NOVEMBER, 1949

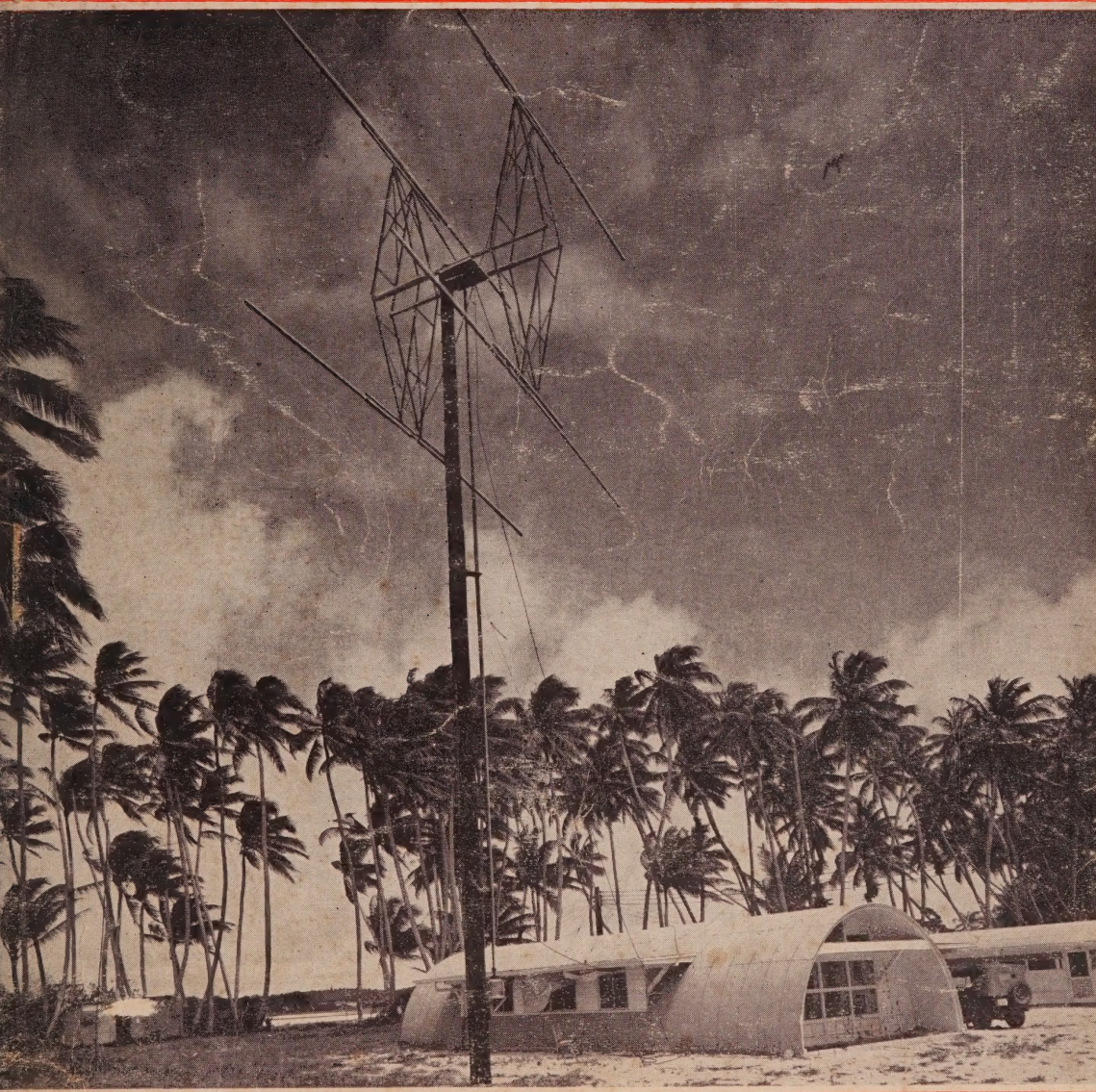
CQ

The Radio Amateurs' Journal

IN THIS ISSUE

- A Low-Cost Modulator for the KW Rig
- The Ultimate in SCR-274N Conversions
- A High-Power Bandswitching Exciter
- More on the 10-Meter TVI-Free Rig

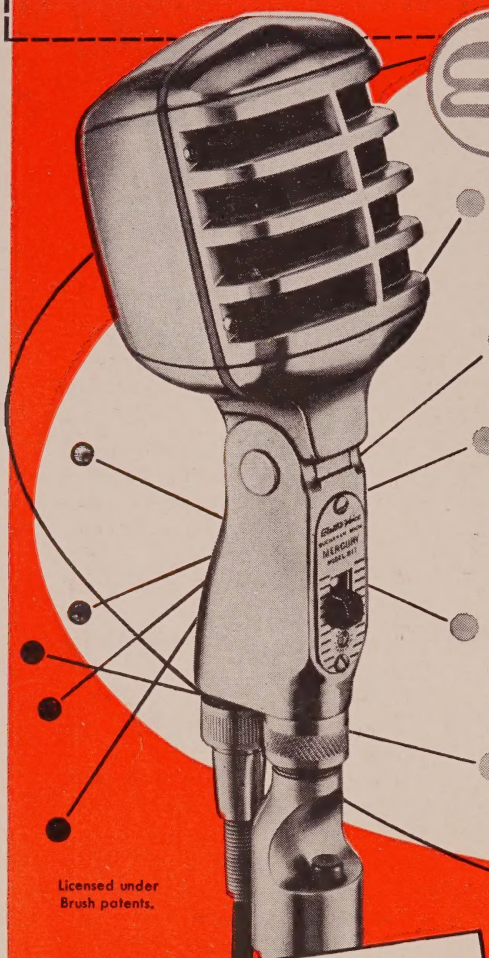
THIRTY-FIVE CENTS



Published by RADIO MAGAZINES, INC. Subscription $3.00 a year

a great NEW *value*

IN CRYSTAL AND DYNAMIC MICROPHONES



MERCURY

brings you Extra Features at No Extra Cost

You'll enjoy using the new MERCURY. High output level: Crystal, −50 db; Dynamic, −53 db. Smooth response 50-8000 cps. Non-directional, becoming directional at higher frequencies. "On-Off" switch. Swivel-tilt head. Built-in cable connector. 5/8"-27 thread. Satin Chromium finish. Acoustalloy Diaphragm in Model 611. Fully enclosed Metal Seal crystal in Model 911.

Dynamic is available in Hi-Z, 50, 150, 250 or 500 ohms. Crystal is Hi-Z.

