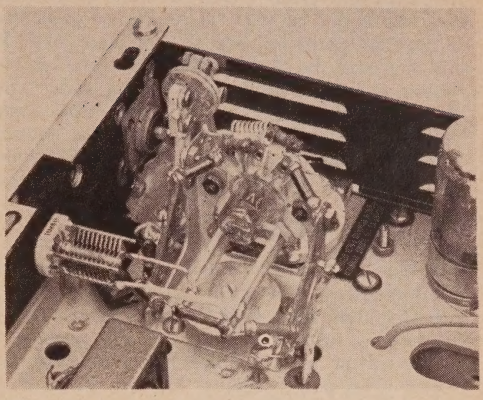
Remove the relay that is located directly below the WE-316 filament transformer (T-101). It will be necessary to remove the two nuts that secure the transformer to gain access to the four relay mounting bolts. Discard this relay. Remove the other relay that is located below the chassis, near the center, (RY-107). The next step is to remove the nut and bolts that secure the terminal strips that run the length of the chassis. Because of the blue torque paint, it may be necessary to chisel them off. Clip all the wires to these terminal boards, remove and discard. Remove relays RY-103 and RY-104 and discard. Remove relay RY-102 and discard. Remove the complete wiring harness by clipping the various connections. Keep the following wires as long as possible: The red/white wire to V-101, the white/red wire to V-101, the 33K resistor lead to potentiometer "MG", the 1K resistor lead to potentiometer "S", the two white/red wires coming out of V-105 and V-106 receiver compartments, the red/white wire coming out of V-106 receiver compartment, the two black wires and the orange wire at the terminal strip near the rear of the transmitter compartment, and last but not least, the blue/orange coming out of the transmitter. These leads are visible in *fig 5*. Next, remove the three potentiometers that pass through the receiver compartments. Be very careful not to damage the coils with the wrench. To remove the center potentiometer it may be necessary to move the bypass capacitor in that compartment so that the wrench will fit. Cut the center shield at each end with a hacksaw or tin shears and break the spot welds by bending the shield back and forth a few times. Remove the shield and discard. Also, remove the shield on the top of the chassis. Remove the two octal sockets and the six loctal sockets. Remove the 30 kc coils, L-101 and L-102. Remove the two "bathtub" capacitors (C-101 and C-102) and the two coil oil filled capacitor cans (C-103 and C-104). Remove the r-f coil located near the NE-1 socket. Remove the two 5 pin sockets. Remove the neon bulb socket (NE-1). Remove the relay that is mounted over the end of the transmitter lines (RY-105).

Unless I have missed something, your BC-645 should look like the one shown in the photographs, *figs 4* and *5*. The wires that you were cautioned about earlier should now be easy to

spot, *if* you did not clip them out. Now, let's proceed with the process of putting the BC-645 back together again. The 7E6 tube (V-106) is used as the receiver detector. The following steps are necessary to connect the triode section as a first audio amplifier instead of a d-c amplifier. Locate the white/blue wire that comes out of the V-106 compartment. Pull this wire back into the compartment and ground it. Clip out the wire between pin 3 of V-106 and the last i-f coil. Also, remove the 5.6K resistor that is connected from this coil terminal to ground. This terminal of the coil should now be free of all connections (except the coil wire itself). Clip out the two resistors that come out of the V-106 compartment (6.8K and 4.7K). Clip the jumper between the two rear terminals of the terminal board in the V-106 compartment. The terminal nearest the chassis should be free of all connections. Connect a 1 megohm resistor between this point and the unconnected coil terminal. Also, from this same coil terminal to ground, connect a 100 mmfd disc ceramic capacitor and a 470K resistor. From pin 3 of V-106 to ground connect a 10 megohm resistor. Also, from pin 3 of V-106, connect a .005 mfd disc ceramic capacitor to the adjacent coil terminal. From the .05 mfd mica (on the terminal board) connect a shielded wire to the volume control. Your V-106 circuitry should now agree with that shown in *fig 6*. Tie the three white/red wires (not the red/white) together with hook-up wire. These three wires represent the 12.6 volt filament buss and are connected to the 12.6 volt power supply connection later. The two red/white wires should be connected together with hook-up wire. This is the receiver B plus buss and is connected to the transmit-receive switch as shown in *fig 6*. The

Parts List

C1—2.7 to 10.8 mmfd "butterfly" capacitor. (Johnson 11MB11).
C2—.05 mfd, 600 volt paper capacitor.
C3—100 mmfd disc ceramic capacitor.
C4—.005 mfd disc ceramic capacitor.
C5—25 mfd, 25 w.v.d.c. electrolytic capacitor (Sprague TVA-1205).
C6, C8, C9—.01 mfd, 600 volt paper capacitor.
C7—2.2 to 8 mmfd "butterfly" capacitor. (Johnson 9MB11).
C10, a, b, c, d,—4 x 10 mfd electrolytic capacitor. (Sprague TVL-4760).
F1—3 amp fuse and fuseholder.
J1, J2—Amphenol UHF connector.
J3—Closed circuit earphone jack.
J4—2 pin microphone jack.
L-104—Filter choke, 10 henries at 90 ma. (Triad C-7X).
R1—1 meg, ½ w.
R2, R9—470K, ½ w.
R3—10 meg, ½ w.
R4—500K volume control and switch. (Centralab B-60S).
R5—470 ohm, 2 w.
R6, R10—2.2K, ½ w.
R7, R8—100K, ½ w.
S1—SPST switch, part of R4.
S2—3 Pole, 2 position phenolic switch. (Centralab PA-1007).
T101—WE-316 filament transformer (part of original equipment).
T102—Filament transformer. 6.3 volts at 3 amps. (Triad F-16X).
T103—Power transformer. 525 v. at 90 ma., 5 v. at 2 amp., 6.3 v. at 5 amp. (Triad R-10B).
T104—Audio output transformer, push pull plates to speaker. (Triad S-15X).
V116—5Y3 rectifier tube.
Miscellaneous: ⅜ inch grommet, line cord, 2-three lug terminal strips, 2-two lug terminal strips.



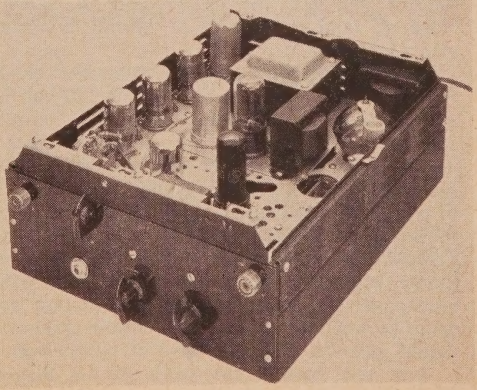
1K and 33K resistors are connected together. This is the AGC (automatic gain control) circuit and it is connected to the 1 megohm resistor on the terminal board in the V-106 compartment. From the 33K resistor to ground, connect a .05 mfd capacitor for AGC filtering. This completes the receiver conversion.

The Audio Section

The two audio tube sockets were mounted in the holes formerly occupied by V-110 and V-111. The audio transformer (T-104) is mounted between the tubes and the front panel. The blue transformer lead is connected to the 6F6 plate and the red wire to the screen (B plus). The brown wire connects to the blue/orange wire. Mount a terminal strip near the end of the blue/orange wire for a tie point. The rest of the audio stages are wired as shown in *fig 6*.

The Front Panel

Fig 8 shows the layout and approximate dimensions of the new front panel. It was made out of



aluminum and given a coat of black paint. After the paint is dry, mount two *Amphenol* connectors on the front panel in place of "TA" and "RA". Be sure to ground the silver plated strip to the receiver antenna connector and to connect the center wire. The outside conductor of the transmitter coaxial line should be grounded to the transmitter antenna connector. Wire the mic. jack, transmit-receive switch, and the volume control as shown in *fig 6*.

The Power Supply

At this point, the rear half of the center area of the chassis was cut out with a hacksaw, and a new aluminum plate installed in its place. This is obviously a refinement and the only purpose is to get rid of some of the larger holes in the chassis. The power supply (shown enclosed in dashed lines in *fig 6*) was installed on this plate. It was necessary to use components that were not too tall and mount the 5Y3 rectifier tube in the center of the chassis so that the cover will go on. A *Triad* R-10B power transformer was mounted at the rear of the chassis with a millimeter or two to spare. The filter capacitor selected was large in diameter and only 2¾ inches high. The filter choke (L-104) and filament transformer (T-103) were mounted with bolts in the same holes, on the top and bottom of the chassis. There was no sign of induced hum in the choke with this arrangement. Knock out the two tip jacks on the rear apron. In the right hole, mount a ⅜ inch grommet for the line cord. In the left hole mount a closed circuit headphone jack for the speaker connections. Mount a 3 ampere fuse and fuse holder near the center of the rear apron. Make sure it clears the power transformer. At first glance, the filament circuitry may seem a bit unusual. The WE-316 requires a filament voltage of 2 volts at 3.65 amps and no commercial transformer was available. Originally, T-101 was used to step down 9 volts a-c from the PE-101/C dynamotor to this voltage. Since 12.6 volts was required for the receiver, it was decided to connect two 6.3 volt windings in series to provide the correct voltage, and in addition, tap one of the windings at the center for 9.45 volts. Incidentally, do not try to wire the receiver filaments in parallel. Not only is it a difficult job, but the i-f amplifier is likely to "take off" and oscillate. It is difficult to make it stop (I know!)

A three lug terminal strip, mounted on the rear apron, was used for the various 110 volt line cord connections. Another three lug terminal strip near the front of the aluminum plate is used as a tie point for the filament wires. Before soldering the filament connections, it is necessary to phase the windings. Ground one of the power transformer filament wires at the terminal strip. Temporarily connect one of the filament transformer leads (T-103) to the ungrounded power transformer filament lead. Connect an a-c voltmeter between the remaining lead and ground. It should measure 12.6 volts give or take a volt. If it does not, reverse the leads of the filament transformer (T-103). Check the voltage now and if it is near normal, wire the filament circuitry permanently with the same connections that produced 12.6 volts. The center tap connection of the power transformer filament winding should be taped up and moved out of the way. Unsolder one of the black wires on the terminal strip near the rear of the transmitter compartment and ground it. Connect the orange transformer wire (T-101) to the now empty lug on this terminal strip. The orange wire is the centertap and it is connected to the transmit-receive switch. Connect the center tap connection of T-103 to the ungrounded black wire on this terminal strip.

Testing

Once the power supply circuitry is completed, you are ready for the smoke test! No smoke or fire? Good, let us proceed. By advancing the volume control you should hear a loud rushing noise in the speaker. No? Is the switch on transmit? If no hiss is heard, touch a screwdriver to pin 3 of V-106. This should produce a loud racket in the speaker. It did? Still no hiss in the speaker? OH—forgot to put in some of the tubes, hummm. Do not forget to put in V-102 "upside down". The tip points toward the top of the case. Once the hiss is heard, oscillator-mixer operation can be checked by touching the mixer lines or the cathode choke of V-101.

Adjusting The Transmitter and Receiver

Without modifications to the local oscillator, the BC-645 will receive 450 to 490 mc by adjusting the silver plated circular disc between the oscillator lines. The mixer lines resonate from 390 to well beyond 500 mc and therefore, will not require modifications. It is necessary to lower the transmitter frequency to "hit" the 420 band. This can be accomplished in one of two ways. The constructor may solder a piece of copper strap 1 inch long on the end of each transmitter line. Moving the strips closer together will lower the transmitter frequency. This frequency should be checked with a pair of Lecher lines, a UHF grid dipper, or a calibrated 420 receiver. Once you locate the frequency you wish to transmit on, do not change the spacing of the capacitor. If you wish to change the transmitter frequency often, do not install the copper straps. Instead, mount a *Johnson* 5MB11 "butterfly" capacitor on the chassis directly above the end of the lines. Connect short wires directly from the capacitor to the end of the lines. Adjusting this capacitor will raise or lower the transmitter frequency. By gentlemen's agreement, modulated oscillators are operated in the 420-430 segment of the band. This minimizes interference to crystal controlled stations with selective receivers.

The local oscillator may also be converted in one of two ways. You can connect an extension on the circular tuning disc and adjust it with a knob which projects through the top cover. You can also install a tuning capacitor on the front

panel. For either conversion, it is necessary to lengthen the local oscillator lines by ⅝ inch. This is accomplished by soldering a ⅝ inch piece of copper tubing on the ends of the lines and moving the choke, capacitor and resistor to the "new" end of the line *(fig 9)*. The copper tubing can be salvaged from the bottom plate (where it was used to connect the bomb jacks together). After the lines have been lengthened, the circular disc will tune the receiver from 420 to 445 mc. This coverage can be checked by using the second or third harmonic of a grid dipper as described in the October 56 issue of *CQ*. Tuning of the mixer lines should not be set by adjusting for maximum noise. It should be peaked up on ignition noise (lots of it on 420) or a local signal.

Tuning

A novel (and very old) tuning system was suggested by Murell Harris, W6GMR for the local oscillator. To avoid the attendant ills of flexible couplings, tuning vanes, and unbalanced capacitors, it was suggested that the author use "shorted loop tuning". This system utilizes the fact that a shorted loop held near a coil will raise the coil's resonant frequency. The tighter the coupling, the higher the frequency. To avoid varying the link coupling, a balanced "butterfly" capacitor (C1-*Johnson* 11MB11) was connected in series with the link. With maximum coupling it is possible to vary the local oscillator frequency more than 70 mc. The coupling link was backed off ⅝ inch spacing, which produced a 25 mc tuning range. The circular disc can be used as a "trimmer" to adjust the dial calibration. This tuning system does not impair the receiver performance in any way. The oscillator grid current is very smooth over the entire tuning range. It is somewhat unusual to tune because maximum capacity represents the high end of the tuning range and minimum capacity corresponds to the low end of the tuning range. This is just the opposite of the regular variable capacitor effect.

Antennas

The antenna you select will determine your transmitting range, to a great extent. Decide how far you want to transmit and select an appropriate antenna. Several suitable antennas can be found in The Radio Handbook, by William I. Orr. The "Twin Five" beam in the October 55 issue of *CQ* (420 on a Budget) also will produce excellent results.

The author wishes to thank *G & G Radio Supply* for furnishing the BC-645 and for the photographs of this unit.

Oh yes! Before it slips my mind, let me be the first to wish you a very Merry Christmas and a prosperous New Year.

73, Don, W6TNS

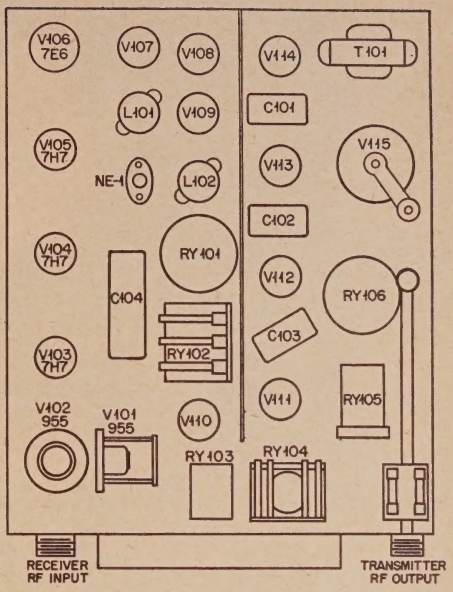


Fig. 1. Chassis layout of the BC-645 before modifications. Note that RY's 103 & 4 are located under a shield cover.

Letters to the Surplus Editor

Dear OM:

I'm just getting started, UHF wise, and I wondered how feasible it would be to just use the ASB-5 50 mc i-f for a 6 meter converter. Also, I recently bought a BC-453 for use with my 450 kc i.f. I wondered if there wasn't some way I could work it in as part of the receiver and then use the receiver's audio system. 73's

Rick Stearns, KØAWN, Osage, Iowa

I think it would be entirely possible to connect the output of the 16 mc i-f amplifier in the ASB-5 to your communications receiver. It would be necessary to stagger tune the 55 mc coils in the ASB-5 over the 6 meter band and to tune the stations in on the communications receiver dial. To answer your second question, it is quite a bit of extra work to connect the detector of the BC-453 into your receiver audio. Although the audio in the BC-453 is not "HI-FI" it is excellent for communications purposes. Most of the stations using a BC-453 on the tail end of their communications receiver leave it connected permanently to the last i-f coil, tie the two speaker outputs in parallel, and simply turn up the volume on the receiver that they want to listen to.

Dear Don:

Read your Q5'er article in Sept. *CQ* and was wondering if it could be applied to the BC-654? Are there 1.5 volt tubes that could be used in the BC-453?

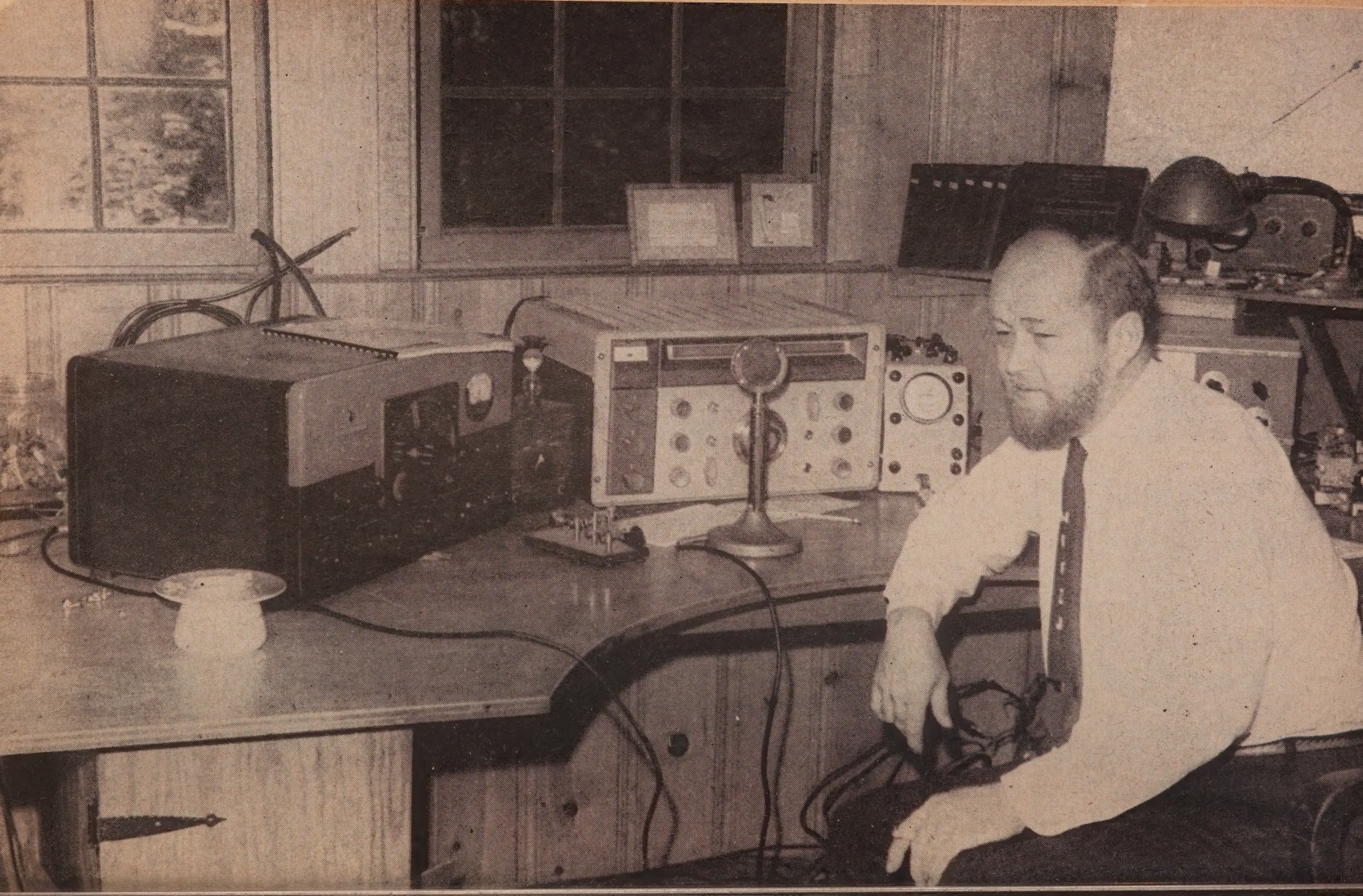
Harold Feldman, Duluth, Minn.

I see no reason why the BC-453 could not be used in conjunction with the BC-654. The input to the Q5'er would be connected to pin 5 of the VT-223 (1H5). As far as using battery tubes in the BC-453, it would be more trouble to rewire the filaments and tube sockets than it would be to build a power supply. Therefore, I would not recommend it.

Dear Don:

Have been going over your *CQ* (Oct. 55) article, "420 on a Budget". What capacitor was used to tune the

[*Continued on page 90*]



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



Moonbounce

My own activities at present on project "Moonbounce" consist of building bigger and better antennas. From the land of smog, traffic and hordes (people) we give you the following from Herby (W6QKI):

"First off, the family is now living in Benson, Arizona, which is some fifty miles southeast of Tucson, and I'm working here in Burbank, California for the rest of the year, after which I will also reside in the land of sunshine.

"The skeds which Jim and I have been trying are not intentionally secret, but just haven't developed into anything very positive due to several factors. Frankly, we have been so wrapped up with the problems involved that it never occurred to me that perhaps we should publicize the efforts.

"Jim has recorded his own echoes, off the horizon. He does not have a tilt arrangement, so can only work when the moon is rising or setting. For our attempts he of course, operates as the moon sets, starting ½ hour before, and continuing until ¼ hour after. On this end we lean the antenna back to about a 30 degree angle, and synchronize listening and transmitting periods with Jim. The tilt angle is adjusted so we hit the moon at the right time (we hope). The antenna is drug along the ground for proper orientation, which changes each day. Jim just pushes buttons to rotate his, lucky dog. His antenna is made up of 8 long Yagis. They are 24 feet long and spaced 16 feet apart, I believe. Stacked 4 high, and 2 wide, mounted on a power pole, with mean height of about 50 feet.

"The antenna here is made of 16 long Yagis stacked 8 wide by 2 high. They're also 24 feet long, and spaced 16 feet apart. This added antenna gain should give us enough stuff to just about make up for the fact that we do not use ground reflection benefits. It says here, anyhow.

"I keep saying 'We' Sam, because there are 9 of us on this end of the deal. The gang got together to build the big monster, and we're using my call mostly because I started the thing. The fellows consist of W6's ZAT, QED, K6's EYN, OUK, IVO, W9QEP/6, W9QXP/6, W2YPY/6 and myself.

"So far we have had nothing but trouble, of one kind or another. At first we had a tough time figuring where the moon would be each time, and so the first several skeds we missed it by too much. Also, the antenna wasn't checked out completely. It turned out it wasn't phased right and the first skeds were a waste of time. Now, the antenna is matched, phased, and seems to be doing what it should. Also, we have become expert astronomers and can predict the moon's position quite accurately, so you might think we are all set. So did we. Until we learned that my old faithful transmitter was not on one frequency, but on several, inside and outside the band. For some stupid reason the 826's refused to neutralize anymore. Finally got the rig working last night. Won't bother giving the messy details, but, as you might suspect, it was some simple ‡$%°! thing. We will be testing the next few nights for our own echoes. Incidentally, we believe we have heard our own echoes, but nothing recorded, and opinion varies."

"I imagine you read the dope in the latest *Preceedings of IRE*, and the references to the polarization shift which may occur as signals pass through the ionosphere. You may be right about using circular polarization. We have talked about it also, and perhaps the thing to build is a raft of helical antennas like the Ohio State job. For me, this will have to take place in Arizona.

Frequency Used

"Oh yes. The frequency we are using is 144 plus very little, as you surmised. I start at 1 mc here, checked against WWV, and set just a whisker high, so the frequency is only 5 cycles or so inside the band. Jim does likewise. At moonset this means that the echo will be about 200 cycles outside the band. The exact shift is hard to figure because we don't know just what the moon's speed is relative to our west coast location, since it is still quite high above the horizon. Anyhow, we tune just outside the band."

And now from Jim (W2NLY):



Southern New England Six Meter Net members assembled at the first annual six meter picnic.

"Caught your remarks in September 'CQ' on our moon experiments. I know I should have written before this, but have been pretty busy. The new antenna has been up since early June. It consists of 8-24 foot long Yagis, 2 wide and 4 high. The rotating structure is 42 feet bottom to top Yagi and approximately 18 feet wide. Total—104 elements.

"I received my first echoes on June 7th. My first sked with Herb was July 4th. We have had a number of skeds with Herb since, with no luck yet. Only one time did I think I heard his signals but could not definitely identify them as his. Received my own echoes again on the 2nd and 8th of September.

"No, I have no objection to mentioning that we are both working close to 144.000 plus mc and are shooting moonset. We start skeds approximately ½ hour before moonset and continue up to about 10 minutes after moonset (New York Time). The best time is the 1st seven days following Perigee.

"The measured horizontal beam width here is 10 degrees at the 3 db points and 18 degrees at 12 db. I expected about 13.5 degrees (but why should I complain).

VE3DIR, Tony's (sob) YL, Joan.



"The vertical beam width I estimate is approximately 7 degrees. The largest secondary lobes are down 17 db from the main lobe and the f/b is 24 db, so I guess most of what counts is where it belongs (the main lobe, that is)."

As you can see, a lot of effort has been put in by Jim and Herby (and company). It is encouraging to hear that others are making a real effort on what I still feel will be the prime D.X. medium for the frequencies above 144 mc. I sure would like some pictures of those moon beams, fellas. How about it?

Syracuse VHF Round-Up

For you poor unfortunates who (due no doubt to untoward circumstances) were not able to get there, I have news. You really missed a good show. Better than two hundred VHFer's were there from as far west as Chicago, to the eastern seaboard from Maine to New Jersey. They came in cars, on foot, by bus and airplane. And they weren't disappointed! The Syracuse VHF Club, drawing on their experience from last year, put on a beautiful show. The main attraction was the chance to meet the guys and gals you've been talking to. The chance to meet Tony and his (see photo) Y.L., to talk to Frank (W2AMJ) and Gordon (W1OUN). The fine talks put on by John (W9WOK) and Bolide Bob (W1RUD). The after dinner speaker who regaled the assembly with the tales designed to titillate even such characters as "W2NSD" (who flew up for the doings). The prizes which were in such abundance that they finally gave prizes for taking a prize.

A get-to-gether like this truly deserves to be called a VHF Round-Up. The Syracuse VHF Club deserves a lot of credit for putting on what was undoubtedly the outstanding VHF Hamfest of the year. You goofed if you missed it. *Don't miss it next year.*

SSB on TWO METERS

In deference to the many inquiries we have received about SSB on two meters, we offer the following information from W3YHI. I think the letter is self-explanatory.

ALL-BAND VERTICAL ANTENNAS

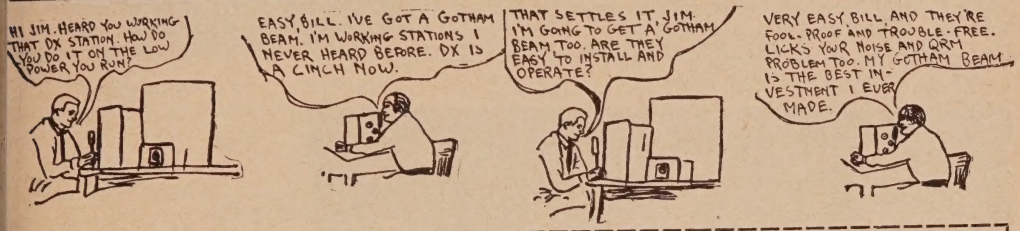


GOTHAM'S sensational new vertical antennas give unsurpassed multi-band performance. Each antenna is absolutely complete, can be assembled in less than two minutes, and requires no special tools or electronic equipment. Radiation is omni-directional, with maximum radiation at very low, DX angles. Perfect 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.

AIRMAIL ORDER TODAY—WE SHIP TOMORROW

GOTHAM DEPT. CQ

1805 Purdy Ave., Miami Beach, FLA.

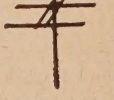
Enclosed find check or money-order for:

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.....

"W3YHI (me of course) is operative on 144.314 mc with 120 watts d.c. peak input, SSB to an 829B. The results are nothing less than amazing. This SSB project of mine is a direct product of the insidious manner in which W2JJC has consistently dangled a Q5 signal under my nose to where I could no longer stand it. I've been running skeds with W2JJC since early this spring, four nights per week (Sunday, Monday, Tuesday and Wednesday at 2200 EDST). He's always been Q5 housefilling loudspeaker copy at the range of 200 miles under every type of propagation conditions, fair weather or foul. For my part, I *was* running 100 watts into an 829B and had to revert to the talk with the fingers media about half the time. I even copied him during tests with him running *three watts* output. Now that was too much—it was not under band-opening conditions either! So, with his remote guidance, and abetted by same from W3HWN at Machanicsburg, Pennsylvania, my first attempt at SSB and I was completely cold on the subject. Nevertheless, I 'dood it.' Started out by picking up the SSB handbook and boning up, then off I went. I run my exciter stages lightly and stability was the expected result. The triple conversion does not seem to be a problem other than the boredom of building repetitive type stages. Decided to get the basic rig going barefooted correctly, then go back and add the frills such as voice control, selectable sidebands, etc.

"With a 'guestimated' 2 watts output from my 6360 driver, I was able to produce audio sock about equal to my 100 watt AM rig at a radius of 100 miles. W2JJC heard it too at 200 miles. With the 829 being driven up to 200 ma at 550 volts on SSB, Class AB2, it's now 100% loudspeaker solid copy at W2JJC's under *all* conditions and even without sighting the beam on him!

"I am presently the only two meter SSB station whose 12 watts output was saturating my receiver, I embarked on a building bee. Took nineteen days leave and spent the whole time, day and night, building my own SSB. It was well worth the effort.



Some of the VHF gang present at the Syracuse VHF Round-Up. (You weren't there?) In the back row the W1MHL gang. In the front row (and the driver's seat) some of the W3KX gang.

"Shook W8KAY up about two weeks ago—I copy him regularly here. Called him for over an hour on SSB but got no answer, so reluctantly switched to cw and raised him right off. He gave me 5-2-9 on cw so, figuring that weak signals were fair tests, had him watch for me on SSB. Lo and behold, he was copying nicely through local QRM, etc. That, I believe, was the first two meter SSB QSO to those parts from the East Coast. This of course, aroused W2JJC and W3HWN and they're now running test skeds with W8WXV and W8KAY.

"I built my rig from complete scratch. It is designed for two meters only since that is the only band I work. Haven't been able to complete all of my projects for two meters as yet, so haven't time to tackle other bands yet, although I do have gear for six meters gathering dust. This was known to be active south of New Jersey and Pennsylvania. However, W4SRD Falls Church, Virginia, is soon to be QRV with a 4X150 final. I usually hang out at 144.314 and am using lower sideband for no particular reason, except that I haven't put in the extra heterodyne crystal and switch to enable me to flip over to the upper.

"I have run comparative 'damage' tests with Communicator owners to see what happens to broad receivers. Here's the results. Tests at 5-10 miles ranges with Communicators with beams and without beams locked on each other (mine's a Big Bertha, incidentally), show that my 100 watt AM rig takes out about 250 kc from edge to edge of the double sidebands. The SSB takes out about 100-125 kc. SO—SSB causes less interference spacewise. Of course they can't read it until I reinsert carrier, but that's their fault, not mine. TVI? What's that? TVI is a by-product of design, I don't have it with the AM job and I don't have it with SSB either. The rig was built along accepted TVI-free lines, all shielded and buttoned up.

NEW MULTIPHASE MODEL MM-1
RF ANALYZER

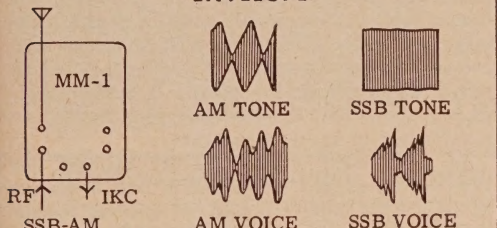


Amateur Net - Kit . . . $99.50
Wired . . . 129.50

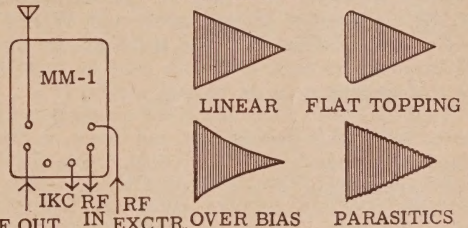
- NO TUNING required. Broadband response flat 1 MC to 55 MC at power levels of 5 watts to 5 kilowatts. Useful indications to 200 MC.
- Built-in 1 KC audio oscillator has less than 0.5% distortion.
- Automatic blanking protects CRT during standby.
- RF attenuator controls height of pattern, calibrated in 3 db steps.
- For use in "Series" with 50-72 ohm co-ax lines. A short pickup antenna is recommended for other systems.
- The MM-1 provides: SPEECH ENVELOPE patterns without annoying 60 cycle double trace.
- TONE ENVELOPE patterns automatically synchronized with self-contained 1 kc audio generator.
- AF TRAPEZOID patterns for HIGH LEVEL AM systems.
- DOUBLE TRAPEZOID OR BOW TIE patterns for analysis of LOW LEVEL LINEAR AM systems.
- RF TRAPEZOID for determining linear amplifier "LINEARITY" by sampling input and output signals. CONTINUOUS AUTOMATIC MONITORING OF SSB-AM-CW.

One compact unit provides oscillator and 3" scope for alignment of SSB exciters and general modulation analysis.

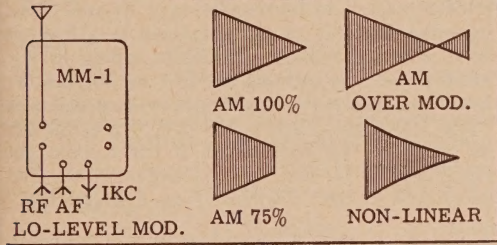
ENVELOPE



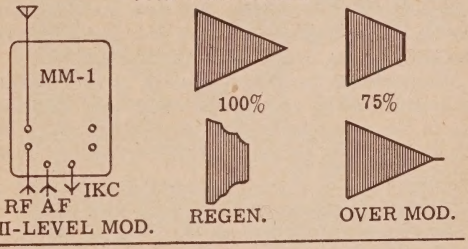
R F TRAPEZOID



A F TRAPEZOID



A M TRAPEZOID



OTHER MULTIPHASE PRODUCTS

Model 20A Bandswitching SSB Exciter	$249.50	Kit . . . $199.50
Model 600L Broad-Band Linear Amplifier - immediate delivery. . .		$495.00
Model GC-1 Gated Compression Amplifier . . .	$59.50	Kit . . . $49.50
Model 10B 10 Watt Multiband Exciter	$179.50	Kit . . . $129.50
Model B Slicer and Q Multiplier	$99.50	Kit . . . $69.50
Model A Slicer, less Q Multiplier	$74.50	Kit . . . $49.50
Model AQ Q Multiplier for Slicer	$29.50	Kit . . . $22.50
Model DQ Desk Type Q Multiplier	$29.50	Kit . . . $22.50
Model 458 VFO Conversion Kits and Cabinet . .	$25.00	

WRITE FOR LITERATURE

MULTIPHASE EQUIPMENT

Central Electronics, Inc.

1247 W. Belmont Ave. Chicago 13, Illinois

MULTIPHASE – THE OVERWHELMING CHOICE OF HAMS EVERYWHERE.