Model 911-8 Crystal. **8 ft. cable.....List $22.50**
Model 911-20 Crystal. **20 ft. cable.....List $24.00**
Model 611-8 Dynamic. **8 ft. cable.....List $29.50**
Model 611-20 Dynamic. **20 ft. cable.....List $31.00**

Order from Your E-V Distributor or Write for Bulletin No. 154.

ELECTRO-VOICE, INC., BUCHANAN, MICH.
Export: **13 East 40th St., N. Y. 16, U. S. A.**
Cables: Arlab

Licensed under Brush patents.



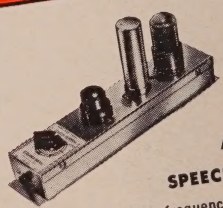
The CARDAX

World's favorite premium crystal mike. The only high level crystal caridoid with dual freq. response.



The "630"

Super dynamic. Service proved. Ideal Frequency response. High output. Acoustalloy diaphragm.



Model 1000
SPEECH CLIPPER

Clips the peaks from speech frequencies which exceed a pre-set amplitude. Adds greatly to intelligibility in speech transmission, especially in the presence of high QRM or QRN. Response 200-3000 cps. High impedance input. Requires 150 v. at 5 ma and 6.3 v. at .6 amp. With tubes. Easy to install. List Price.....**$24.50**

NO FINER CHOICE THAN

Electro-Voice

Q. What Ken-Rad tube is a natural for your VFO circuit?

A. THE COMPACT METAL 6AG7.



6AG7 K KEN-RAD

POWER-AMPLIFIER PENTODE

Heater voltage	6.3 v
Heater current	0.65 amp
Max plate voltage	300 v
Max screen voltage	300 v
Max plate dissipation	9.0 w

Two features of the Ken-Rad 6AG7 help in VFO work: (1) the tube's high transconductance (11,000 micromhos) which makes for stability in conjunction with a substantial power output, and (2) exceptionally thorough shielding. Besides being a metal tube, so inherently well shielded, the 6AG7 employs an inter-lead shield, which further reduces undesired input-and-output-circuit interaction.

Maybe you're not considering a VFO at present. Even so, there isn't a handier tube than the Ken-Rad 6AG7 for use in any of your low-power r-f circuits. Here's a grand choice for self-excited oscillator, crystal oscillator, or frequency multiplier. The tube takes to r-f work like a spaniel to water.

Ken-Rad precision methods of manufacture give uniformity, meaning you can count on the 6AG7 *you* buy to deliver its full ratings. Visit your Ken-Rad distributor or dealer to inspect the full line of Ken-Rad tubes, metal, glass, and miniature. Learn about their quality and value! Ken-Rad tubes are made right, priced right . . . they *serve* the radio amateur while *conserving* his dollars.

FOR KEN-RAD QUALITY
LOOK BEYOND THE DATA SHEET!

182-HA30



KEN-RAD *Radio Tubes*
PRODUCT OF GENERAL ELECTRIC COMPANY
Schenectady 5, New York

YOUR PREFERRED SOURCE FOR AMATEUR TUBES IS YOUR NEARBY KEN-RAD DISTRIBUTOR OR DEALER

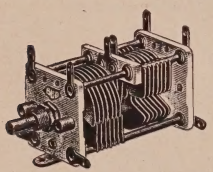
Look AT YOUR SAVINGS
Look AT THESE PRICES

on BUD VARIABLE CONDENSERS

Today is the time to look for savings! Note the prices on our condensers and compare. You will find that the entire Bud line maintains greater value while giving you the best quality and service. Illustrated below are two types of Bud condensers—there are over 400 different variable condensers in the Bud line. Consult your dealer for your requirements.

BUD "CE" TYPE DUAL MIDGET CONDENSERS

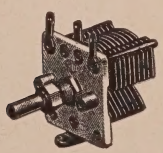
1. Extremely efficient, they embody everything that any other condenser has PLUS a positive rotor wiping contact in the exact electrical and physical contact permitting the design of balanced circuits.
2. Ball bearings are featured on this double bearing condenser for centering and elimination of end-play.
3. Any of three methods of mounting can be used.
4. Alignment is maintained by 4 rigid tie rods.
5. Two solder lugs on each stator permit the placement of other components for efficient, short lead design.



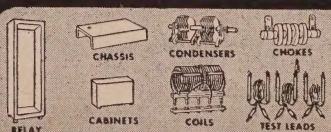
Catalog Number	PER SECTION Max. Cap.	Min. Cap.	No. of Plates	Air Gap	Distance Behind Panel	Dealer Cost
CE-2032	35	6	7	.030"	3 1/2"	$2.10
CE-2033	50	7	9	.030"	3 1/4"	2.25
CE-2034	75	8	14	.030"	3 21/32"	2.70
CE-2035	100	9	18	.030"	4 3/32"	2.85
CE-2036	150	10	27	.030"	5 3/16"	3.40
CE-2039	15	5	5	.060"	3 1/2"	2.45
CE-2040	35	7	11	.060"	4 1/32"	2.85
CE-2041	50	8	15	.060"	4 23/32"	3.10

BUD "CE" MIDGET CONDENSERS-SINGLE BEARING

1. Any of the three methods of mounting can be utilized.
2. Extended rotor shaft allows ganging of two or more condensers.
3. Smooth operating and noiseless bearings permit operation on high frequencies and prevent capacity changes.



Catalog Number	Max. Cap. MMFD.	Min. Cap. MMFD.	Air Gap	No. of Plates	Over-all Length	Dealer Cost
CE-2020	15	4	.030"	3	1 11/16"	$1.00
CE-2021	35	6	.030"	7	1 39/64"	1.15
CE-2022	50	7	.030"	9	2 1/16"	1.25
CE-2023	75	8	.030"	14	2 1/4"	1.40
CE-2024	100	9	.030"	18	2 15/32"	1.55
CE-2025	150	10	.030"	27	3"	1.80
CE-2028	15	5	.060"	5	1 13/64"	1.20
CE-2029	35	7	.060"	11	2 1/16"	1.40
CE-2030	50	8	.060"	15	2 25/32"	1.55



THESE ARE SOME OF THE 1274 ITEMS AVAILABLE FROM BUD RADIO, INC.

BUD RADIO, INC.

BUD

2118 E. 55th ST. • CLEVELAND 3, OHIO

CQ
The Radio Amateurs' Journal

Published monthly by RADIO MAGAZINES, INC., at 342 Madison Ave., New York 17, N. Y. Telephone MUrray Hill 2-1346. Entered as Second Class Matter Oct. 10, 1947 at the Post Office, New York, N. Y. under the Act of March 3, 1879.