"Incidentally, W1DXE at West Hartford started hearing me as soon as I put the SSB on—that's about 320 miles. W2AMJ says it pounds in in his area. So, it's here to stay at W3YHI's. I intend to drive a pair of grounded grid 826's up to about 400 watts as soon as I can finish up some of the little things yet to be done, so my e.r.p. should jump up a few more db then.

"That's it for now, got to run and get back to the office before the boss decides I'm 'goofing' instead of 'lunching'. Be seeing you on SSB?"

NEW ENGLAND VHF PICNIC

Hoxsie, Rhode Island Ruth (W1WED) sends us the following information on new six-meter doings in Rhode Island: "The first annual picnic of the Southern New England Six Meter Net was held on September 9, 1956, at Goddard Park in Rhode Island. Forty six-meter operators and their families got together for a picnic lunch and an informal meeting to organize the Southern New England six meter net. The time decided on for the net meetings was Wednesdays, 8:00 p.m. local time on 50.7 mc, and any six meter station is welcome to call in. Sector net controls are W1KCS in Rhode Island; W1GRW in Eastern Massachusetts; W1HJC in western Massachusetts, and W1FFF in Connecticut. They will tune the band for any off frequency stations, until such time as crystals for that frequency are in general use.

"Paul (W1ZPC) a member of the planning committee set up his portable rig and beam at the Island, Massachusetts and Connecticut. Among these mobiles were W1LJY, W1WTR, W1CUO, W1VWR, W1MFM, W1ZXX, W1FZZ, W1FVZ, W1GZA. Other committee members were W1LJY W1HJC, chairman, and W1FVZ, picnic photographer." *Thanks for the info Ruth, and now we'll let the rest of the brotherhood in on a few of the things you didn't bring out in your communication.*

'Twas about the fourth or fifth of September when I was asked on six meters whether I was going to the picnic to be held at Goddard Park in Rhode Island for the local six meter gang. At that time I was told that Paul (W1ZPC) and Bob (W1FVZ) thought it might be a good idea if a few of the boys met at the park for a picnic and make it a get-a-quainted-party. It ended up with everyone liking the idea and asking everyone he talked to, to attend the picnic. It really caught on and shows that the six-meter gang in his area really want to know each other.



V. H. F. men at the Southern New England Six Meter Picnic. Standing are W1GRW and W1HJC. W1KCS and W1FFF in the foreground.

At the present writing the net has met four Wednesdays on 50.7 mc and each time attendance at the net has increased. Last net meeting twenty-three stations called in. Al (W1KCS) has been named net control and Norm (W1UHE) is alternate control. In four weeks time Al and Norm have the handling of the net down to a fine art what with the number of stations calling in etc. Most of the boys are now on 50.7 mc for the net but those who are not just give a long call and Norm logs them. Then at the end of the roll call he gives that list over to Al. It has worked out beautifully so far and we say congratulations and good luck to the "Southern New England Net."

Anybody recognize this guy from Boigenfield, New Jersey? (W2AMJ at the Syracuse VHF, Round-up.)



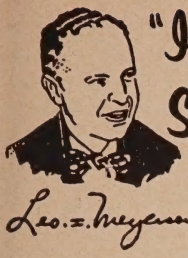
Tokyo, Japan Dale (KA2DS) comes forth with this heartbreaking (?) information:

"My six-meter signals were received in or near Perth, Australia by VK6HK. He called me but I was not listening high enough in the band. *You ha-aa-ad boy!* The date was September 23, 1956, 1252 my time.

"Am on six meters every day. Have a three element wide spaced beam thirty feet high. Am crystal control on 50.4 and 50.55 mc, also higher crystals. Most operation is on 50.4 mc. Will run up to five hundred watts when get permission for this power. Receiver is 1 microvolt or better. Pass word to stateside boys to look for me, on c.w. most of the time." *OK, Dale, the word is passed and the boys are almost blind from looking.*

Los Angeles, California K6SDX comes along with a query.

"There are a couple of us here in L.A. who would like to get into Amateur T.V. Rarely do you run across articles which treat the subject with any practical applications from the amateur standpoint. If you could be of any service I would appreciate it.



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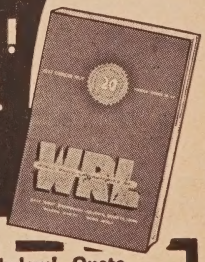
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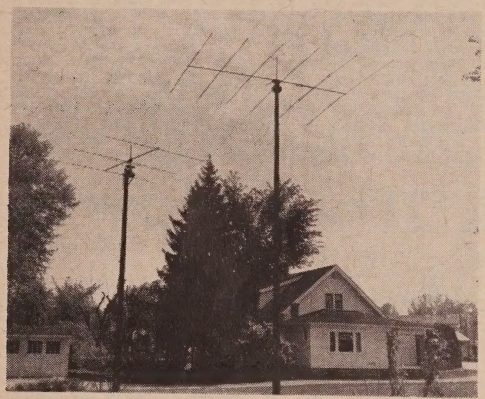
3415 W. BROADWAY COUNCIL BLUFFS, IOWA

"Just finished a crystal converter for six, as yet haven't heard your moon bounce signals. *Wha-at!* Have started work on a six-meter rig, a pair of 12AU7's and an 12AU8 into a 4-400A Class AB1 Linear. Hope to have the limit in, expect about 600 out. Would appreciate physical dimensions on yagi for six meters." *O.K. now boys, get busy and send Chappie some facts and figures.*

Gurdon, Arkansas Jay Harwell (W5JWL) emits with:

"We have been trying to get something going on two meters here in Arkansas for some time now. Have been doing quite a bit of listening on two but have yet to catch anyone. I am beginning to wonder if there is any activity on the band! *Shame on you, Jay, and you boys who are going to complain about this remark too.*

"Seriously, I would like to get in touch with active hams nearby (on 2 meters). At the present we have a *Gonset* Communicator and stacked 4-element beam, vertical, and plan to have an 829B on the air before long. Just bulit up a converter appearing in November '52 'CQ' and seems to out-perform the Gonset, so we have the receiving department going O.K. now. We operate on 144.1, 144.25, and 146.7 mc. Hope to see you on Two Meters." *Me too, Jay, and I feel sure you'll hear from the boys in your vicinity who are on two.*



A special prize to any VHF man who recognizes this antenna installation. (Clue: The owner is a Big Fireman.)

Orlando, Florida Walt Bain (W4LTU ex W2WFB) old dependable, is ready and waiting for action.

"Just a note to let you know I am set up in Florida on two meters and looking for skeds.

"Have arranged skeds with W2NLY, W2ORI, W8KAY and W4HJQ for meteor shower October 19-22, and tentative skeds with W9GAB, W5FAG and W8DX.

"Rig at present is 400 watts and 12 element yagi, but plan to have four yagis stacked by October 19th. Also plan a cool KW by December showers. Frequency is 144.060. Have daily skeds with W4HJQ and W2ORI and have gotten good bursts but no QSO." *Good to hear from you again Walt and reassuring to know that you're all set down there in Florida. Good luck on your skeds.*

Fairborn, Ohio Bill (W8SVI) from the old home state emits with:

"Still working toward that contact with you via the moon. Next time the moon is visible from here, I will be pointing a 96 element Sterba Curtain array at it. The thing looks like a monster and I'm expecting the poor neighbors to haul me out in the wagon any day now, but I sure will be in there pitching. *Just be sure to take your key along and have a nice long feed-line all ready, Bill.*

"I can do best with the moon fairly high in the sky. Don't expect too much luck at horizon elevation, anything from about fifteen degrees elevation on, is the best from here. My frequency is 144.158 mc." *What do you mean "poor neighbors" Bill? That just isn't the correct way to look at it.*

Inkster, Michigan George Petrena (W8UCT) sends a contribution from that town in Michigan which brings back fond memories of two-meter dx from Ohio in the "Good old Days."

"Through your column we would like to let other hams know of a new organization called The Amateur VHF Association. The charter members are W8ARR, W8DX, and W8RMH, and others too numerous to mention. Meeting dates are quarterly." *Fine, George, I knew that those Michigan VHF boys must have a group, club or association of some kind.*

Dayton, Ohio Ron (W8ILC) with information for the gang:

"We were blessed with two aurora openings and one tropospheric opening from September second to fourth. On September 2nd W1FZJ, W1PU, W4AO were worked. W2PU was state #17 and W4AO was state #18. On September 3rd W2CBB state #19 W1RFU, W1KCS state #20, K2IXJ and W2ALR were worked. *Hey, hold on there Ron, that's working them a little too fast.* On September 4th we had a tropospheric opening extending from Missouri to the New England states. On September 13th we had a nice opening again into Louisiana and Mississippi. Many stations in the Cincinnati area worked their first Louisiana contact.

"Will be ready for moon bounce next spring with a KW and 128 element beam. That circular polarization deal sounds very interesting. I was talking to W5HEZ about it last night, and we are going to build some experimental circular polarized antennas this winter.

"By the way, before I forget, W4UUF was heard several times on the 13th, he is located in a very high noise area and did not hear anything up this way. Also, I'm getting skeds set up with W7QDJ in Utah for the meteor shower on October 22nd. That's a distance of 1480 miles. W2WFB/4 is now on the air in Orlando, Florida with 400 watts and a long yagi on 144.060." *Lots of news in this one, Ron. You'll notice that we have a letter from Walt (W2WFB) in the column too.*

Mount Vernon, New York Neil (W2OLU) gets an awful lot on a itty bitty post-card:

"Yes, yes, 1000 yes's, let's have an article on that very FB VHF amplifier wid 2-826's built by K2CEH. I think that the 826 is a vy fb tube, fer hf as well as vhf, and there are mighty few OM's taking advantage of this fact. The commercial ham equipment builders are sure doing FB, tho. Look at the 826 linear put out by Gonsett. Pse coax our friend into authorship! Tnx." *Well what more can I say, brother such enthusiasm!*

Lincoln, Nebraska From Dick (WØVZI) the following:

"Have been reading your column steadily and gradually been growing more interested in VHF operation. I have been operating on 80—10 meter phone and c.w., but I prefer cw. This year I plan to build some six meter equipment and would appreciate any information on six meter gear or other information which might be of some help to me." *Hurry, hurry, boys, a convert in sight. Deluge him with information. Glad to know you're interested Dick, I'm sure you'll enjoy VHF work.*

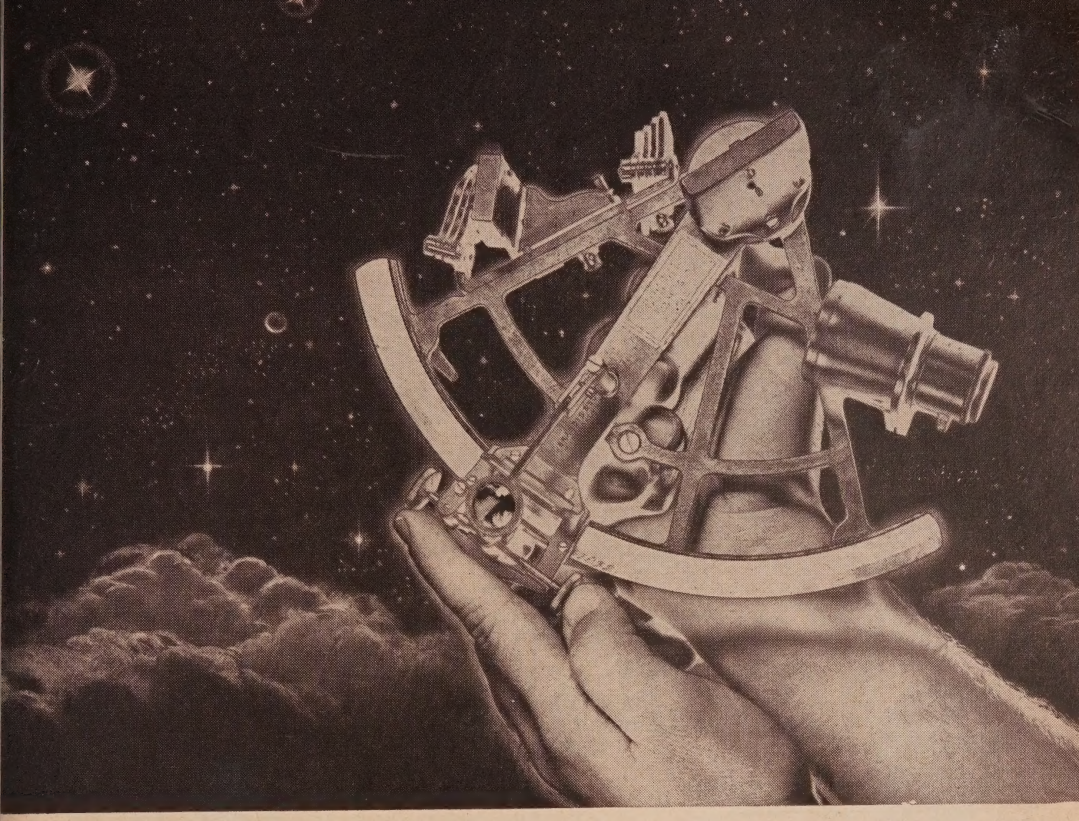
Akron, Ohio Art (W8KAY) sends us the following summary:

"Summary of meteor scatter tests on 144 mc during Perseids shower at W8KAY, Akron, Ohio. Tests covered period 8/10—8/16/56.

"Skeds were made with stations in California, Washington, Oregon, Arizona, New Mexico, Texas, Louisiana, Florida, Nebraska and Kansas.

"Two way exchange of complete call sequences, reports, and acknowledgements, was made with W5HEZ, Baton Rouge, Louisiana (144.149) at approximately 0100 EST on August 12th. Signals were very erratic and required many repetitions.

[*Continued on page 86*]



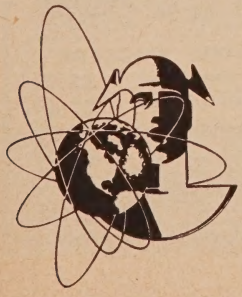
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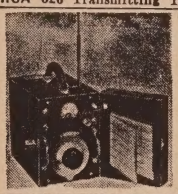
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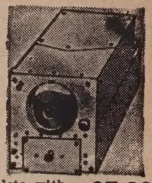
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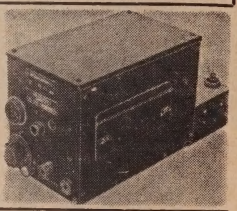
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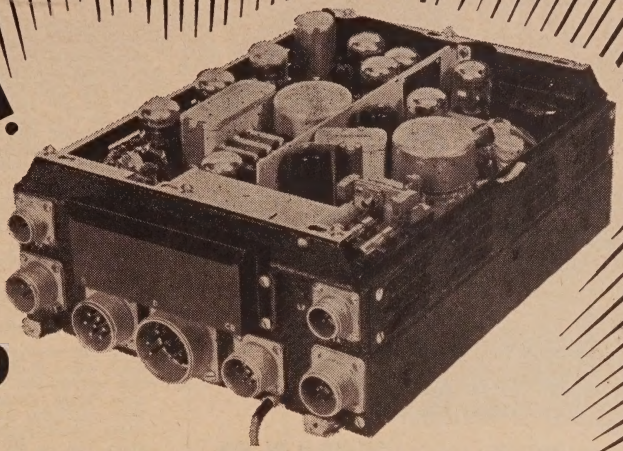
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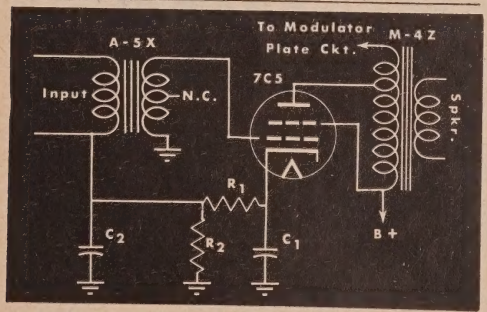
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VHF *[from page 82]*

"The best meteor-reflected signals heard were from W5SWV, Denison, Texas (144.000.00). One call sequence copied was a loud, steady signal for duration of at least twenty seconds. Several faint 'pings' were heard on a frequency in use by W5FAG and W5VWU, Alburquerque, New Mexico. No other signals were heard at W8KAY.

"W7LEE, Parker, Arizona, heard a few faint bursts on the frequency used by W8KAY (144,300).

WØVTP, Omaha, Nebraska, heard many bursts and made positive identification of W8KAY signals.

"W5SWV reported some very good sequences copied on W8KAY transmissions.

"The peak for maximum number of bursts and best signals heard was early in the morning of August 12th." *This is the kind of information that makes very interesting reading for lots of the boys, Art. Thanks for typing it up and sending it to us.*

Salt Lake City, Utah Jay Farnsworth (W7WLV) sends a contribution too:

"I am now active with a four element beam and fifty watts. Local activity here is very low. During the past three weeks the openings have been very rare. Hope things pick up soon and we can work back into the East. We are on every morning and every evening looking for contacts. Hope to hear from you on the air soon." *I hope so too, Jay, for both our sakes. Keep up the good work.*

Tucson, Arizona From Bob Turk (W7LEE) the following news and information:

"I picked up a thirty-five foot telephone pole *(you did?)* last week and hope to get it up within the next month so I can work the two-meter men on the 20 mx band. I run a healthy kw to pp 4-250'A's class b Mod with 304 TL's and have a three element beam that hasn't seen use yet. I used to be a rabid DX chaser winding up five years ago with two hundred and thirty-two countries worked when I quit to come out here.

"I have worked VHF back to 1936 on the old five and 2½ meter bands. I was working 1¼ meters with a mobile when I found out we were at war with Japan. From this you can see the VHF spark is superior.

"Push the lunar project and let me know of your progress. *Will do, Bob.* I am sure this is going to be a positive and better type of propagation. My big antenna is nearly mechanically perfect but have matching impedance problems with which W7LHL seems to think we can overcome.

"I plan on not having the antenna over 20 feet high with a tracking system to be used on the moon to keep it within a straight line as it rises. On earlier tests with the 48 element antenna I found I could get an average of three out five return echoes for only the first twelve minutes every day as the moon rose on the horizon. This was last winter so I abandoned the project for the bigger antenna and a means of tracking it. The 48 element beam used here has terrific forward directivity on the horizontal plane and practically no radiation vertically.

"For optimum forward scatter with the stations I work regularly in the three surrounding states. I find I must operate the antenna at approximately 7½ degrees upward tilt angle on the horizon. It is with this same upward tilt I work on scatter tests. Finally with exasperating effort, made contact with W7LHL this a.m., but it took two hours and eighteen minutes to sk. *It was worth it though, wasn't it Bob? One more experiment completed satisfactorily.*

"I am dickering with the Indian Reservation for some free ground adjoining my property to install a Mark II minitrack system for the satellite which will be launched next year. Will give more dope later. *We'll sure be interested in anything on that project Bob.*

"Hope this info has been of some use to you. Many tnx for skeds and tests."

The foregoing is an excerpt from a letter to Walt (W2CXY) from Bob Turk (W7LEE). Thanks a lot to both you boys, we're all interested in this type of information.

Nanaimo, B.C. From one of our many Canadian friends, Don Oliver, (VE7AOG) we received the following:

HENRY HAS IT FIRST

YES HENRY HAS ALL THE NEW EQUIPMENT FIRST!

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S85	12.00	5.94	119.95
SX99	15.00	7.42	149.95
SX96	25.00	12.37	249.95
SX62A	35.00	17.32	349.95
SX100	29.50	14.65	295.00
R46B			17.95
HT30	49.50	24.50	495.00
HT31	39.50	19.55	395.00
S94-S95	6.00	2.97	59.95
S-102	6.00	2.97	59.95
S-106	6.00	2.97	59.95

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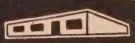
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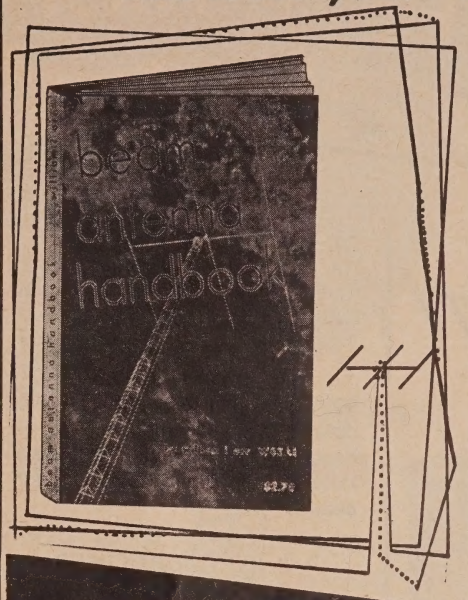


Ted Henry, W6UOU Los Angeles



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"Since W1 is still a little far for two meters at present, I have to break down and write a letter to let you know what we are doing here. Last night W7GQM, Harry, in Seattle and VE7AOG, me, completed what we believe to be the first two-meter teletype QSO between British Columbia and Washington, *(I've heard of no others Don.)* and we had to pick the worst band conditions in many moons to do it. To VE7AIK, Jim, goes the credit for loaning me his teletype machine and terminal unit while he is building a low frequency *(what's that?)* transmitter for it.

"The equipment used here is a Millen 829B transmitter, feeding a sixteen element co-linear. Receiver is a Wallman Converter to a BC-342. Printer is a model 26 we liberated in Oakland while we were at the National Convention last month.

"I would like to build a crystal controlled converter so I could work c.w. without keeping one hand on the BFO tuning, but don't know where to get a WE-417A, maybe you could enlighten me on that point.

"Last week I made Tacoma my best DX to date with W7LRF at that end. I was beginning to believe there was a Faraday Shield on the other side of Seattle!

"Should have mentioned that W7LHL, Seattle, was also copying our RTTY signals last night but did not transmit on RTTY as conditions were so rough I couldn't read him and he usually puts in a good signal here with a Gonset to 96 elements. Believe W7GQM was using a Gonset Communicator also." *Fine work, Don, so glad to know that your efforts paid off. They usually do, but some times it does take a heck of a long time.*

Baton Rouge, Louisiana Jack (W5HRZ) the old crocodile eater from Baton Rouge sez:

"A little news on the meteor shower (Persieds). Saturday, August 11th, worked W8KAY after an hour and one minute of effort. Started at 2345 CST and finished up at 0046 August 12th. On August 13th at 0105 to 0200 almost worked W5VWU, but he was not hearing me too well. He could not get his report. At 0705 finally made contact with W2CXY for first Louisiana—New Jersey two meter contact. Walt was puting a mighty potent signal down here. That was the end of the shower activity.

"On Wednesday, August 22, at 2330 was in contact with W5JTI when I got a phone call from Ron, W8ILC, in Dayton, Ohio, telling me he was hearing Tim and myself about S8 to 10 db over 9. Signed with Tim and got Ron a 2355 with a 5-7-9 signal down here in Baton Rouge. Signed with him at 2400 and heard W4HJQ calling 'CQ'. Hooked him at 0004."

From Mexico (New York, that is) Cliff (K2MLG) writes:

"I am interested in working six meters also. I have a new Hallicrafter six-meter receiver and a four element beam up in the air, but that is as far as I have gone.

"I have heard it is possible to convert the Heath AT-1 to six meters, but do not have this information." *Can anybody give Cliff a helping hand?*

Urbana, Ohio From Urbana-on-the-Avon (?) and from Max Holland (K8AMU) we hear:

"Thought I would write and tell you of my choice as TMRCP (two meter rag chewer par excellence) for the Dayton, Springfield and Urbana, Ohio section. The fellow I have in mind is W8DSQ, Willard. When there is no activity on two meters, you can always rag chew or test with Willard.

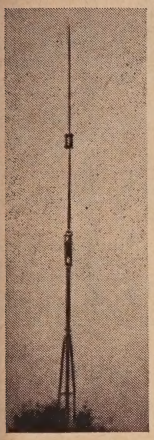
"By the way Sam, I'm on six meters also." *Nice to hear from you Max, and we'll keep your nominee in mind.*

Tonawanda, New York John Tyler (W2LXE) comments:

"A pair of 4-125A's is in the planning stage and a 416B preamp is in preliminary stages of construction. However, these are cold weather projects and the main project now is a fifty-two element beam. It won't be ready for several weeks yet as mounting twenty-four foot booms with two wavelength spacing in both directors is going to produce some rather immense problems. Maybe with this I'll be able to work New England and the gang in New Jersey. *You surely should be able to John, and a lot farther too.*

"Good luck with the VHF column and keep it big and full of new ideas."

W7OE PICKS DAVIS MOBILE EQUIPMENT FOR FIXED STATION AND PORTABLE USE



"MADE EXHAUSTIVE TESTS AT MY HOME FIXED STATION. Davis Mobile '500 Series' Hi-Q Coil at 17 feet exceeded half-wave horizontal wire 40 feet high! Signal strength reports averaged better than an S1 increase in all instances! I am taking down the wire antenna and mounting your mobile job on top of my 40-foot tower for permanent use. This solves the problem for hams who are limited in antenna space! It is superior. I know for I think I've tried about every type of antenna system ever developed!"

"IN PORTABLE, DAVIS ALMOST DOUBLES RANDOM WIRE SIGNAL REPORTS. I consistently receive signal reports with Davis '500 Series' Coil almost double those received on a random wire antenna approximately 65 feet long! Davis increased my signal reports from RST 349-469 to RST 569-599 — merely leaning the Davis antenna against one of the INSIDE walls of a motel room!"

Davis Mobile Equipment in Fixed Station Use on Premises of Howard S. Pyle, W7OE, Mercer Island, Washington.

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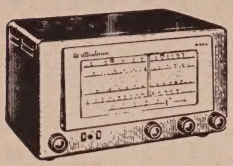
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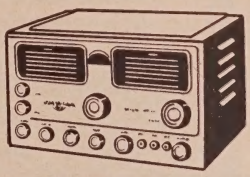
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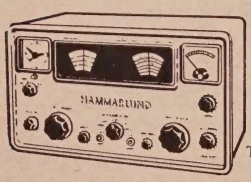
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35 William St., Newark, N. J. MArket 4-5154

Microwave DX from Ilion, New York Jeffrey Hopkins (K2ITN) has a bit to say on this subject:

"I saw your article in the VHF section of the September issue of 'CQ' on Microwave DX records and thought I would drop you a line and see if you would be interested in trying for a DX record on 10,000 mc or in the future on a frequency or frequencies above 10,000 mc.

"At the present time I am just about all set for 10,000 mc. I have a 723A/B reflex klystron for a transmitter and one for the local oscillator in the 30 mc preamp. I have two 3 centimeter parabolic reflectors and one dual variable power supply for the transmitter. The 30 mc preamp and local oscillator power supply is the only thing that I haven't got but it is under construction now.

"I would like to hear from you or anyone else who is interested in 10,000 mc or higher frequency communication. Also would you let me know what is the highest frequency you can get on with the equipment you have now." *Will do, Jeff.*

Fairfield, Connecticut Ray (W1REZ) comes up with:

"We're open for skeds for new states from Minnesota, Iowa, Missouri, Arkansas, Tennessee, Georgia, Alabama and Mississippi. Anyone willing to put some honest effort forth? *Lots of 'em, Ray, you'll be hearing from them.* The rig runs 1 kw with good effect and the hearing aid is in good shape. Lots of luck to you and Helen."

Merry Christmas fellows.

73, Sam, W1FZJ

SURPLUS

[*from page 73*]

receiver oscillator when the front end is used in conjunction with the APS-13 i-f strip? Best 73's

Til Young, K2AZT Baldwin, L.I., N.Y.

It is possible to tune the APS-13 receiver by installing a 2.7 to 10.8 mmfd "butterfly" capacitor such as the Johnson 11MB11. This capacitor is installed directly over the oscillator lines in the receiver compartment (yes, it will fit). A short wire then connects the capacitor to the junction of the oscillator lines and the coupling capacitors.

Dear Sir:
Am considering building a combination of the SSB Q5'er and Novice Q5'er. In the SSB model, are the slugs removed from the coils? How did you extend the tuning shaft? When receiving SSB, how do you adjust it to receive both sidebands? Thanks es 73's

A. Hansel Willmar, Minn.

The slugs were left in the coils used in the SSB Q5'er to aid in tracking the receiver on 75 meters. Even with the slugs in the coils they will still tune up to the 40 meter band. The shaft was extended with a ¼ inch shaft coupling (available at any radio store) and a short piece of ¼ inch brass stock. The crystals selected for use in the SSB Q5'er are for the most popular sideband in use. To change sidebands, it is necessary to reach around the right side of the BC-453 and adjust the bfo control to the other side of the receiver pass band.

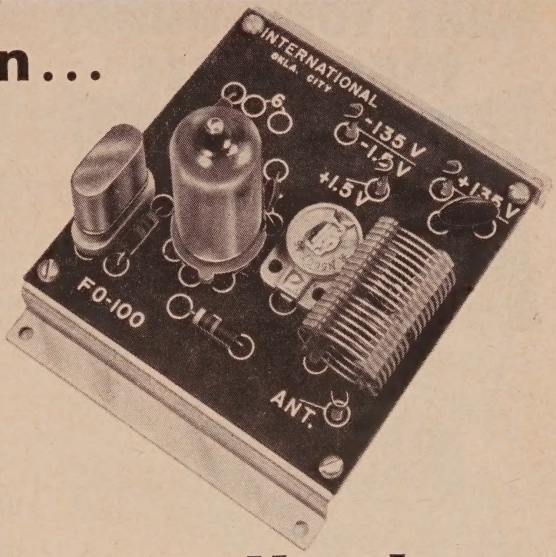
Dear Mr. Stoner:
I built the Novice Q5'er as described in January *CQ*. It is FB except I have one difficulty. On 40 meters, using a 6800 kc crystal, I pick up WSC, which I believe to be a press association station, at 300 on the dial of the BC-453. I believe they operate on 6500 kc . . . I believe it has a perfect right to be there, but it sure raises havoc when I try to work on 7100 kc. Is there any way around this? 73

John A. Toennessen, W9KFM, Milwaukee, Wis.

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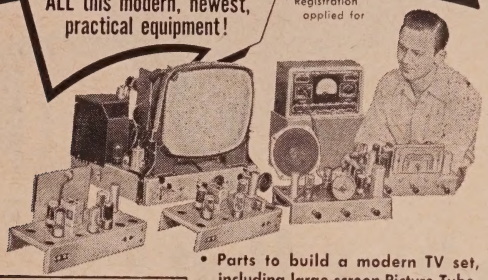
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NAME _____ BIRTHDAY _____ 19 __
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Sounds like you have a bad case of images. Fortunately, it is not too tough to get rid of. You can move the image up or down the dial by using a crystal higher or lower than the one you have. You can eliminate the image by using a crystal on the high side of 40 meters, such as 7500 kc.

Dear Don:
I bought a Q5er and built the converter you had in CQ Magazine some time ago. I have it operating and am picking up a lot of beacons. I can't get the receiver with the converter to pick up either the 40 or 80 meter bands. Yours truly,

Eugene Borne, KN5GBD, Waco, Texas

Sounds like you didn't see the correction on my error in that article. Capacitor C-6 should be eliminated and capacitor C-8 should be 50 mmfd rather than .005 as stated. See March CQ, page 36 for more details.

73's and Merry Christmas . . .

Don, W6TNS

DX *[from page 49]*

UN1AB, ZS9P, YA1AM, OQØCZ and IT1AGA for a 212 total while Bob, WØQVZ, reaches 211 thanks to YVØAA, AP2AD, IT1AGA, UN1AB, ET3AF, HB1MX/HE, VS4FC, VR4AA and UD6BM . . . Vic, W1TYQ, keyed with KC6UZ and ZD1FG for 211 as Bob, K2GMO, rises to 207 and 39 zones with OQØDZ, CR5SP, SM8KV/LA, UL7CB, UAØKCA, VR4AA, UI8AE, VK1RW and UH8BA . . . Otto, K6ENX, adds three zones and goes o 190 with such as VS9AN, PX1EX, KG6IG, ZC5SF, VK1RW plus 40 others while Fred, W8KML, makes it 231 (225 on phone) with UI8KAA, OQØDZ and I1AXV/IT . . . Paul, W9KXK, is 179 with such as BV1US, ZD3D, YJ1RF, VR4AA and VK9TW as Ed, W6UQQ, goes to 176 with UAØSK, VR6AC, KC6UZ, AP2AD, UR2KAA, 4X4CJ, VQ5GC and ZC4IP . . . Ken, W1QJR, goes to 38 zones and a 173 total with such as UAØKQB, UN1AB, I5RAM, UI8AE, UJ8AF, UG6AB, I1SG/M1, VR4AA and VR3B while Mickey, W8YIN, reaches 212 with UJ8AF, OQØDZ and IT1XX . . . Tom, W5HDS, snagged UA9VB for a new zone and pushed his total to 181 with such as FS7RT, VQ5GC, VR1B, XE4A, VK9XK, PJ2MC, HI8FR, VK9TW, EA6AM, BV1US, PX1EX, UQ2AS, VQ1JO, I5RAM, YA1AM, KW6CA and AP2RH as Skip, K6JQJ, climbs to 179 with VR4AA, UJ8AF, FF8BL, UI8KAA and ZP5IB . . . Doug, VE1PQ, comes up to date with 38 additions to rest on 166 while Bill, VS1GX, adds VK1RW for No. 123 . . . Bob, W9NN, hits 171 thanks to IT1TAI and HB1MX/HE as Bob, W6YMH, goes to 147 with XE4A and VR4AA . . . Chas, ZL3CP, adds a zone with UA9CC and sports a 129 total . . . On the "phone only" side Guy, W6DI, upped to 227 with SM8KV/LA, HB1MX/HE and M1B while Luis, CE3AB, adds 27 for a phone total of 214. He nabbed UM8KAC on 21, A3 . . . Ernie, W6KQY, talked his way to 207 with UB5WF, HB1MX/HE, LZ2KN and M1B as Charlie, W6PJ, A3'ed to 193 with PZ1AI, AC5PN, 15RAM and

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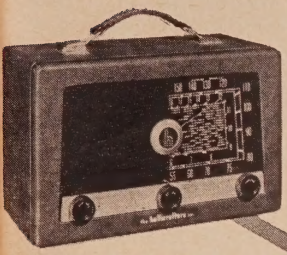
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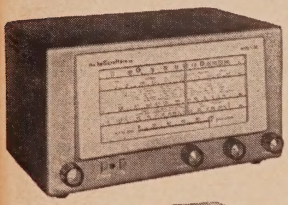
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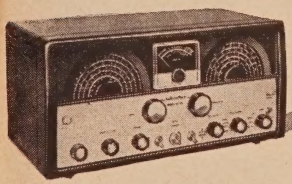
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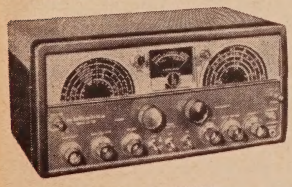
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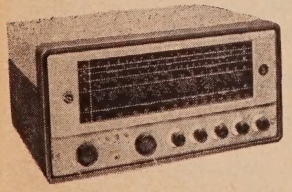
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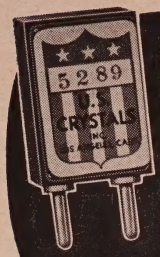
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VK9TW . . . Willard, W1NWO, went to 223 thanks to XE4A while Bill, W4ESP, added UQ2AN, VP8BU, ZD3D, UC2KAB, VP8BY, YVØAA, FB8BV, ZC4IP and PJ2MC for a 183 phone total . . . George, W3CMN, received his General ticket in August and promptly worked VE1KJ, DL1CR/LX, KV4AA, YV4AU and W4LRN/VO2 . . . Stan, W2KGN, goes to 121 with PJ2ME, ZD2ROC, UC2AA, CR4AE, CR7BS, UR2KAA, OY1R and MB1MX/HE . . . Rudi, DL7AA, has worked XW8AB on 5 bands, CW! . . . Norm, W9RKE, running 30 watts, phone, advises that QRP DX can be done and reports QSO's with ZS6AFF, KB6BC, HB1MX/HE, OE5CK, TI2GC, CX4AB, 5A1TA, GM8MN, F7AR and CR9AH . . . Steve, K2CJN, goes to 157 on phone with 4S7GE and OY2Z . . . Nick, K4DTI, acquired a 2 element Mosley beam and quickly added 12 new ones for a 65 total . . . Mike, K4CHK, nabbed YN1PM, CO8AQ, LA3A, VP6CS, DJ1NS, PY7AN, ZS6DG and OZ7SN on 21 CW plus VP7NF and HK2GO with A3 . . . Chas, W9YZP, running a DX35 rig in up to 17 with such as HK3PC, KH6OM, ZL3PJ, OE1WT, XE1MB and KA2KX . . . Pete, W1BPW, totals 57 with ZB2Q, HB1MX/HE, YS1O, UA3XP . . . Norm, DL4RI, worked 102 in three month's operation with such as W4EMF/KS4, UI8KAA, VK9DB, SVØWE, FB8ZZ, FL8AB, OQØVN and PJ2ME . . . 4S7MR was No. 178 for W5AVF as K2BZT nabbed ZS9P for 199 . . .