EDITORIAL STAFF

EDITOR
ALBERT E. HAYES, JR., W2BYF

EDITORIAL PRODUCTION MANAGER
LUCI TURNER

ASSOCIATE EDITORS
HERBERT BECKER, W6QD, DX Editor
LOUISA B. DeSOTO, W2OOH, YL Editor
E. M. BROWN, W2PAU, VHF-UHF Editor
RALPH ANDERSON, W3NL, Mobile Editor
OLIVER P. FERRELL* Propagation

CONTRIBUTING EDITORS
JACK E. WILLSON, W2AQX
ROBERT C. CHEEK. W3LOE
FRANK C. JONES, W6AJF
R. LEIGH NORTON, W6CEM

TECHNICAL DRAFTSMAN
FRANK Y. HAYAMI, W2TNE

BUSINESS STAFF
D. S. POTTS, President & Publisher
S. L. CAHN, General Manager
H. N. REIZES, Advertising Manager
D. SALTMAN, Production Manager
E. E. NEWMAN, W2RPZ, Circulation Mgr.

*Radio Amateur Scientific Observations—121 S. Broad St., Philadelphia 7, Pa.

Branch Office: Los Angeles—J. C. Galloway 816 W. 5th St., Los Angeles 13, Calif. MUtual 8335. Midwest Representative—S. R. Cowan, 342 Madison Ave., New York 17, N. Y., MU. 2-1346.

Subscription Rates: in U.S.A., U.S. Possessions, Canada and Pan American Union—1 year $3.00, 2 years $5.00. Elsewhere $4.00 per year. Single copies 35 cents. (Title Reg. U. S. Pat. Off.) Printed in U.S.A. Copyright 1949 by Radio Magazines, Inc.

Foreign Subscription Representatives: Dale International Publications Ltd., 105 Bolsover St., London, W. I, England; Radio Society of Great Britain, New Ruskin House, Little Russel St., London, WC 1, England. Technical Book & Magazine Co., 297 Swanston St., Melbourne C1, Victoria, Australia.

Vol. 5 November, 1949 No. 11

In This Issue

COVER—Warm weather and cool nights make this impressive photo of KP6AA's stacked 8JK and its surroundings bring back wartime memories of the Islands. By the time this issue appears, Steve, KP6AA, will be QRT and other KP6 calls will pull the main switch, as Palmyra's installations are de-activated. (Photo by Bruce H. Hart, KH6OA.)

Letters 4

Scratchi 8

Zero Bias *(Editorial)* 11

Modulating a Kilowatt
Robert C. Cheek, W3LOE 13

Wide-Range V.H.F. Converter
C. O. Bishop, W7HEA 16

Command Set Special
F. A. Bartlett, W6OWP/6 18

More on V.H.F. Converters
John Stacy, W1KIM 22

TVI-Free Rig for 10
Mack Seybold, W2RYI 23

The R5 Mike
Walter S. Rogers, W1DFS 27

A Man-Size All-Band Exciter
Don Good, W6EZP 29

The YL's Frequency 33

DX and Overseas News 34

WAZ Honor Roll 35

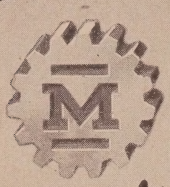
Monthly DX Predictions—November 36

V.H.F.-U.H.F. 37

Mobile Corner 38

Advertising Index 80

Designed for



Application



The No. 90711

Variable Frequency Oscillator

The No. 90711 is a complete transmitter control unit with 6SK7 temperature-compensated, electron coupled oscillator of exceptional stability and low drift, a 6SK7 broad-band buffer or frequency doubler, a 6A67 tuned amplifier which tracks with the oscillator tuning, and a regulated power supply. Output sufficient to drive an 807 is available on 160, 80 and 40 meters and reduced output is available on 20 meters. Close frequency setting is obtained by means of the vernier control arm at the right of the dial. Since the output is isolated from the oscillator by two stages, zero frequency shift occurs when the output load is varied from open circuit to short circuit. The entire unit is unusually solidly built so that no frequency shift occurs due to vibration. The keying is clean and free from all annoying chirp, quick drift, jump, and similar difficulties often encountered in keying variable frequency oscillators.

JAMES MILLEN MFG. CO., INC.

MAIN OFFICE AND FACTORY

MALDEN

MASSACHUSETTS

★ ★ Letters ★ ★

More on Prop Pitch Motors

45 Grace Ave., Great Neck, N. Y.

Editor, *CQ*:

Perhaps you would be interested in the following comments and improvements on the article "A Quick Change of Pace for the Prop-Pitch Motor" by Dick Saunders, W6MUO, which appeared in August, 1949, *"CQ"*. I have just finished this conversation.

Dick Saunders says to use a ¼-20 screw to secure the modified internal gear (called a "bell gear" in the article) to the aluminum differential unit. From past experience I have found that this screw has a tendency to loosen and strip its threads under pressure. I strongly recommend the use of a ¼-28 cap screw. Not all hardware stores carry this item, but any good auto supply house carries this cap screw, as it is SAE standard. When using this ¼-28 cap screw, the differential unit must now be drilled using a #3 tap drill.

Difficulties were encountered when I tried to enlarge the hole in the hardened internal gear to pass the ¼" screw. Carbide tipped drills *are* necessary for this operation (high speed drills won't cut). To overcome this, the two units (differential and internal gears) were placed together with the small ball bearing in between to insure alignment. Then the six holes should be drilled using a ¼" high speed drill, having the drill press in its lowest speed and using plenty of pressure to insure that the drill is cutting at all times. Drill through the modified internal gear with the ¼" drill and lightly spot the aluminum differental unit. Now disassemble the two units and drill the differental unit with a #3 drill. Tap these holes with a ¼"-28 tap.

This method was easily accomplished with standard high speed drills (about $0.50 each).

I hope this information will help others in their conversions.

Bob Fincke, W2CK

Caveat Emptor

Chicago, Ill.

Editor, *CQ*:

As authorized adjusters for the Franklin Fire Insurance Company we are investigating disappearance or theft of a General Electric Portable Relay Television Transmitter owned by the Balaban & Katz Corporation. This is a 2000 Mc Television Relay Transmitter and was used for Relay Televised broadcasts of the Notre Dame Football games from South Bend to the Chicago Transmission Station.