Second European (WAE) DX Contest

TIMES: *Phone*, First Half—1200 GMT, Dec. 8th to 2400 GMT Dec. 9th.
Second Half—1200 GMT, Jan. 19th to 2400 GMT Jan. 20th.

CW First Half—1200 GMT, Jan. 5th to 2400 GMT Jan. 6th.
Second Half—1200 GMT, Apr. 6th to 2400 GMT Apr. 7th.

Rules are essentially the same as last year. It should be noted that each station may be worked PER WEEKEND only once PER BAND. Times should be kept in GMT. Each contact, numerical exchange (579001, 569002 etc.) counts one point. Mulitplier is the sum of European prefixes worked on each band. Last year's "QTC" feature is included and 5, 10 or 20 bonus points may be had by working the same station on 3, 4 or 5 bands. Phone logs should be mailed to DARC, DX-Bureau, Fuchsienweg 51, Berlin-Rudow, before Jan. 31st. CW logs before May 15th.

160 METER TESTS (Via W1BB)

The transatlantic top-band tests for the 1957 season will be held on the following dates:
Sunday mornings, 0500-0800 GMT
December 2nd, 16th and 30th.
January 13th and 27th.
February 10th and 24th.

[*Continued on page 98*]

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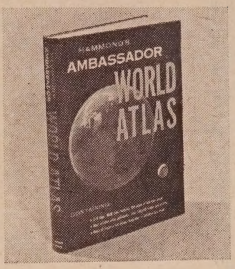
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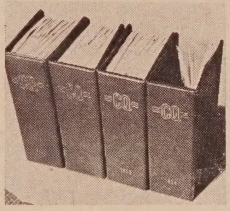
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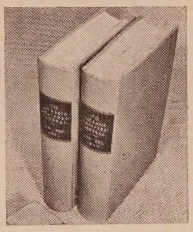


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The fones had a bad spot some place in the line.
And the rusty alarm clock refused to keep time.
My over-size ashtray was littered with snipes,
Gum-wrappers, stub pencils, a couple of pipes.
The trusty dot-maker all covered with dust
Was fighting but feebly the onset of rust.
My old Hallicrafters with a flat 6A8
Was trying to pull through a weak W8.
While down from the window there seemed to tumble
A dozen-odd wires; Boy! What a jumble!
A junkbox was crammed with mouldy old gear,
Unused, but loved, for many a year.
The logbook just bristled with skeds, ads, and notes,
"The Loading of Pentodes," and "How to Raise Goats."
A trusty long skyhook swung under the stars
(a dandy emitter of black TV-bars).
I turned on the box that gives out the noise,
Figured I'd hear the usual boys.
Then out of the speaker came a fat CQ,
A clean-sounding signal, I paused to see who.
His transmissions were brief, his words were so clear,
His procedure the kind a guy likes to hear.
I zeroed him quickly and flipped on the soup,
Never dreaming he'd answer a rig with no poop.
He said "The name here on this end is Sandy,
"I've just qso-ed your rich old Aunty.
"She told me to tell you the news, Colonel;
"She's sending you CQ, THE AMATEUR'S JOURNAL."
And I heard him repeat (noise here is infernal)
"All lucky hams get THE AMATEUR'S JOURNAL."
So you hasten, ole top, and send in your dough;
CQ MAGAZINE gives what you want to know.
However you do it, whether by key or mike,
You'll find in it all those things that you like.
And lest I forget it (my schedule is SO tight)
Merry Christmas to all, and to all, Good-night.

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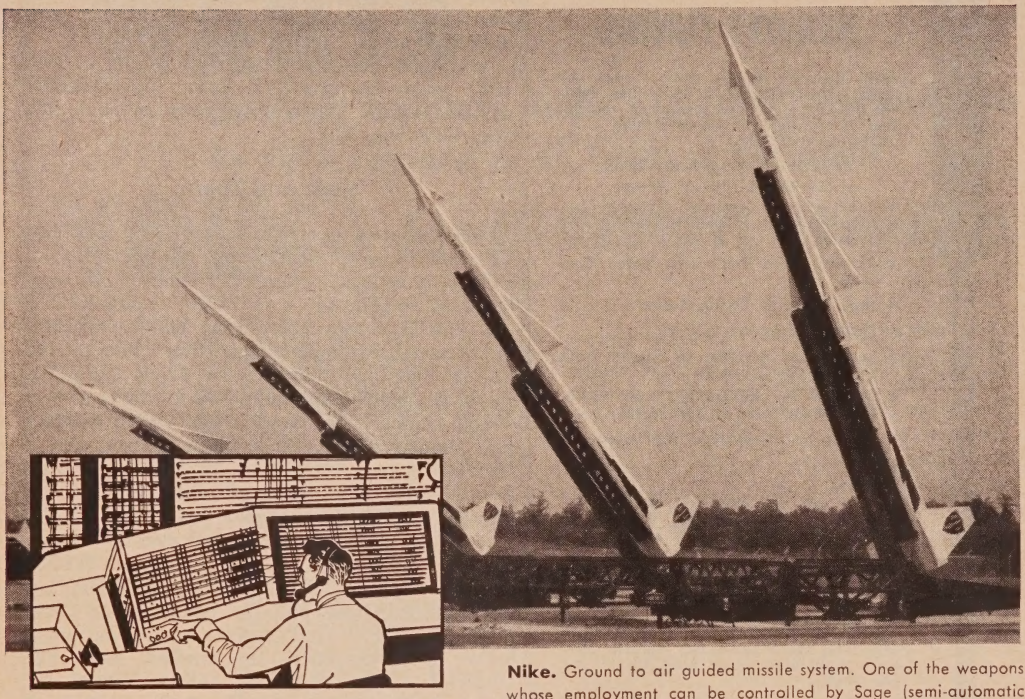
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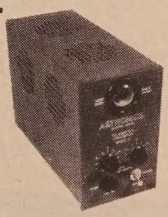
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DX [*from page 94*]

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A top-band "first" occurred on July 11th at 0505 GMT when the OM/XYL team, ZS2GE/ZS2KZ worked W1BB. This was repeated on Sept. 8th. Max RST was 339.

Here and There

W3ZAO opened up from a new QTH and first six contacts were all different continents! . . . W4LIB is none other than Art Godfrey. He may be heard on SSB, 14 . . . W7BDW is now K2OLS . . . W1FH advises that missing ZD7A cards may be obtained by contacting Arthur Hemsley, 46 Mutual Bldg., Germiston, South Africa (ZS6GV). Please no contributions altho IRC for direct answer would help . . . W1RAN, Ned, visited OH2RY plus Dutch and Swedish hams in September . . . W2HQB is now K6GMA . . . W8OPG now keys from Miami as W8OPG/4 . . . Chas, KV4BK, has returned to W5RX after two year stay in KV4-land. While at KV4BK he worked over 600 novice stations in all states . . . W8PQQ visited W4TO, W5ADZ and W5JUF . . . Don, VE3CDP, has just returned from portable operation at Coral Harbour, N.W.T. and reports conditions much better than expected. He worked stuff like UR2KAA, VK4SD, UA1KAE, JA8AA, VR2BZ etc. Only problem was the wind which reached up to 82 MPH . . . Hubert, FB8BR, is looking for Vermont contact. FB8BR is on from 1100 GMT Saturdays and often during the week . . . WØKOK has received several QSL's for VS9A. Otto says he does not know this character—. KV4AA does NOT handle FG7XD cards nor those for PX1AR/SV . . . VP9BM went QRT in September and will appear with a KP4 call . . . KR6USA is back in operation with complete new staff. Ops are Nick, KR6IY and Ernie, ex-DL4XX. Operation is on 14, 21 and 28, mostly phone. A KWS-1 is expected shortly . . . Warren, W7FBD, is QRV for any station needing Idaho . . . The 8th joint annual DX conference of the Northern and Southern California DX Clubs will be held at the Hotel Californian, Fresno, on Saturday and Sunday, January 19 and 20th. Other DX clubs throughout the world are welcome. Send inquiries to Joint Convention Chairman, Horace Greer, Box 75, Oakland, Calif.

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5 IRC's should accompany application. Address to JA1CJ, Hiroji Ikeda, 33, Oimatsu, Bunkyo, Tokyo. JDXRC members are:

JA1's—AA, AAW, AB, AG, BK, CC, CJ, CO, CR, EA, EF, JM, KF, LL, NP, VP.
JA2's—AW, BL, LC, SM (ex-1TD).
JA3's—AA, IW.
JA4AG.
JA5AB.
JA6's—AD, AO, HK, OI (ex-1TJ).
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JA9's—AB (ex-2WB), AC (ex-2WC), BE (ex-2XE).
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3 different SP regions (SP2, SP3, SP9 etc.)
3 different YO regions (YO2, YO3, YO6 etc.)
3 different YU regions (YU1, YU3, YU6 etc.)
Contacts should date AFTER April 26th 1949. Apply to C.A.V. P.O. Box 69, Praha 1. Amateurs with at least 30 confirmations may submit for listing in the journal "AMATERSKÉ RADIO". A special "ZMT-24" Award is available to those contacting the above in a 24 hour period. (! !)

Last complete HONOR ROLL appeared in the September issue.

Next complete HONOR ROLL will appear in the January issue.

(To October 15th 1956)

WIFH	40-271	W6DUB	40-163	W8YIN	37-212
W6AM	40-271	W5ASG	39-266	W5HDS	37-181
W6ENV	40-269	W2WZ	39-253	K6JQJ	37-179
W3GHD	40-265	WICLX	39-248	VEIPQ	37-166
W8KIA	40-265	W8UAS	39-247	W8TLL	37-128
W6AOA	40-265	W2NSZ	39-244	VSIGX	37-123
W2AGW	40-264	W2QHH	39-244	W9NN	36-171
W7VY	40-264	W2HMJ	39-237	W6YMH	36-147
KV4AA	40-263	W3OCU	39-237	G2KHU	36-132
W9VND	40-261	WIJYH	39-236	ZL3CP	36-129
W6VE	40-260	W9ABA	39-236	F8CW	35-168
W3EVW	40-259	WØAZT	39-226	KP4JE	35-155
W6EBG	40-257	W4HA	39-226	W4HKJ	35-143
W6TI	40-252	WIKFV	39-222	W3UXX	35-133
W6GFE	40-251	KP4KD	39-216		
W7GUV	40-251	W7ADS	39-216	PHONE ONLY	
VK2DI	40-249	W2GVZ	39-216		
ZLIBY	40-242	K2GFQ	39-212	G8IG	40-198
W6DLY	40-240	WØQVZ	39-211	W6DI	39-228
W6EFM	40-240	WITYQ	39-211	W6AM	39-214
F8BS	40-239	K2GMO	39-207	CE3AB	38-214
W6NTR	40-239	K6ENX	39-190	W3GHD	38-209
W6LDD	40-237	IIOJ	39-188	W6KQY	38-207
W6BZE	40-231	W8KML	38-231	W6PJ	38-193
G8IG	40-223	W9UXO	38-207	W8KML	37-225
W6LN	40-219	W9KXX	38-179	WINWO	36-228
OKIHI	40-213	W6UQQ	38-176	W4HA	36-212
ZS2AT	40-197	WIQJR	38-173	W5ASG	36-197
W6ID	40-196	VK3YL	38-171	W4ESP	36-183
W9YNB	40-192	WIZZK	38-163	W3EVW	36-173
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73's, Dick, KV4AA

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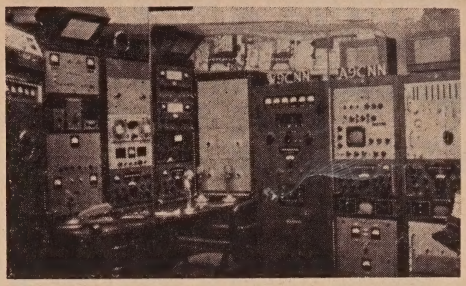
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W9CNN

STATION GEAR



We regret to announce that with the passing of Cecil C. Gregson, W9CNN is a silent key. However, we feel he would have wished his ham gear to continue in operation and bring others the pleasure it brought him.

The entire contents of this, probably the most elaborate ham shack ever devised, is hereby being offered for sale. Most of the equipment listed was factory installed and any modifications were factory made. Everything was kept in an air conditioned room. The station was described in the September 1955 CQ, see front cover and pages 54-55.

COLLINS KW1 Transmitter with SSB-80-20 Factory converted using Multiphase Exciter 20A-Vox with VFO

COLLINS 51J3 reciver-speaker, mated with a Radio Products panoramic receiver SA-8A-T200-500KC;

COLLINS 75A2A receiver with speaker;

COLLINS 75A3 receiver with speaker;

COLLINS 75A4 receiver with speaker;

COLLINS 32V3 transmitter;

COLLINS frequency shift equipment consisting of—

709-D-1 keyer with power supply,
Polar relay and crystal,
716-A-2 converter with power supply and oven and COLLINS equipment cabinet;

MOTOROLA communications equipment—

2-pack trans/receivers, Model #FPTRU-1(B)L1 with AC-DC power supply;

3—fixed frequency station receivers, 29.640KC, model #B1919A;

2—fixed frequency station transmitters, Model #T6920A;

MOTOROLA citizens band equipment — 468.5 MC—

2—station trans/receivers, Model #L-44A-1

2—mobile trans/receivers, Model #T-44A-1

MAGNECORDER tape recorder with continuous feed mechanism, Model #PT63A;

MAGNECORDER model #PT63J recording and playback amplifier

KLEINSCHMIDT teleprinter and table, Model #150;

KLEINSCHMIDT reperforator and table, Model #120;

HARVEY-WELLS TBS50-D transmitter with mobile power supply;

#630 ELECTROVOICE microphone with stand;

2—MILLEN 5 inch oscilloscopes, Model #90905;

RME MB3 monitor

JOHNSON "Signal Sentry" monitor;

3—BIRD coax switches, model #74;

BARKER-WILLIAMSON 52 ohm lo pass filter;

COLLINS VFO-70E8A RTTY Osc.;

Rotary beam control panel (2 powerstats, model 20, 1 SYLSEN motor, 110 AC) and antenna rotator, prop pitch 24 volts, SYLSEN motor, 110 AC;

19—PRICE coax relays, 110 AC;

Antennas—

2—MARK PRODUCTS vertical array, 468.5 MC;

40 meter TELREX beam, full size, 3 element;

2 meter HYLITE, four element, four bay array, (new)

ELDICO #SSB-500 power amplifier;

ELMAC mobile receiver, model #PMR6A with power supply;

RCA 1 in. TV camera and amplifier;

HALLICRAFTERS panoramic receiver, 455KC-IF;

POWERSTAT model #20;

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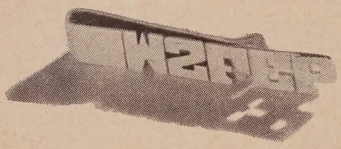
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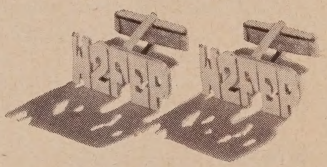
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RTTY [*from page 62*]

newcomer in Larchmont, New York. Eric has a kilowatt and a Model 26 to start. K2USA, the Signal Corps station at Fort Monmouth, New Jersey, is on 3620 kc with 400 watts to a BC-610, a model 15 for receiving and a Model 19 for transmitting. The receiver is an SP-600JX and the converter is a CV-31A. K2IAZ of Union, N. J., is trying to get a Model 12 going on 80-meters. K2IYN is in the Navy at San Diego, California.

Comments

Late in December or early January, your RTTY Editor will move W2JTP (and family) to a new QTH out on Long Island. This, we expect, will be a much better location for RTTY and v.h.f. At least there will be room enough to get up a half-wave on 80! If you don't hear W2JTP on 80-meter FSK or 2-meter AFSK and 'phone, please bear with us. It takes plenty of time to move and re-install more than 20 year's accumulation of radio gear.

The new address of W2JTP will be:
16 Ridge Drive, High Hills,
Huntington Station P. O.,
New York

Best of Christmas Greetings to all and may you all have a Happy New Year. Drop us a line and let's hear from you, will you?

73, Byron, W2JTP

Propagation [*from page 65*]

is in relation to the influence of ionospheric absorption associated with peak solar activity upon shortwave propagation. Based upon the best data presently available, it appears that intense ionospheric absorption associated with the rapid rise in the sunspot cycle will limit propagation on the 160-meter band to distances less than 1500 miles for the power permitted for amateur use. These skywave openings can take place only during the hours of darkness since solar absorption during the daylight hours limits propagation on this band to the groundwave component only, which is generally restricted to distances considerably less than 50 miles, or so. In order to better determine the influence of peak sunspot absorption upon 160-meter propagation, I would appreciate receiving reports of band openings in excess of 1000 miles. Reports can be sent directly to CQ or to my home address. The reports should

for mobile or fixed receivers

Kenneth E. Lohner, W6GTG

5400 Rockwell Road
North Highlands, California

An Outboard "S"-Meter

Regardless of what receiving system you use, whether mobile or fixed, if it has no S-meter, now is the time to equip it with a meter whose sensitivity can easily be adjusted to permit maximum use in hidden-transmitter hunts, for use as a tuning indicator, and for zero-beating.

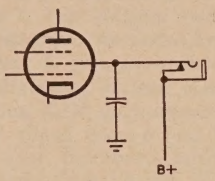


Fig. 1

Locate the screen grid pin of the first (r-f amplifier) stage. (See *fig. 1.*) Lift off the wire supplying B-plus to this pin and hook it to one contact of a closed-circuit headphone jack. Run a wire from the screen grid pin to the other contact on the jack. Mount the jack, but *insulate it* from the chassis by using fiber washers made for this purpose or by any other practical means. I can't give you too much information about this step because it will vary in every case. It is desirable to have the screen by-pass condenser as shown rather than on the B-plus side of the jack. Turn on the receiver and make sure it works normally, and that with a shorted headphone plug inserted into the jack it still works normally.

Connect a 0-1 or a 0-5 ma. meter, a 100 ohm potentiometer, a two-conductor cord and a headphone plug as shown in *fig. 2*. The cord should be left plenty long; later on, after you decide where to permanently mount the meter and pot, you can shorten it. Turn on the receiver and tune it to a strong signal. Turn the pot so it is a direct short across the meter, then plug the meter cord into the jack. The meter should read zero; the receiver should operate normally. Slowly turn the pot until a small reading is obtained on the meter. Now tune the receiver off the strong signal and the meter reading should increase. Tune from station to station and you will note that the *lowest* reading indicates the strongest signal. All readings are, of course, simply relative. A little practice will enable you to make the pot settings rapidly and almost automatically, whether you are using it as a tuning indicator, for zero-beating your VFO, or for seeking the hidden-transmitter. It is desirable that the meter reading increase when the pot is turned clockwise. If it goes the opposite way, the "finger" of the pot is connected to the wrong end of the fixed winding.

The value of pot will affect your control over the meter. If a slight change in pot setting causes a great change in meter reading,

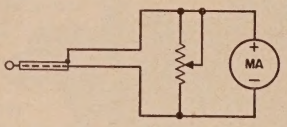
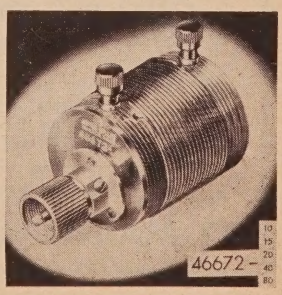


Fig. 2

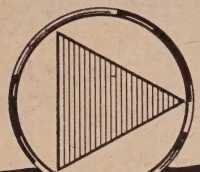
parallel the pot with a fixed resistor or use a pot having less resistance if you must change the pot setting radically to vary the meter reading, change to a pot having more resistance. Using a 0-5 ma. meter, I found 100 ohms just right, but the type of meter as well as the type of r-f amplifier tube used in your receiver will affect the value of pot required. ■

Millen's wee Baluns

Now even Baluns have gone miniature, as you can see by the photo, and without losing efficiency, at that. Millen has telescoped the usual side-by-each coils into this compact unit, with the coaxial connector mounted right on the end. #46672 of a new series of Baluns designed for laboratory measurement and amateur band transmitter use, this high-Q auto transformer exhibits very tight coupling between the two halves of the total winding, with the residual reactances tuned out by fixed capacitors. Providing an accurate 4 to 1 impedance ratio over the entire band of frequencies for which they are designed (this one covers 10M thru 80M), these coils are destined for great popularity amongst the amateur ranks. Why not congratulate Millen on this useful development? Write James Millen Mfg. Co., Inc., Malden, Mass. They'll probably try to get you to buy one, and they have the cogent arguments on their side.



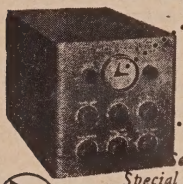
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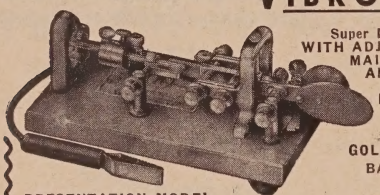


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include time of opening, date, power used at both ends, as well as antenna and receiving equipment used.

Self-Forecasting

The geometry of skyward propagation by reflection from the ionosphere is such that a definite relationship exists between *minimum* skip distance observed on a particular frequency and the MUF in the direction of the skip. By observing the *minimum* skip on a particular frequency, the MUF in a certain direction as well as the minimum skip distances on *higher* frequencies can be determined with fairly good accuracy.

A complete discussion of the relationship between skip distance, critical frequencies measured at the center of the circuit, MUF factors, radiation angles, etc, all of which enter into the picture, would be rather lengthly and is now being prepared for publication as a special feature in CQ during 1957. However, *fig 1* and *2* below are from the article now in preparation and can be used for self-determining MUF and skip distances on the 15, 10 and 6-meter bands. This method of forecasting band conditions may be useful in determining 10 and 6-meter openings during the next few months of peak solar activity. As an example in the use of *fig 1* and 2 suppose that as we tune across the 15-meter band we notice that the *nearest* skip stations are coming in from the southwest at a distance of approximately 800 miles. It's the distance to the *nearest* skip station that's important in this case, not the furthest heard. During the daylight hours of the winter months its more than probable that openings on 15, 10 and 6-meters will be due to F-2 reflection rather than E or sporadic-E.

After determining the minimum skip on 15-meters and the fact that it is probably F-2 reflection, we note from *fig 1* that the point of intersection between a minimum skip distance of 800 miles and the 15-meter curve corresponds to a *critical frequency* of 11 Mc. at the mid-point of the circuit where reflection from the ionosphere takes place. The *critical frequency* is a measure of the degree of ionization of the reflecting layers. We note from *fig 1* that a critical frequency of 11 Mc. intersects the 10-meter curve at a minimum skip distance of 1300 miles, but does not intersect the 6-meter curve at all. This means that ionization is strong enough to reflect a 10-meter signal for distance *greater* than 1300 miles towards the southwest, but not strong enough to support 6-meter propagation. Whenever sporadic-E propagation appears to be prevalent, *fig 2* can be checked in a similar manner.

Fig 1 and *2* can both be used in reverse, for example, if we want to know what the minimum skip distance should be on 15 or 10-meters to indicate that the ionosphere is strong enough to support 6-meter propagation. From *fig 1* we see that a critical frequency of 14.5 Mc. is necessary before F-2 reflection of 6-meter signals can take

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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

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Receiver dynamotors 28V, used ..... $ 1.00
BC-456 SC Mod. w/tubes, new 4.95, used 3.95
MD-7 ARC-5 Pl 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 24V Trans, ct at 12v, 1A 3.50
Plugs for rear of receiver 1.00



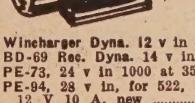
110 VAC power supply for ARC-5 & 274N Recvrs kit 8.95, Wired & tested 12.95

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1625 Tubes, for trans # mod, 50¢ 3/1.00

Popular Dynamotor Specials

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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 8.95

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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
RK-65 Tetrodes, 500 watts each, 6 watts drive, special 2 for 11.90

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VC-40 or VC-50, 15KV 7.95

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
0-15 Ma 0-20 VDC
0-50 Ma 0-40 VDC
0-100 Ma 0-300 VDC
0-200 Ma

$3.29 ea. SPECIAL 3 for $9.00



Heavy Duty Collins choke 4 Hy-300 Ma 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

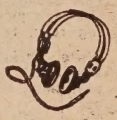
OIL CONDENSERS

2 mfd 5000 vdc new $5.95
4 mfd 5600 vdc 2.25
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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**

Brand New Headphones, your choice of HS-23, 2000 ohms, or HS-33, 600 ohms, complete with brand new rubber cushions **$3.95**

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**

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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, each 2.29

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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
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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, $6.95, ... GF-12 5.95

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

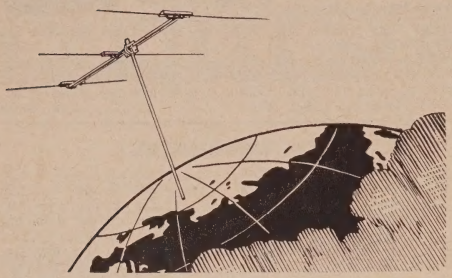
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GLOBEMASTER—3 Band Minibeam 10, 15 and 20 meters—it's the Ham's dream beam—sold *only* by Fort Orange Radio. One antenna, one beam, one feed line—it's pre-tuned, fits any 2' pole. No tricky loading coils, twin boom for strength. Net $99.50.

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place. A critical frequency of 14.5 Mc. corresponds to a minimum skip distance of about 800 miles on 10-meters and 500 miles on 15-meters. When minimum skip distances of this order are observed on 15 and 10-meters, the chances are good that the 6-meter band will open in the same direction, with the skip out beyond 2100 miles.

Season's Greetings

Merry Christmas and a Happy New Year to all from the gang here at W3ASK.

73, George, W3ASK

YL [*from page 59*]

The OMs always provide great assistance and those working with the net this year included W6's ARI, AGO, WJF, BVH, BVM, EJU, EXB, GRO, HT, MSW, RWI, TRF, WRL; K6's GSB, IUX, JZD, KJQ; American Legion Net, Kern County Radio Club, Paso Robles Radio Club, Bakersfield Radio Club; W7's BFA, OPY, RUK, VKP, REO, PJY; W5's LFT, OIA, K5ADE; W5's PCN, IGU, UBW, LTM, LPI, VUW; WØ's ZSZ, PBU, KØCKB; WØ's AOP, RMF, PWJ, VJD, IYF, YOR, VWN, ORL, NJR; KØCTG, KNØEMY; W9's FLL, PWI, GLR, JAF, OPY, IOS, FTB, UEZ, LOC, BKJ, VMG, EOG; K9CJH; W8GJH; Genesee County Radio Club.

AWTAR Chairman Betty Gillies W6QPI, expresses deepest thanks from all race participants to those active in the net and feels the AWTAR "would be lost without it."

The only YL contestant in this year's AWTAR was Joyce Failing, KN6SBG, who placed seventh in the race.

With the Clubs

The YLs of Philadelphia have organized the YL Amateur Radio Club of Philadelphia with 16 paid-up members and many others interested. The president is W4VCB/3, Ev; secretary, W3SLF, Sylvia; treasurer, W3FTP, Marion. The club plans to meet the first Friday of each month.

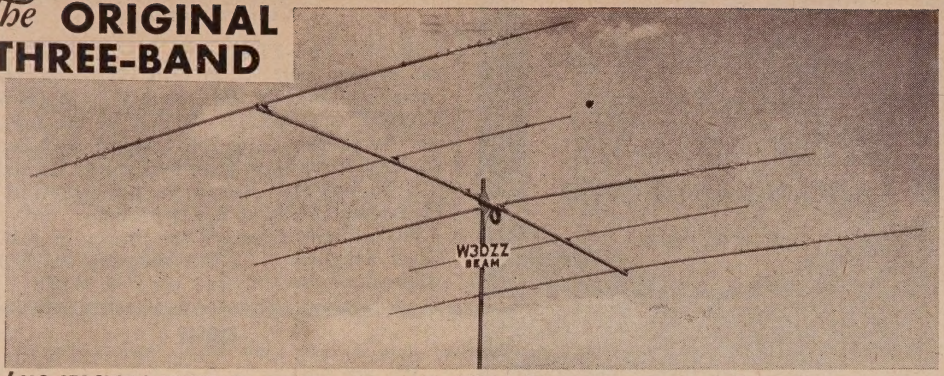
Congratulations to the Los Angeles YLRC which celebrated its 10th anniversary in October! This club has grown from 10 to 75 members. In addition to the new L.A. officers reported in Sept. CQ, W6JZA, Elsa, is recording secretary, and K6BUS, Midge is handling press.

At their September meeting members of WAYLARC (Washington, D.C.) elected new officers: president, W4TVT, Claire; vice president, W3RXJ, Irene; secretary, W3TSC, Camille; treasurer, W4ETR, Mary; exec. cmte. representative, W4DEE, Beulah.

Members of the Texas YL Round-up Net held their second anniversary party in Houston in mid-November.

SPARC-YLS, YL club of St. Petersburg, Fla., extends a welcome to vacationing YLs who may be in the area. This is an active club gaining new members rapidly.

The ORIGINAL THREE-BAND



✓ **NO STACKING REQUIRED**—all elements are at the full height yet wind resistance is held to a minimum.
✓ **UNIQUE WINDMILL DESIGN**—permits ready access to all parts of the beam from the tower.
✓ **WIDE-BAND BALANCER**—affords perfect pattern symmetry with coaxial feed line. No adjustment required.
✓ **MAXIMUM GAIN**—over 8-db. gain on 20 and 15 meters, somewhat higher on 10 meters.
✓ **HIGH FRONT TO BACK RATIO**—in most installations the front to back ratio exceeds 30 db. on 10 and 20 meters and 25 db. on 15 meters.
✓ **RUGGED DESIGN**—Boom consists of two 12-foot lengths of 2¼" dia. tubing with .065" wall. Three-band elements are made of 1½" tubing with .058" wall. All tubing is of 6061-T6 heat-treated aluminum alloy for maximum weather resistance and strength.

MODEL FT-100 BEAM ANTENNA PARASITIC ARRAY operating on 10, 15 and 20 meters. Complete with hardware, assembly instructions and prints..... **$195.00**

MULTIBAND DESIGN FOR WIRE ANTENNAS—The W3DZZ design employs a concentric coil and condenser completely potted in Polyester Resin. Polystyrene insulation of concentric capacitor can withstand highest amateur transmitter voltages.

MODEL FT-200 TRAPS for 5-band antenna operation on 10/15/20/40 and 80 meters. (75 ohm feed line). Pair, postpaid..... **$12.50**

See your local distributor (HARVEY has it in the N. Y. area) or write to:

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414 PINE AVENUE, FREDERICK, MARYLAND

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MODEL 98 CARDIOID

Here's a cardioid mike that gives you top performance at low cost. It's a mike with directional characteristics that make it live to sound originating in front—dead to sounds from the rear. This feature reduces mechanical equipment noises and background noises from ventilating, heating or air-conditioning equipment in your shack.



SPECIFICATIONS

Frequency Response—65 to 11,000 cps. Level—−52 db.

Specify 50 ohm, 200 ohm or high impedance.

Diaphragm—rugged Turner Dynaflex.

Mounting—standard ⅝"—27 thread. Friction swivel permits 90° swing.

Dimensions—6¼ x 1½ x 1.

Weight—15 oz.

Cable—Detachable 20 ft. single conductor (high impedance) or two conductor (50, 200 ohm) shielded, grey plastic.

Model 98.....List Price $59.50

Model S-98 (with on-off slide switch) ....
List Price $63.50

Matching G-7 Shockmount Stand
List Price $8.00

Models 98 or S-98 with chrome finish add $10.00 to list prices and specify "chrome finish."

Matching C-7 Chrome Shockmount Stand $9.50

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How to Obtain Top SSB Performance from Your 75A-2, 75A-3, HRO-50 or HRO-60 Receiver



The Universal Product Detector

Use of the Product Detector makes it possible to obtain SSB performance from a Collins 75A-2 or 75A-3 or HRO-50 or HRO-60 receiver. It eliminates the need for continual adjustment of RF gain when the conventional CW position is used and gives full AVC on all SSB signals.

Installation of the Product Detector, which plugs into the FM socket, does not require any conversion of the receiver. It is simple and easy to install without removing the receiver from its cabinet.

Use of the Product Detector does not reduce selectivity or otherwise affect the operation of your receiver.

Specify model of receiver for proper Product Detector.

$39.95 (amateur net) includes all necessary mounting hardware and complete instructions for installation and operation.

See your local distributor. If he doesn't have the Product Detector, send us his name and your check. We'll ship direct to you, postpaid.

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Congratulations

To W5's YRT-YTM on the arrival of their third son on Aug. 18th . . . to W7's UYL-MGG on the arrival of a son July 18th . . . to W7's WRA-WQZ, ZUQ-YIO, and WN1JJY-W1CDV on the arrival of new daughters . . . to Edith Meyer on becoming KN5GQO after many years exposure to Ham radio. . . . To W6QOG, Helene, for being the first W6 YL to earn DXCC on 2-way phone.

We are sorry to record the passing of W1LYR, Hazel Kempton. . . . Our sympathy to W6PJU, Mildred, who recently lost her OM, W6ZE.

QRU?

We are anxious to hear from any YLs who received their amateur licenses during the years 1934 and 1935 and have retained them since that time. If you were licensed in either '34 or '35, won't you please drop your column editor a card or note? Tnx!

New QTH

You may have noticed a new QTH at the beginning of this column in the last few issues. After two years at Dulce, the OM received a transfer to the U.S. Indian School at Santa Fe, N.M. Though we now have to contend with TVI for the very first time, we love the "city different," and are happy to be back in civilization again.