Due to the installation of the coaxial cable this equipment was not used for some time and was stored from November of 1948 to May of 1949 in a Field Office near New Carlisle, Indiana, where the relay station was located.

We have already advised the General Electric Corporation of this loss and they have assisted in notifying their various associations and it has been suggested that you might publicize this fact with the possibility of locating and recovering this highly specialized equipment.

We have been informed that the average radio amateur would have absolutely no use for this equipment and our thought is that if some publici-

Unconditionally Guaranteed



. . . the Mark of the Maker's Confidence in His Product

PRs are built to PERFORM . . . under good conditions and bad. They have that extra measure of stability and dependability BUILT-IN . . . that *plus* of rugged precision that guarantees years of unfailing service. Thousands of pre-war PRs are still performing . . . *still right on the kilocycle!* No wonder PRs can be UNCONDITIONALLY GUARANTEED.

10 METERS, Type Z-5, $5.00 • 20 METERS, Type Z-3, $3.75 • 40, 80 & 160 METERS, Type Z-2, $2.75

PR *Crystals*

Since PR CRYSTALS 1934

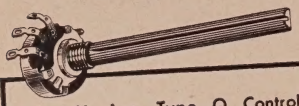
USE PR AND KNOW WHERE YOU ARE

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

Miniaturization Can Be Fun . . .

AND IRC MAKES IT EASY

It's fun to design and assemble miniature rigs —but only if the parts are right for the job. IRC, with years of experience in miniaturization offers you the resistors you need to fit the most compact chassis. For example:—



Small-size Type Q Control has compact 15/16" design. 1/4" long bushing saves space efficiently. Resilient Retainer Ring, an exclusive IRC feature, gives smoother "cushioned" turn. Employs salt spray materials and finishes.



Tiny, 1/3-watt Advanced Type BTR Insulated Resistors, with body only 13/32" long. These are the famous BT's that won fame during the war —and that surpass JAN-R-11 specifications. They assure low operating temperatures with good wattage dissipation, exceptionally low noise level and maximum protection against humidity.



Close Tolerance Deposited Carbon PRECISTORS 15/16" x 9/32"—200 ohms to 5 megohms. PRECISTORS feature a resistance element of pure crystalline carbon film deposited on special ceramic rod. They give high stability and close tolerance of resistance values at much less cost than wire-wound precisions.



Bodies only 23/32" x 1/4" make Type CLA Insulated Chokes suitable for a great number of small circuit applications. "Q" improves with rise in frequency, and is sufficiently high for broad-band tuning in FM and TV regions. Type CL's are rugged, and resistance is low enough to permit use as filament chokes for moderately high power tubes.

Ask your radio parts distributor about miniature IRC resistors or write for catalog information stating the products in which you are interested. International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa. *In Canada:* International Resistance Company, Ltd., Toronto, Licensee.

IRC INTERNATIONAL RESISTANCE CO.

Wherever the Circuit Says —

ty could be arranged this unit might be located and returned to the rightful owners.

Yours very truly,
W. G. Wiese

D.D.T.

500 Quartz St. Redwood City, Cal.

Editor, *CQ*:

I feel the following information to be of sufficient value to merit early publication in the interest of amateurs and the radio serviceman.

I have found that several of the common types of Aerosol and liquid DDT sprays and solutions will adversely affect certain types of plastics. The liquid or spray will, upon contact, fog or turn milky plastic meter faces, dials, and other clear plastics. It further tends to roughen or pit plastic cabinets and cases.

DDT, while of value in insect control, should be kept *away* from plastics or plastic-trimmed items.

To date no good method of repair has been found, except to buff and polish the surface below the level to which it has been affected.

Hope this saves a few instruments for someone else.

John W. Sherman, Jr. W9KRD/6

Ham of the Year

715 N. Waugh, Kokomo, Ind.

Editor, *CQ*:

Here is a picture of George Graue, W9BKJ, of Fort Wayne. He is holding a plaque given him at the annual Indiana Radio Club Council picnic and hamfest.



The plaque was awarded him after a careful study by a committee over a period of several weeks. He was voted to be Indiana's Outstanding Amateur Radio Operator of the Year.

Bob Ropes, W9PAP

Baltimore, Md.

Editor, *CQ*:

What ever became of *CQ*'s plan to do something more for the traffic man than the "chit-chat" type reporting of routine activities found in other ham literature?

Bob Merryman, W3FBB

NEW



I'LL TRAIN YOU FOR YOUR FCC LICENSE

A Federal Communications Commission Commercial Operator's License puts you in line for a good job in Radio or Television Broadcasting, Police, Marine, Aviation, Two-way, Mobile or Micro-wave Relay Radio.



YOU BUILD THIS TRANSMITTER

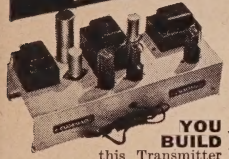
with parts I send. This low-power broadcasting transmitter shows you how to put a station "on the air." You perform procedures demanded of Broadcast Station operators, make many practical tests.

LEARN COMMUNICATIONS by PRACTICING at Home in Spare Time

with MANY KITS *of* MODERN EQUIPMENT I SEND



MY COURSE INCLUDES **TELEVISION**



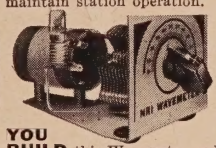
YOU BUILD this Transmitter Power Supply used in the basic experiments in RF and AF amplifiers, frequency multipliers, buffers, etc.



YOU MEASURE current, voltage (AC, DC and RF), resistance and impedance in circuits with Electronic Multitester you build. Shows how basic transmitter circuits behave; needed to maintain station operation.



YOU SET UP code amplitude and frequency modulation circuits (put voice, music, etc., on "electrical signal" you produce). You learn how to get best performance.



YOU BUILD this Wavemeter and use it to determine frequency of operation, make other tests on transmitter currents.

Ever think HOW FAST Radio-Television Communications is changing, developing, growing? Have you considered what this amazing progress can mean to you?

In 1945, there were 943 Broadcasting Stations. Today 2,694 are on the air! Result—THOUSANDS OF QUALIFIED MEN STEPPED INTO GOOD JOBS. Only 19 Television Stations were on the air in 1947. Today there are more than 50 and experts say there will be 150 in a few months, 1,000 within three years. That means thousands of well-paid jobs for trained Operators and Technicians. Then add development of FM, Two-way Radio, Police, Marine, Aviation and Micro-wave Relay Radio! Think what all this means! New jobs, more jobs for beginners! Better jobs, better pay for experienced men!