33, Louisa, W5RZJ

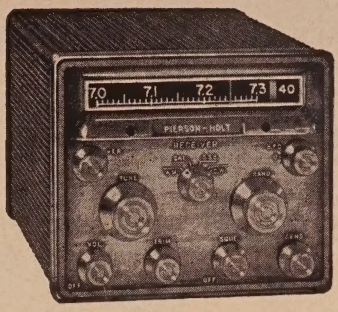
CQ CQ CQ CQ . . .
Has a new QTH
300 W 43rd St
JUdson 2-4460

Ladder Problem [*from page 37*]

that we have a mess on our hands and we begin to lose interest rapidly. After all, solving the problem is a detail once it is set up and who cares what the width of the alley is anyway? But again we naturally start thinking of electronics—if we only had an electronic digital computer (giant brain to the layman) in the hamshack we could just feed this problem into it and let it grind out the answer while we fire up the coffee pot. Looking into the prices for these machines we soon find them to be more expensive than that new super-single-side-band kilowatt transmitter, in fact, even to rent one for an hour costs more than that new v.f.o. we want to buy next month. Maybe all is not lost however, we might take a lesson from the way that the digital computer tackles

KE-93

Small, highly efficient, full fledged, 12 tube all-band or fixed station mobile receiver.



Extreme stability under shock and vibration, wide temperature excursions and wide power source voltage excursions. Fully capable of mobile in-motion side band reception on all bands. Full automatic noise *SILENCER* (not a limiter). Also effective sharp cut-off squelch circuit.

Write for descriptive literature

Band #1	550	to	1650 KC
Band #2	1650	to	3500 KC
Band #3	3500	to	4030 KC
Band #4	6990	to	7310 KC
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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.

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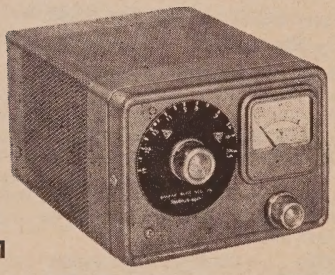
PRICE $199.95
($19.95 down; $16.50 per month)
ALSO AVAILABLE
Modified 1625 Tetrodes $3.75 each

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!*

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MONITOR IN SILENCE!



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A 5-tube tunable broadcast receiver, AC powered, built-in speaker. Meets all FCC requirements. Conelrad frequencies plainly marked. Meter for visual monitoring, also rear jack (for relay connection to other signal devices). **Amateur net . . . $39.50**

See your jobber.

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a problem.

Now those in the know have said that the giant electronic brain is more like a giant moron—it really does the very simple mathematical operations best—its power lies in its ability to add two and two, and get four, in almost no time at all (a millisecond or less) and to keep up these simple operations at a phenomenal rate without getting tired or making a mistake. If a computer were used to solve the problem above (finding x) it would probably do it best by sneaking up on the answer through the back door by solving some simple problem repeatedly at great speed, and maybe we can learn a lesson in computation the same way.

Taking a look at this problem backwards we note that if we were only given x, the width of the alley, and asked to find h, the height of intersection of the ladders, the problem would have been much easier. So let's just guess that the alley is 20 feet wide. If we plug this into the formula for h we find that the ladders intersect at a height of 13.6 feet. Unless we are luckier than usual our first guess will not come out to be right with an intersecting height of 10 feet, but, looking at the figure, we can see that our guess must have been too small if the height of intersection was too high. So we guess 28 feet the second time; and the height h comes out to be 7.8 feet—our guess was too big this time. Our next guess will lie between the first two and thus we slowly sneak up on the answer as in the table below.

x	Height of Intersection
20	13.6
28	7.8
25	10.8
26	10.02

If our patience holds out we can come as close to the answer as we please by this method but we are ready to settle for 26 feet as being very close.

Going back to the electronic computer and introducing a few fancy words we can say that we would *program* the computer to do this operation and each new guess would be an *iteration,* and by this *iterative* procedure we hope to *converge* on the right answer. Of course we would have to give the computer some good method of making the next guess each time or it might have a nervous breakdown and just oscillate around the right answer. Here is where that fine quality possessed by hams and called *judgment* has it all over the computer. Now probably you will say that we went out of our way to make this a lesson in electronic digital computers but whoever saw a ham that didn't do things the hard way—electronically? ■

CQ CQ CQ CQ . . .
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McGurk [*from page 31*]

plicated, and awfully expensive, but all perfectly legal, he tells me. Seems his brother knows some big wheel in A.T.&T., and together they work out this deal. Ed sets up his ten watt rig, receiver and folded dipole while his brother sets up a two meter receiver in the garage along with his 160 meter rig. They have leased television coaxial cables from A.T.&T. which are terminated at Ed's place. Ed has written letters to lots of two meter hams all over the country, and arranged for similar set-ups at the other end. Well, without boring you with all the technical details, it worked something like this. Skeds were arranged at specific times, and Ed would call the guy on two meters. His brother would receive and retransmit on 160 meters Ed's signals, and pipe the 160 meter soup into the TV coax. At the other end it was retransmitted on two meters to the other ham. Same thing in reverse. Very neat, and very legal, too. You know the regs; the transmitter location must be the same within 25 miles for all contacts for a certificate; doesn't say a thing about the antenna, though, or how long the feeders should be, and since both transmission and reception were on two meters, it wasn't crossband.

Collect butterflies, me? Heck, no. I'm going home and work W.A.S. on 220 mcs, but with just 5 watts. ■

Editorial [*from page 12*]

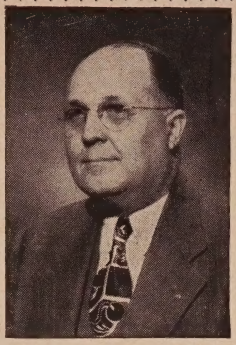
to see such souveniers as the rope used to hang the Nazi war criminals, etc.

Then came the prizes. There were hundreds . . . . they gave them away as fast as they could, but it still took hours. After a while they gave up pulling winning numbers out of the box and had everyone that hadn't yet won a prize come up and pick out something for himself. I won a pair of earphones.

George Cook, W2RBK, and his XYL put us up for the night. Early the next morning we all got up and drove back to the lake . . . the plane was still there. A quick trip to a nearby gas station for fuel and we were ready to head homeward. We bounced across the choppy lake, waving goodbye to George and soon were airborne.

The trip across the relatively waterless mountains on the way up was a little dangerous in a float plane so we headed back down the New York State Barge Canal and turned right at Troy to go down the Hudson. The trip was a bit bumpy, but we made over 100 mph average and I was home for lunch. Guess I'll have to get a plane.

[*You're not done yet—see 112*]



BEFORE YOU BUY

OR

TRADE

ANY HAM GEAR

SEE

WARD, W2FEU

CHRISTMAS SPECIALS

REYCO Multiband Ant. Coils complete antenna kit including

1 pair Reyco coils	$12.50
100 ft. 72 ohm twin lead Amphenol or equivalent	6.00
125 ft. #18 Copperweld	1.00
2 #668 Birnback insul.	.42
1 #468 Birnback insul.	.27
Total	$20.19

OUR PRICE $19.95

prepaid

add 50¢ west of Mississippi

DO IT YOURSELF MULTI BAND ANTENNA KIT

(See Page 18 — Oct. QST)

Including

100 ft. RG-59U	$ 7.00
125 ft. #18 Copperweld	1.00
1 B & W 3905—1 coil	1.50
2 Centralab 850SL-100N	3.60
10 Burndy-KS-90 servits	2.40
4 #668 Birnback insul.	.84
1 #468 Birnback insul.	.27
total	$16.61

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See WARD — W2FEU

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Model DKC



1000 WATTS
Length 4½",
width 3"

←*Silent* A-C magnet prevents hum modulation of carrier — A-C types guaranteed as quiet as D-C.

Special connector protects your receiver ←from R.F. during transmission (Optional).

Transmit contact-pressure over 75 grams, making the 1000 w. rating very conservative. Causes negligible change in SWR up to 100 Mc.

DKF rigid adapter for external chassis mounting, $1.85



AC types (All Volt.) Amateur net.....$10.50

DC types (All Volt.) Amateur net..... 9.50

See your distributor. If he has not yet stocked Dow Co-axial relays, order from factory. Send check or money order or will ship COD. Prices net FOB Warren, Minn. Shipping Weight 9 oz. Dealers' inquiries invited. Literature on request.

Add $1 for external switch (Optional)
Add $1 for special receiver protecting connector (Optional)

THE DOW-KEY CO., INC.

WARREN, MINNESOTA

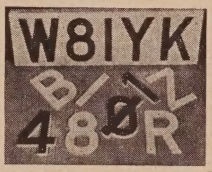
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Canadian Electrical Supply Co. Ltd.
275 Craig St., W. Montreal, Quebec

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Tenite II plastic 3" letters 3-D styled, 2 color, lacquered face: Yellow-black face or Red-white face. Select wood plaques.
Kit #2: Call letters only $1.00 pp

Kit #3: Letters & plaque $2.00 pp

Above #3 Kit Assembled $3.00 pp





"CALL-LETTER KIT"
Order your call in neat 2 inch die cut letters and base. Just the thing for your shack—you assemble. Letters: 3/32" show-card stock. Base: Select quality wood.
Kit #1 Price $1.00 Postpaid
Sorry, No C.O.D.'s
TRUART PRODUCTS CO.
Dept. D, Box 676
Spring Lake, Michigan

LMB BOX CHASIS OFFERS FREE inside LMB BOXES

10 tested kit diagram projects for the builder. Each one of these kit diagrams built by a recognized expert. Kit projects are complete in every detail. Circuit diagram, photo of project both front and rear photo. Rear photo shows wiring and parts. Detailed instructions for building, complete parts list and approximate cost. Complete to build except parts and your distributor can supply the parts. Ask your distributor for the list of LMB kit Diagram Projects. If he does not have them, write to

LMB 1011 Venice Blvd.
Los Angeles 15, Calif.

[*Endless Editorial from p. 111*]

Other Hobbies

That card in the October CQ (how many times do I gotta tell you: mail it in!) had a question on it about your major and minor hobbies. Over 70% of those sending in cards gave a second hobby in addition to ham radio. In all, 61 different hobbies were listed. The popularity of other hobbies seemed to follow about in the percentages that would be expected from any random group of active intelligent people.

One application of this data is in improving our QSO's. Since such a high percentage of us have other hobbies it would do well to try to bring them into our conversations as much as possible. After all, one mark of a good talker is to know your subject. There were darned few of the hobbies listed that I wouldn't be interested in hearing about from someone who was familiar with them.

Perhaps I am an exception though, for I collect hobbies practically on a compulsive basis. Of the 61 listed, I counted 20 that I am very interested in, and another 10 with more than passing interest. Anybody top that? You catch me on the air and I'll let loose on: Photography, travel, boating, reading, hi-fi, girls, horses, mountain climbing, astronomy, painting, water skiing, flying, writing, tape recording, skin diving, caving, television, psychology, cooking and cartoons. Like I said, it's compulsive. I'm on 20 phone almost nightly at 11 p.m., so give me a try. OK? Look for me around 14,270, AM or SSB.

Yup, We're Still Growing

Someone, somewhere, I hope, is reading this who will before long be on the staff of CQ. We have been miserably short handed, and there are so many things that need to be done for CQ and for ham radio. We have lots of plans, but we need help. Maybe you know someone who would fit in here. Maybe *you* would like to make ham radio your career.

Since the CQ staff is small, everyone does ten different jobs . . . so there isn't any fixed way to describe the available job. Ham radio experience is important, so is technical knowledge. Writing ability, advertising experience, sense of humor, and cultural background count. We want CQ to be good, that means we must have top notch staffers.

So who is going to help Art and me think up more weird ideas? If you dig all this then fire up some good reasons why we should support you.

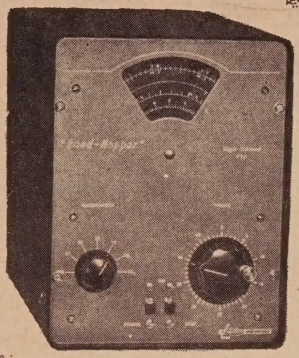
Warning

For some time now I have been getting complaints from fellows who have ordered Tele-

[*Read Ads, then turn to 114*]

LOOK .... it's here!

"Band-Hopper"



1. BANDSWITCHING – 160M – 80M – 40M – 20M – 15M – 10M.
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VFO FOR SSB

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TREMENDOUS CRYSTAL CLEARANCE SALE!

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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.

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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

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370 KC–538 KC

35 Crystals *Our Choice* **$3.49**

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For operating on 80, 40, 20, 15, 10, 6 and 2 meters—on either fundamentals or harmonics.

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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	415	487	509	533
372	394	416	488	511	534
374	395	418	490	512	536
375	396	419	491	513	537
376	397	420	492	514	538
377	398	422	493	515	540
379	401	424	494	516	
380	402	425	495	518	
381	403	426	496	519	
383	404	427	497	520	
384	405	431	498	522	
385	406	433	501	523	
386	407	435	502	525	
387	408	436	503	526	
388	409	481	504	527	
390	411	483	506	529	
391	412	484	507	530	
392	414	485	508	531	

79¢ each—10 for $6.50

400	462	4335	5740	6325	7475	7766
440	463	4030	5750	6340	7500	7773
441	464	4165	5773	6350	7506	7775
442	465	4190	5775	6373	7520	7800
444	466	4280	5780	6375	7525	7806
445	469	4340	5806	6400	7540	7825
446	470	4397	5840	6406	7550	7840
447	472	4490	5852	6425	7573	7841
448	473	4495	5873	6673	7575	7850
450	474	4840	5875	6675	7583	7873
451	475	4852	5880	6700	7600	7875
452	476	4930	5892	6706	7606	7900
453	477	4950	5906	6725	7625	7906
455	479	5030	5925	6750	7640	7925
457	480	5327	5940	6775	7641	7940
458		5360	5955	6800	7650	7950
459		5385	5973	6825	7660	7975
461		5397	6206	6850	7673	8250
		5437	6225	6875	7675	8273
		5485	6240	6900	7700	8300
		5500	6250	6925	7706	8310
		5660	6273	6950	7710	8316
		5675	6275	6975	7725	8320
		5700	6300	7450	7740	8630
		5706	6306	7473	7750	8690

79¢ each—10 for only $6.50

CR-1A SCR 522-1/2 Pin, 1/2" SP

5910	7810
6370	7930
6450	
6497	
6610	
7380	
7480	
7580	

FT-171B — BC-610 Banana Plugs, 3/4" SPC

2030	2258	2435	3250
2045	2260	2442	3322
2065	2282	2532	3955
2105	2300	2545	3995
2125	2305	2557	
2145	2360	3202	
2155	2390	3215	
2220	2415	3237	

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N.W., Wash., D. C. Dept. Q.

FT-243 — .093" Dia. — .486" SPC

49¢ each—10 for $4.00

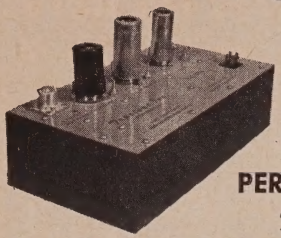
4035	5740	6325	7475	7766
4030	5750	6340	7500	7773
4165	5773	6350	7506	7775
4190	5775	6373	7520	7800
4280	5780	6375	7525	7806
4340	5806	6400	7540	7825
4397	5840	6406	7550	7840
4490	5852	6425	7573	7841
4495	5873	6673	7575	7850
4840	5875	6675	7583	7873
4852	5880	6700	7600	7875
4930	5892	6706	7606	7900
4950	5906	6725	7625	7906
5030	5925	6750	7640	7925
5327	5940	6775	7641	7940
5360	5955	6800	7650	7950
5385	5973	6825	7660	7975
5397	6206	6850	7673	8250
5437	6225	6875	7675	8273
5485	6240	6900	7700	8300
5500	6250	6925	7706	8310
5660	6273	6950	7710	8316
5675	6275	6975	7725	8320
5700	6300	7450	7740	8630
5706	6306	7473	7750	8690

79¢ each—10 for $6.50

3735	6200	6640	8275	8625
3990	6450	6650	8280	8650
6025	6473	7000	8350	8690
6042	6475	7075	8375	8700
6073	6500	7125	8400	8733
6075	6506	7150	8425	
6100	6525	7306	8450	
6125	6550	7300	8475	
6140	6573	7425	8500	
6150	6575	7440	8525	
6173	6600	8173	8550	
6175	6606	8175	8575	
6185	6625	8225	8600	

SPECIAL—200 KC In FT241A Holder–$1.25 Without Holder 39¢ ea.–3 for $1.00

Introducing the



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A TRULY HIGH PERFORMANCE 2 METER CONVERTER

NOISE FIGURE
2.8 db

VERY LOW ORDER UNWANTED SIGNAL RECEPTION — HIGH POWER GAIN.

SPECIFICATIONS

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, 12AT7. **$79.95**

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FREED

MIL-T-27A POWER TRANSFORMERS

FOR IMMEDIATE DELIVERY FROM STOCK

POWER TRANSFORMERS-STANDARD
All primaries 105/115/125 v., 60 c.p.s.

Cat. No.	Hi Volt Sec.	ct	DC Volts	DC Amps	Filament #1 Volt	Filament #1 Amp.	Filament #2 Volt	Filament #2 Amp.	MIL Case Size
MGP1	400/200	√	185	.070	6.3/5	2	6.3	3	HA
MGP2	650	√	260	.070	6.3/5	2	6.3	4	JB
MGP3	650	√	245	.150	6.3	5	5.0	3	KB
MGP4	800	√	318	.175	5.0	3	6.3	8	LB
MGP5	900	√	345	.250	5.0	3	6.3	8	MB
MGP6	700	√	255	.250					KB
MGP7	1100	√	419	.250					LB
MGP8	1600	√	640	.250					NB

Send for NEW 48 page transformer catalog. Also ask for complete laboratory test instrument catalog.

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1703 WEIRFIELD STREET, BROOKLYN (RIDGEWOOD) 27, N.Y.

[End, at last, of the Editorial]

type or other radio equipment from an outfit which seems to make it a practice of not delivering for long periods of time, or longer. Some report waits of *two* years. I know I got stuck for well over $100 and have been unable to get any word or action from phone calls or letters in over a year. Don't fall for fancy names, amateur call letters, or "Societies." If you have in mind buying Teletype equipment or any other gear from someone primarily involved with Teletype equipment please check with one of the following first and save yourself months of anguish and doubt.