Are you a beginner who wants steady work in this growing field? My NEW course can help you get an FCC License and prepare for the job you want. Are you a man with some training in Radio or Radar, or a Licensed operator? My NEW course modernizes, increases the value of your knowledge and experience!

Course Is New! Different!

Mail coupon now for facts about my NEW, intensely practical course in Radio-Television Communications. Let me send you FREE books. Read outlines of 78 lesson texts written for you by leading Communications experts, edited by my practical staff. See the nine big Kits of Parts I send that "bring to life" theory you learn. Read about the Transmitter you build and operate, about the Electronic Multitester you get. All equipment yours to keep. My BRAND NEW course includes BOTH Theory and Practical Experience, with result-getting kits, in Radio-Television Communications. It's backed by N.R.I.—world's oldest and largest home-study Radio school.

Mail Coupon For Books FREE

See what my NEW course is like. Find out how I get you ready for a brighter future, better earnings, more security in Radio-Television. Send coupon now in envelope or paste on penny postal. No obligation. No salesman will call! My books tell full story. J. E. SMITH, Pres., Dept. 9MF7 National Radio Institute, Washington, D. C.

Servicing Training Also Offered by N.R.I.

If you prefer a good-pay job in Radio-Television Servicing . . . or your own Radio-Television Sales and Service Shop, I'll train you at home. My famous Servicing Course also includes many Kits of Parts. You conduct experiments and tests with modern Radio and other circuits you build. MAIL COUPON.

I TRAINED THESE MEN

Chief Engineer Station WORD



"I am now Chief Engineer of Radio Station WORD, in charge of four engineers. Owe all I know about Radio to N. R. I."—C. J. BURDETTE, Spartanburg, South Carolina.

Has Good Civil Service Job



"I hold a Radiotelegraph Second Class License with Radio telephone first class endorsement. Am now with Civil Service as a P-4 Electrical Engineer."—OTIS L. WRIGHT, Albuquerque, New Mexico.

Succeeds In Aviation Radio



"As Chief Operator of WMDU, had 6 Operators in my charge. Now Maintenance Technician with Signals Branch, CAA."—E. W. MAYER, San Juan, P. R.

Specializes In Marine Radio



"I have been in several kinds of Radio work. Am now specializing in Marine Radio telephone installations and service."—MURRAY DICKSON, Paducah, Kentucky.

MAIL NOW-BOOK FREE

MR. J. E. SMITH, President, Dept. 9MF7
National Radio Institute, Washington 9, D. C.

Mail me FREE Catalog and Book about Radio and Television Communications opportunities and training. (No salesman will call. Please write plainly.)

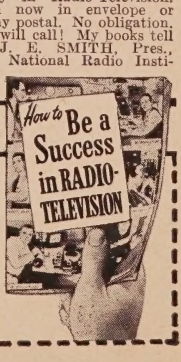
Name.....Age.....

Address.....

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

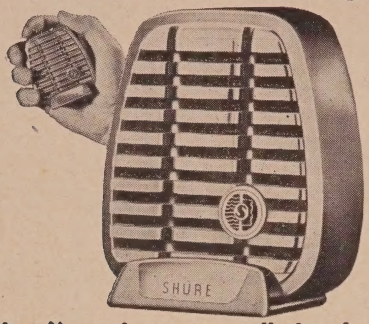
☐ Check if Veteran

Approved Under G. I. Bill



VETERANS GET THIS TRAINING WITHOUT COST UNDER G. I. BILL

NO OTHER MICROPHONES OFFER YOU SO MUCH FOR SO LITTLE!!!



...The *New* Shure Controlled Reluctance "HERCULES" Only $12.95 List!

A revolutionary new hand-held magnetic unit that provides clear reproduction, high speech intelligibility, high output, and ruggedness—*at an amazingly low price!* A tough microphone that can be used indoors or outdoors—fits snugly in the hand, sits firmly on a desk without tipping over, can be placed on a stand. Metallic Green finish. Complete with stand adapter. Die-cast case. 2⅔" wide, 3¼" high, 1½" thick.

MODEL	CABLE	OUTPUT LEVEL	IM-PEDANCE	SHPG. WEIGHT	CODE	LIST PRICE
510C	7 ft.	52.5 db below 1 volt per microbar	High	1½ lb.	RUTUF	$12.95
510S (with switch)	7 ft.	52.5 db below 1 volt per microbar	High	1¾ lb.	RUTUS	$14.95

...The *New* Shure Crystal "REX" Only $10.00 List!

A striking-looking low-cost crystal microphone. The "Rex" is a high output, hand-held microphone that fits snugly in the hand, sits firmly on a desk without tipping over, or can be placed on a stand. The "Rex" is recommended where good quality speech reproduction is required, and low cost is an important factor. Burgundy Red metallic finish. Complete with stand adapter. 2⅔" wide, 3¼" high, 1⅛" thick.

MODEL	CABLE	OUTPUT LEVEL	IM-PEDANCE	SHPG. WEIGHT	CODE	LIST PRICE
710A	7 ft.	50 db below 1 volt per microbar	High	1¼ lb.	RUDEL	$10.00
710S (with switch)	7 ft.	50 db below 1 volt per microbar	High	1½ lb.	RUDET	$12.00

Controlled Reluctance Microphones Built Under Shure Patents. Crystal Microphones Licensed Under Patents of Brush Development Company. Shure Patents Pending.

SHURE

SHURE BROTHERS, Inc.

Microphones and Acoustic Devices

225 West Huron Street • Chicago 10, Illinois

Cable Address: SHUREMICRO



Feenix, Ariz.

Deer Hon. Ed:

Something horrible are happening——Scratchi are in a terrible state. It are all most confusing, but the horrible thing that are happening to me is that nothing are happening to me. You are knowing, Hon. Ed., how normally Scratchi are getting in all sorts of trubble. If there are way for me to doing sumthing wrong, I are always doing it that way. This times I trying just as hard, but everything going like peachy.

For example, Scratchi are deciding to get rig all fixed up for big DX contest. I are going in shack, and turning on filaments. All toobs lite up, voltages right on the nose. I turn on plate voltage and press key, listening in monitor. Note sounds like sweetest little old p.d.c. you are ever heering. I key it—no clicks. Put weight on key and check meters. All on scale. Draw arc from final tank—wow!!—it are a cupple of feets long.

Turn on receiver, band sounds hot. Sit down and rap out short snappy three minute seek-you. Without even tuning receiver there are fellow calling me. Seems he are DX, has a call AC4Y something or other. Not bothering to go back to him on acct. Scratchi not feeling like ragchewing.