Byron Kretzman, W2JTP,
9620 160th Avenue
Howard Beach 14, New York

Ray Morrison, W9GRW
8029 Keeler Avenue
Skokie, Illinois

Merrill Swan, W6AEE
3769 East Green Street
Pasadena 10, California

There is plenty of RTTY gear available through regular channels if you want it, so get in touch with one of the above before filling out that **check.**

2.92314, Wayne, W2NSD

---

letters [*from page 19*]

generally considered a drawback in an anchor. Have we any other conversion data from readers on this unit?

Glenn Camp, K6LOP
South Gate, California

DX-100 Modification

To Editor, CQ:

Regarding W6DOB's article on neutralizing the DX-100 (October *CQ*), I have found that the same results can be obtained without drilling any holes.

Simply solder a 12" piece of #12 insulated house wire to the right hand terminal of the driver plate tuning capacitor (where the other two wires are already soldered), run it upward and close to the baffle shield plate, and then bend and cut the end so that about 4" extends out over the 6146s. By bending this 4" tail up and down a spot can be found where the final is neutralized (resonating the final has minimum effect on grid current).

Although W6DOB's method is neater appearing, it is rather difficult to drill the hole he mentions after the DX-100 has been assembled.

John Abbott, W6ZOL
Sherman Oaks, Calif.

CQ CQ CQ CQ...

Has a new QTH

300 W 43rd St

JUdson 2-4460

A....Always
B....Buy
C....Columbia

LOCAL HI-FI MANUFACTURER GOES BUST!

His loss is your gain! LOOKIT THESE BUYS!

BEEDE METER: 0-1 MA. 4" square. A truly beautiful job cased in lucite. Brand new. Orig. cost approx. $18.00. A COLUMBIA SUPER-BUY..... $7.95

AM-FM TUNING CONDENSER: 3-section. Was used in $200.00 tuner combo. Brand new from assembly line $1.00

DIAL LIGHT ASSEMBLY: Brand new. Each..... 15¢

IN-64 DIODE: New. Stock up NOW! Each..... 65¢

20 MA METER RECTIFIER: Each..... 65¢

THE TIME IS RIPE! Write for our new flyer for loads of fantastic deals on resistors, disk ceramic condensers, electrolytics, fuse holders, pots, tube sockets, etc.—ALL GIVEN AWAY AT DISTRESS PRICES!

LATEST WEBCOR 4-SPEED CHANGER

4 pole motor . . . intermix . . . hum free . . . no rumble or wow . . . automatic speed changer . . . G.E. RPX 050-A variable reluctance cartridge mounted in arm . . . rubber mat turntable . . . fabulous buy at only.... **$34.50**

BC-605 AMPLIFIER GIVE AWAY!

Originally used in GI vehicle. Employs 2-1619 amplifier tubes. New cond. Complete with tubes AND schematic. BUY IT NOW!

Only $2.49
Only $2.49
Only $2.49
Only $2.49

YOUR OWN CRYSTAL BANK!

100 Assorted FT-241 & FT-243. Brand new U.S. Gov't surplus. Good, useful, popular frequencies. Special **$9.95**

50 ASSORTED CRYSTALS..... $5.49
25 ASSORTED CRYSTALS..... $2.95

TUBES!

No Cat in a Bag!
Individually Boxed and tested!
Individually guaranteed!

3BP1	$1.97	6V6	$ .47
5BP4CRT	.99	6SN7	.47
5654	.77	6J6	.47
2D21	.97	6AG5	.47
9006	.47	70L7	.77
6C4	.47	12A6	.47
6AK5	.47	826	.47
1625	.27	832A	4.87

DE LUXE METAL CABINET—A STEAL!

17¾" wide x 12" deep x 11½" high. New crackle finish. Ideal for housing receiver, radio, amplifier, etc. Self-locking front lid; back lid opens too. Original cost $28.00. Each **$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
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BC-456 MODULATOR: Excellent cond..... 4.95
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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

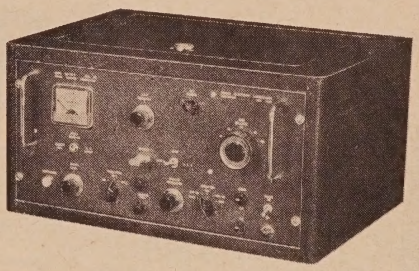
All orders FOB Los Angeles. 20% deposit required. All items subject to prior sale. MINIMUM ORDER $5.00
OPEN FRIDAY NITE TILL 10 P.M.

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LOS ANGELES 18, CALIFORNIA

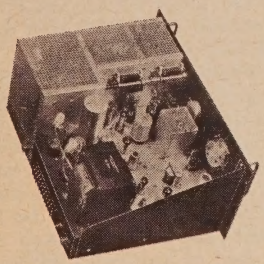
SUPERIOR SINGLE SIDEBAND

PROVEN PERFORMANCE!

100 Watts Peak Power Output*



- Band switching 10 thru 80 meters
- Front panel adjustment of all controls including carrier null
- Voice operated break-in, Built-in speaker anti-trip unit
- Selectable sidebands with or without carrier
- Meter indicator (selectable) carrier null or R.F. output
- Built-in calibrate circuit. Talk yourself on frequency
- Phase-shift circuitry, frequency conversion type
- Gang tuned single knob peaking of all R.F. circuits
- Conservatively rated! 814 Final amplifier loafs*
- Excellent deliveries—factory in mass production
- Companion transistorized V.F.O. available at low cost



YOUR COST ONLY

$399.50

Amateur Net

Write for complete literature

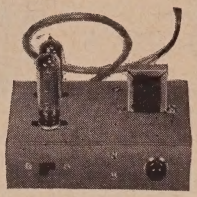
MOHAWK ELECTRONIC RESEARCH LABORATORIES

BOX 126-A, R.D. 4, AMSTERDAM, NEW YORK

SAVE! Build Your Own CONELRAD Unit

for Only $16.50

with Regdon's



'QRT' Conelrad Alarm Kit

Meets FULL FCC Requirements

- Foolproof, fail-safe, easy to assemble. Converts any inexpensive receiver having avc into CONELRAD alarm system.
- Both visual and audio alarm. Automatically cuts off transmission. Fused against short circuits. 2 tubes. Installs without butchering present equipment. Complete with instructions, tubes.

Dealer Inquiries Invited

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give an

ALLIED GIFT CERTIFICATE

It's smart, It's distinctive to give an Allied Gift Certificate. It's even smarter to pass a hint along to those who don't know what to give *you*. Allied Gift Certificates are available in any amount from $1.00 up. Order early from Allied Radio, 100 N. Western Ave., Chicago 80, Ill.

Stolen, as usual, from

AUTOCALL

The bulletin of the Washington, D.C. Mobile Radio Club

Answer to last month's problem: The tape is 1000 feet long and .001 inches thick, the diameter when rolled on a one inch spool is 4.03 inches.

Problem #1

There are five hams, a W1, W2, W3, W4 and a W5. Their names are (but not necessarily in this order): Al, Bob, Jack, Jim and Red.

1. The W1 has no fixed station, he operates 25 watts on 10 meter mobile.
2. The W2 has 68 countries confirmed, all on c.w. He detests phone.
3. The W4 operated the 20 meter position during Field Day.
4. The W5 was first licensed in 1949.
5. Al has just received his first order of 100 QSL cards.
6. Bob holds a Technician Class license.
7. Jack has a phone patch.
8. Jim has operated only on two meters.

Who holds which calls?

Problem #2

A man has twelve marbles indistinguishable from one another. One, however, is *either* lighter or heavier than the rest (he doesn't know which). The only way he has of telling which one it is is a pair of balance scales (like a drug store uses). In three weighings, he can determine which is the odd marble and whether it is heavier or lighter. How? ■

Novice [*from page 54*]

John Churan, 1027 Superior Avenue, 5th Floor, Cleveland, Ohio, wants to meet any young teen-age hams and visit them, help John do a good turn boys and girls.

Kenneth P. Jones, 175 Jersey Street, San Francisco, California, Telephone: MI 7-6939 after 5:00 p.m. wants help with code and theory.

Leith Irwin Paine, Fryeburg, Maine, Telephone: Chatham, New Hampshire, Owen 4-2552 wants some one to give him the test.

That will be the last help wanted column for 1956. I want to take this opportunity to wish each of you the very best of every thing to come your way and wish that we may again be together at this time next year. I hope that you can excel in your chosen field of ham radio, whatever that may be. To you, I wish, health, happiness and a little time to pray each day of 1957. Thank you for the letters that are keeping this column going, thanks for reading CQ. 73, Walt, W8ZCV

SPARKY SAYS



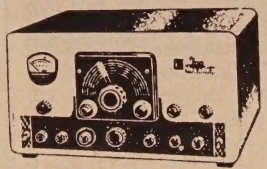
HEY FELLAS! WANNA GET STARTED OFF RIGHT?

SEE WALTER ASHE!

Walter Ashe has had 35 years experience in serving the amateur needs. We are always ready with answers to your technical problems and, when you are ready to step up to bigger and better gear, our "Surprise" trade-in allowance will make the cost much less than you might imagine.

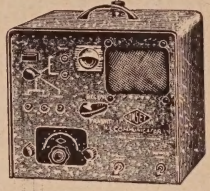
NO DOWN PAYMENT

In most cases, your trade-in will more than cover the down payment on new gear so no further cash down payment is required. Write for our deal today!

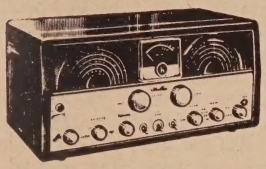


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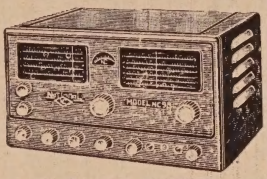
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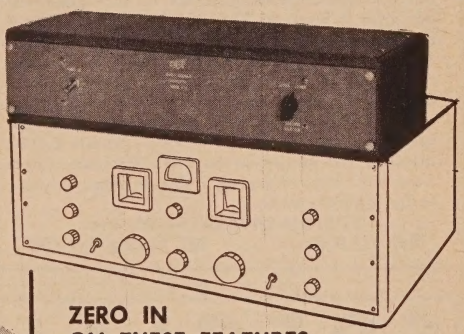
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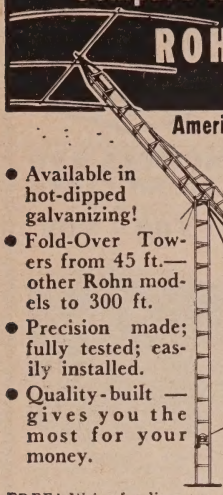
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his face red! One of the connectors to the coupler had the threads stripped and it had come loose, which was probably what had happened before. So now we were back in business and it was also noon time—time for Jim's and my next shift to begin.

Both forty and eighty meters were not so hot and we had picked up a terrific noise level. People were calling me back but I couldn't copy well enough to even get their calls. Then Jim caught sight of the 807 modulators. One was a lovely shade of blue. I could have gone down on CW but why waste a YL voice. Errand girl dashed down the road to Prince's shack and picked up all the 807s there. (Isn't it fortunate I have a driver's license as well as a ham license?) All but two of these were as gassy as the ones we took out. But we only needed two good ones so once again we were back in business. By that time it sounded as though most people had given up and started home. We were then too tired to feel, but we kept on till the last minute, making one contact at four forty-five, for a grand total of fifty-six contacts. Well, next year we'll do better.

Now the awful job of getting things taken down and packed in the cars. We shut down the faithful old generators which never failed except for the time someone tripped over the cord. "Where's that first aid kit? Those aspirins will come in handy about now." Bob sort of hoped some of those antennas would be left behind but Skeets, Nick and Ted were stowing them away. "Bob, you will have to have an antenna raising party after you get moved in. Looks as though you have enough cans here for one of those vertical jobs."

The last thing on the agenda was a family picnic for all the club members and their families at a nearby farm. We all sat around—or rather the OMs sat around while the XYLs chased the kids—and ate and rehashed the weekend. Our score wasn't so good but maybe by next year we will have a club station available—one designed for portable use. Next year also we will have more General class operators and more experience in operating strange equipment under adverse conditions. But it was the first time the club had had a chance to work together as a unit and we were pretty proud of the job we had done. We had demonstrated to ourselves and we hoped to the community—the newspaper editor who came around was very impressed—that we can put an emergency station on the air and we felt that if one of Diane's stormy sisters should come along this year, we would be able to help out with emergency communications. Anyway, we all learned a lot about operating and about each other and wasn't it a lot of fun!

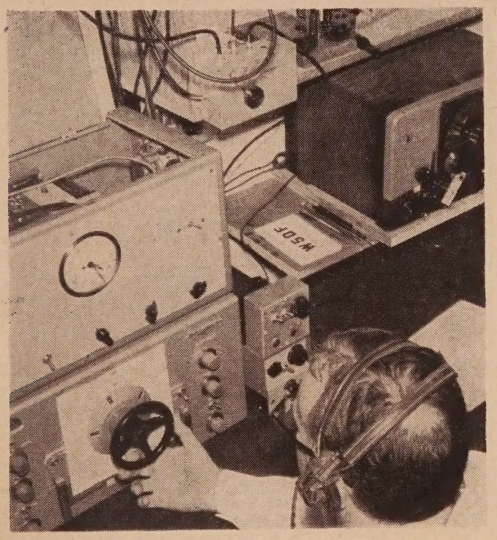
Jim and I staggered home, unloaded the car and piled everything in the middle of the liv-

ing room floor, hoping to regain enough strength to cope with it in the morning. I headed for the shower. Running water never felt so good before. But I was still too wound up to go to sleep. So while Jim showered, I dusted off the old typewriter and started pounding. "June twenty-third dawned—." ■

INTEGRATED STATION

[*from page 36*]

handled than the r.f. at the driven element. Surplus variable condensers from BC-457 series transmitters may be used, and they appear to be about 2000 volt rating. The variable condensers at the base of the driven element are 6000 volt, and the relays are mycalex with ¼ inch spacing. Estimated cost of this beam is about $25.00, exclusive of coax.



W5DF Tuning

The ham radio space at W5DF consists of an attached garage. The rear of the garage is a store room and the transmitter is located here. The garage is sealed moderately well against weather and the concrete floor has been equipped with some asphalt tile. The operating position is in the garage, as is the workshop with tools and instruments. The operating position can be moved in the house in 30 minutes, and control cables are provided for that purpose.

You are certainly welcome to use any or all of these ideas, but I would appreciate it if you try to do it with as little additional help from me as possible. I'm busy using the Integrated Station. ■



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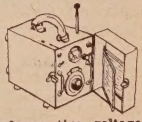
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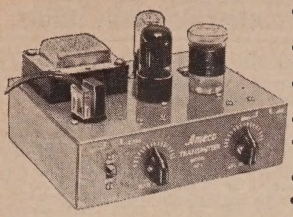
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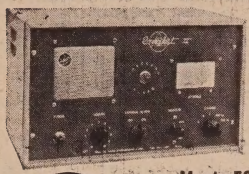
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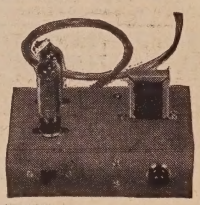
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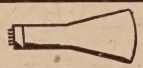
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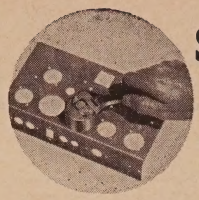
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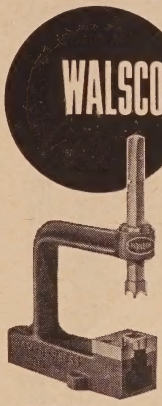
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CORRECTION

On Page 110 of our November issue, the Regdon Conelrad Unit had incorrectly listed a price of $13.95. This price should have been $16.50.

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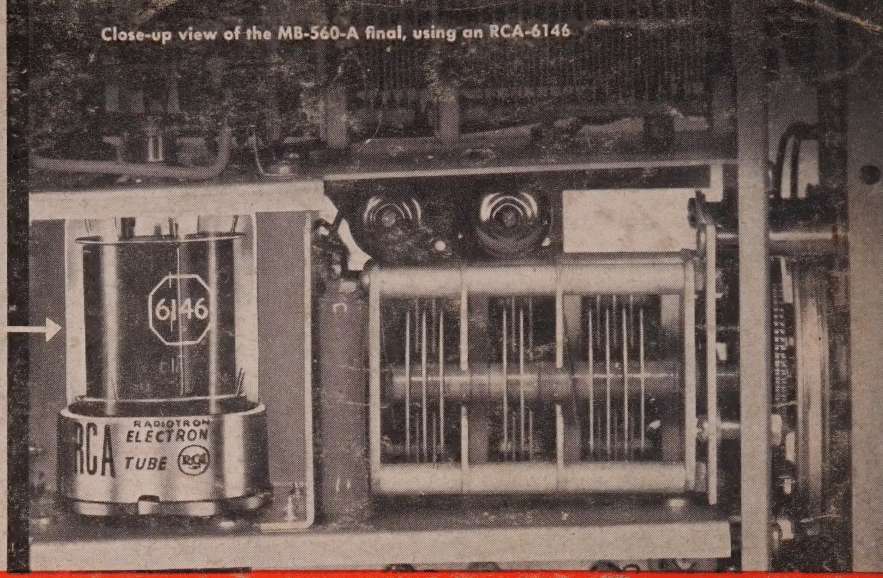
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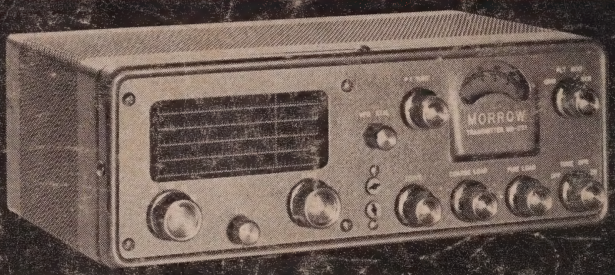
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