Deciding to check rig on phone, so putting modulator toobs in socket and taking clip lead off modulation transformer secondary. Twisting VFO knob in general direction of phone band and talking into mike. Pattern on scope shows modulation to be 100 percent, so talk some more then sign call once. Just as are turning receiver off are heering some fellow on phone from Russia calling me, but Scratchi are still not feeling like ragchewing so not bothering with him.

Well, Scratchi are flagger-blasted at this turning of events. Oh well, I are figuring that something are sure to going wrong any moment.

Just then Brother Itchi are coming in with the days mail. I are getting envelope from qsl bureau and two long thin envelopes. Envelope with qsl cards are practically splitting Hon. Seams it are so full. I are opening it and idly noting that are now having forty zones confirmed. Opening one long envelope and out falling check for fifty bucks, refund on last years income tax. Next envelope are containing check for five hundred bucks, on account Scratchi are winning thirteenth prize in Crackley-Crunchy-Poppy serial contest.

Hon. Ed., this are horrible! What nice things are happening to poor old Scratchi next? It aren't normal—it are a catastrophe. At this point I are determined to making something bad happen to Scratchi, so I are going into living room and kicking big Mexican vase so it shattering into

(Continued on page 72)



for the finest line of...

RECEIVING TUBES



From miniatures and standard tubes to the famous Lock-Ins and cathode ray tubes, you can be sure of a complete and top quality line when you stop in at an Authorized Sylvania Distributor.

You'll want Sylvania tubes for their well-known ruggedness and dependable performance. Nearly every part that goes into the manufacture of these tubes is made by Sylvania to assure the highest quality in its receiving tube line! For outstanding dependability, be sure you come to the right place for your tubes—a Sylvania Distributor.

P.S. You can get a new Technical Manual covering all latest type tubes for only 85¢!

TRANSMITTING TUBES



Sylvania's complete line of Transmitting Tubes is of the same top quality that has made Sylvania Receiving Tubes the leaders with amateur operators all over the country.

This comprehensive line consists of 20 types—triodes, beam power tubes, rectifiers (mercury vapor and vacuum)—all specified in a new bulletin "Sylvania Transmitting Tubes," readily available from any Authorized Distributor or directly from us. Simply mail coupon below for information and name of nearest Sylvania Distributor.

P.S. The tube shown is the 2E26, a pentode r.f. amplifier and oscillator.

SYLVANIA ELECTRIC

RADIO TUBES; CATHODE RAY TUBES; ELECTRONIC DEVICES; FLUORESCENT LAMPS, FIXTURES, WIRING DEVICES, SIGN TUBING; LIGHT BULBS; PHOTOLAMPS

Sylvania Electric Products Inc.
Advertising Dept. R-2411
Emporium, Pa.

Kindly send information on Receiving and Transmitting Tubes, plus name of nearest distributor.

Name_____

Address_____

City_____ Zone____

State_____



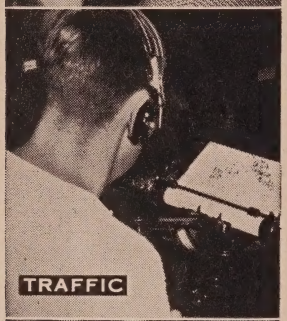
NAME IT

What ever your choice...

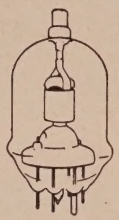
CW or phone (AM, FM, or SSSC) . . . and whether you like DXing, mobile operating, traffic handling, rag chewing, or experimenting around the shack . . . there are Eimac tubes built with characteristics to help you do the job easier, better, and with complete dependability.

Illustrated below are but three of the Eimac family of outstanding power amplifiers. Complete data on the entire amateur group is available by writing for the new packet entitled "EIMAC TUBES FOR AMATEUR SERVICE."





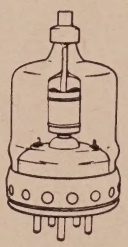




TYPE 4-65A

GENERAL CHARACTERISTICS

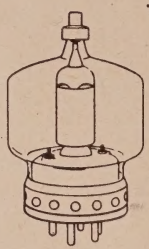
ELECTRICAL	
Filament: Thoriated Tungsten	
Voltage	6.0 volts
Current	3.5 amperes
Grid-Screen Amplification Factor (Average)	5
Direct Interelectrode Capacitances (Average)	
Grid-Plate	0.08 μμf.
Input	8.0 μμf.
Output	2.1 μμf.



TYPE 4-125A

GENERAL CHARACTERISTICS

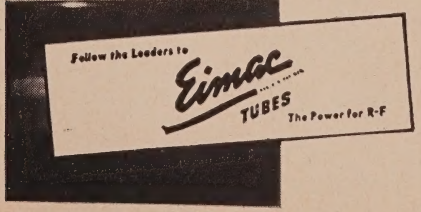
ELECTRICAL	
Filament: Thoriated Tungsten	
Voltage	5.0 volts
Current	6.5 amperes
Grid-Screen Amplification Factor (Average)	62.
Direct Interelectrode Capacitances (Average)	
Grid-Plate (without shielding, base grounded)	0.05 μμfd.
Input	10.8 μμfd.
Output	3.1 μμfd.
Transconductance (i_b = 50 ma., E_b = 2500v., E_{c2} = 400v.)	2450 μmhos



TYPE 4-250A

GENERAL CHARACTERISTICS

ELECTRICAL	
Filament: Thoriated Tungsten	
Voltage	5.0 volts
Current	14.5 amperes
Grid-Screen Amplification Factor (Average)	5.1
Direct Interelectrode Capacitances (Average)	
Grid-Plate (without shielding, base grounded)	0.12 μμfd.
Input	12.7 μμfd.
Output	4.5 μμfd.
Transconductance (i_b = 100 ma., E_b = 2500v., E_{c2} = 500v.)	4000 μmhos



EITEL-McCULLOUGH, INC.
San Bruno, California

Export Agents: Frazar & Hansen, 301 Clay St., San Francisco, California

ZERO BIAS

EDITORIAL

BY WHATEVER STANDARDS one selects to judge progress and improvement, *CQ* has obviously come a long way since its appearance in January of 1945. Under the successive editorships of the late John H. Potts, our founder and first publisher, and Larry LeKashman, *CQ* has become the leading journal in the amateur radio field and a force to be reckoned with as a defender of the rights and privileges of all of amateur radio. The position of *CQ*, it must be remembered, is unique—it is the only publication, devoted entirely to the interests of the radio amateur, which is not the "official organ" or mouthpiece of any single faction or group of the amateur fraternity. *CQ* neither represents nor supports any single segment of amateur radio, and has never weighed the merits of a suggestion or a proposal solely on the basis of its source, but is, rather, the "free press" of amateur radio.

Our previous editors have, it is true, spoken out, and emphatically too, on controversial subjects in every case where it has appeared that the rights and privileges of the American radio amateur were being tampered with, or when it has been the Editor's feeling that misrepresentation, or worse, was being passed to amateurs in general as incontrovertial fact. We know that *CQ*'s voice has been heard and heeded in the councils of amateur regulation, and we can proudly point to the existence now of an informed body of amateurs who have had adequate opportunity to study all sides of every issue which has borne fundamentally on our rights as communicators and as instruments of Public Service.

Let no one believe that the change of editorship of *CQ* will be reflected in a softening of the principle that *CQ* shall continue to provide a well-informed and factual source of information. Your new Editor well recognizes the soundness and intrinsic worth of the principles which have been laid down in these pages over the past several years, and shall continue to speak in favor of those things which are in the best interest of amateur radio as a whole and against those things which are detrimental to our avocation. The voice of *CQ* will continue to be heard.

It shall always be our aim to provide our readers with a publication worthwhile for the sake of its content, and not a magazine which depends on sentiment or loyalty for its support. *CQ* has been and shall continue to be loyal to its readers in the most definitive sense of the term.

CQ will perpetuate its policy of providing its readers with the most accurate and up-to-date technical articles available. Our growing staff of "regular" authors, the cream of the writing hams, produces what we believe to be the best ham articles to appear in any publication anywhere.

Staff Notes

Our Editorial Staff undergoes several changes this month in addition to the change of editorship. Louisa B. DeSoto, W2OOH, having abandoned New York for the less urban clime of Arizona, has stepped out of the Assistant Editor post to become our Associate Editor for YL matters. Vincent G. Dawson, WØZJB, our former V.H.F.-U.H.F. Editor has left us, and has been replaced by our old friend Edwin M. Brown, W2PAU. Better known to his "short wave" colleagues as "Brownie," W2PAU brings a wealth of technical and editorial ability to his new post. Oliver P. Ferrell, known to all as the author of our Monthly DX Predictions, and presently on leave of absence from the *CQ* staff while handling the Radio Amateur Scientific Observations program, moves to Associate Editor. Our innovation, "Mobile Corner," appears this month as a full-fledged department under the editorship of Ralph V. "Andy" Anderson, W3NL. Andy, one of the leaders in the field of mobile ham work, is looking forward to receiving contributions of news and mobile matters in general from all those interested in his field of specialization. Last, but not least, in the department of changes, we have an entirely new face in the Editorial Department, Miss Luci Turner, our new Editorial Production Manager. It is she of the shears and paste pot who is largely responsible for our typography and orthography.

No discussion of staff changes would be complete without the assurance that our DX Editor, Herb Becker, W6QD, and his DX Committee, are continuing to handle all DX matters for us. The DX column, WAZ, and all problems confronting the DX gang are Herb's field of specialization, and we're proud to have him and his gang on board with us.

Docket 9295

Next month we shall present on this page an account of the proceedings at the all-important Informal Conference scheduled to be conducted by the FCC on October tenth. *CQ* will be on hand to learn the facts.

—W2BYF/W1IIN



Collins 51J-1 receiver

The new receiver is here!

● Increasingly, for some months, rumors have spread that a new Collins receiver of surpassing performance would be available soon. This receiver is now in production.

The new Collins 51J-1 is a double conversion superheterodyne, permeability tuned throughout, and continuously tunable over the range 0.5 to 30.5 megacycles.

Designed as a general purpose communications receiver for military, commercial and individual use, the 51J's outstanding characteristics are extremes of accuracy and stability. Quartz crystals in the first conversion circuit, and the very accurate, stable Collins 70E-7 VFO in the second conversion circuit, contribute notably to these characteristics.

The tuning method employed is an innovation. The range is divided into 30 bands of 1,000 kc each. The tuning mechanism is based on a decade system in which the megacycle figure is set by means of a band switch. 100 kc figures are indicated on the slide rule dial; kilocycle figures on the circular dial. Under normal operating conditions, with a 10-minute warmup, the dial reading is within 2 kc of the receiver's exact frequency throughout its range. Calibration error can be reduced to less than 200 cycles by means of an adjusting knob which permits the reading to be corrected at 100 kc intervals by use of a built-in crystal oscillator. The 100 kc crystal may be compared directly against WWV.

Even without reference to the crystal calibrator the frequency over the temperature range —20° C to +60° C does not vary from the frequency at 20° C by more than 30 parts per million plus 1 kc; thus stability is within 2 kc at the highest operating frequency. Frequency does not vary more than 100 cycles from the frequency at 115 line volts when this voltage is varied through the range 105 to 125. Changes in atmospheric pressure from sea level to 10,000 feet altitude, relative humidity from 10 to 90%, and mild shock, do not vary the frequency by more than 500 cps.

The price of the 51J-1 as shown, with dust cover for standard rack mounting, is $875. It may be had in a cabinet, for table use, at a slight increase in cost.

The price of the well known and highly regarded Collins 75A-1 exclusively ham receiver, which is not displaced in the Collins amateur line by the 51J-1, is $375.

See or write your Collins dealer for further information. If you are not acquainted with him, write us for his name and address.

FOR SUCCESS IN AMATEUR RADIO, IT'S . . .

COLLINS

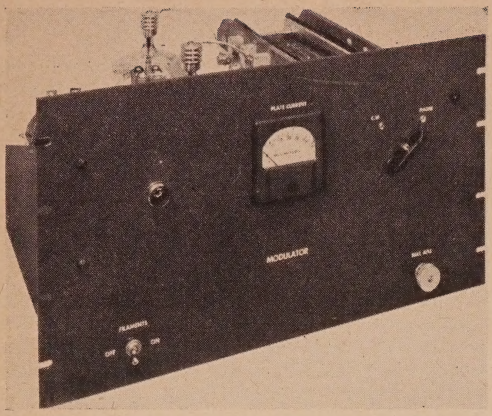
COLLINS RADIO COMPANY, Cedar Rapids, Iowa

11 W. 42nd St.
NEW YORK 18

2700 West Olive Ave.
BURBANK

M & W Tower
DALLAS 1

Fountain City Bank Bldg.
KNOXVILLE



MODULATING A KILOWATT

ROBERT C. CHEEK, W3LOE*

Zero driving power and inherently distortion-free operation are only two of the advantages of Class AB_1 operation of a modulator. Here's a way to attain it with a minimum of expense.

SINCE CLASS B MODULATORS were pioneered by amateurs nearly twenty years ago, Class B has been practically the only system even considered for high-level amplitude modulation in medium- and high-powered amateur transmitters. Prior to the advent of the surplus market, this practice was probably justified by the fact that tubes capable of producing a given amount of audio power in Class A or Class AB_1 were considerably more expensive than tubes capable of similar output in Class B, and the additional difficulties of the latter method of operation were more than offset by economic considerations.

However, the present-day amateur who contemplates running high power on phone should consider the advantages of Class AB_1 modulator operation. The well-known 304TLs, so plentiful on the surplus market, make Class AB_1 operation possible at a tube cost much lower then that for tubes that would normally be used in a Class B modulator for similar power.

But tube cost is only the beginning of the story, for Class AB_1 operation has many other attractive features, most of them contributing further to the economies that can be effected by using 304TLs.

Class AB_1 operation, by definition, implies that no driving power is required, because grid current does not flow during any part of the excitation cycle. This means that a voltage amplifier can be used to excite the grids of a Class AB_1 modulator. Problems of driver regulation, so important with Class B, are eliminated, and, with them, the need for expensive driver transformers and low-impedance driver tubes. If the exciting voltage required for a Class AB_1 modulator is higher than that available by resistance coupling from a voltage amplifier with conventional 300-volt plate supply, a small interstage audio transformer can be used to step the voltage up to the required value. This is done in the modulator to be described here.

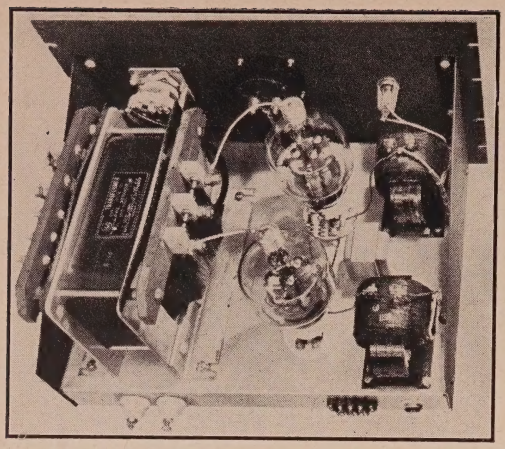
The fact that no grid current is drawn by the modulator tubes also means that bias supply regulation is inconsequential, provided only that the d.c. resistance of the modulator grid return path is within recommended limits. In the modulator shown, bias for the 304TLs is obtained at practically negligible additional cost from the plate winding of the power transformer used to supply the speech amplifier.

Another advantage of zero-grid-current operation is that the plate milliammeter can be placed in the modulator filament return path and there will indicate true plate current, unobscured by grid current changes.

A really major advantage of Class AB_1, however, is one that cannot be evaluated in terms of dollars or ease of construction. This is the relative freedom from distortion that Class AB_1 operation affords as compared with the usual Class B modulator without inverse feedback. The reason for this characteristic is again the fact that no grid current is drawn. This means that there is no sharp discontinuity in the grid characteristic. Also, the operating point is in the linear region of the grid-voltage/plate-current characteristic, with the plate current well above cut-off, and practically Class A operation is obtained except on speech peaks. Although the ultimate in freedom from distortion is not necessary for entirely satisfactory intelligibility for communication purposes, reduction in distortion means a corresponding reduction in higher-order sidebands in the transmitted signal, an important consideration in the light of the present-day congestion of bands.

There is one feature of Class AB_1 operation that is in some respects a disadvantage. This is the relatively high static plate current that Class AB_1

*R.F.D. 4, Irwin, Pa.



Top view of chassis. A 17" x 13" x 2" heavy-duty chassis is used. The exciting transformer is the small unit at the center to the left of the tubes. The two large transformers at the extreme left are the filament transformers.

operation inherently requires. For continuous commercial operation at high power, this consideration would be an important one from the standpoint of the power bill, but it is not a major factor in the intermittent type of service involved in amateur operation, and, furthermore, this characteristic has an offsetting advantage—it materially eases plate supply regulation requirements as compared with Class B.

Characteristics of 304TLs in Class AB_1

The curves of *Fig. 1* show recommended operating limits for type 304TL tubes in Class AB_1 at plate voltages from 1500 to 3000 volts. The small circles on these curves are the typical operating conditions given by manufacturers' data sheets. Experiments with different operating conditions have shown that considerable departure from the recommended load impedance curve is permissible without the introduction of appreciable distortion. For example, with 2500 volts on the modulator and the Class C plates, and with a unity-ratio modulation transformer, the Class C input can be varied from about 500 watts to a full kilowatt without noticeable distortion at 100 percent modulation. This is a variation in modulator load from 6250 to 12,500 ohms, representing considerable departure from the recommended value of 8300 ohms with 2500-volt plate supply. Distortion was checked in these tests by applying sine-wave audio input to the speech amplifier and observing the modulation envelope on an oscilloscope. Some increase in grid bias, with resultant reduction in standing plate current, is also permissible under certain conditions. Distortion begins to show up at high modulation percentages if this is carried too far, however. This is particularly true with full-kilowatt input to the Class C stage, and it is recommended that the bias be adjusted so that the standing plate current has the value shown in the curves for the particular plate voltage used if an input in excess of 750 watts is to be modulated. If the Class C input is less than 750 watts, the standing plate current can be reduced by about one percent for each 10 watts below 750, or a total reduction of 25 percent for 500-watt Class C input.

A Practical Modulator Using 304TLs in Class AB_1

Figure 2 is a schematic diagram of a practical 304TL Class AB_1 modulator. The layout of the unit is obvious from the photographs. The modulation transformer is the familiar RCA 1-kw surplus job, but, of course, any modulation transformer capable of handling the required output and of providing an approximate impedance match can be used. Because of the weight of the unit, a heavy-duty chassis is recommended. The filament transformers are rated at 5 volts at 30 amperes, and are also surplus. They are used in series to provide 10 volts for series operation of the 304TL filaments.

The phone-c.w. switch is a high-voltage ceramic switch from a TU-10B tuning unit. The switch clearances should be increased somewhat by mounting both the fixed and movable contacts on ½-inch porcelain standoffs.

The input transformer, which is also the output transformer of the preceding 6SN7 speech amplifier, is mounted in the modulator unit rather than on the speech amplifier chassis. This is done

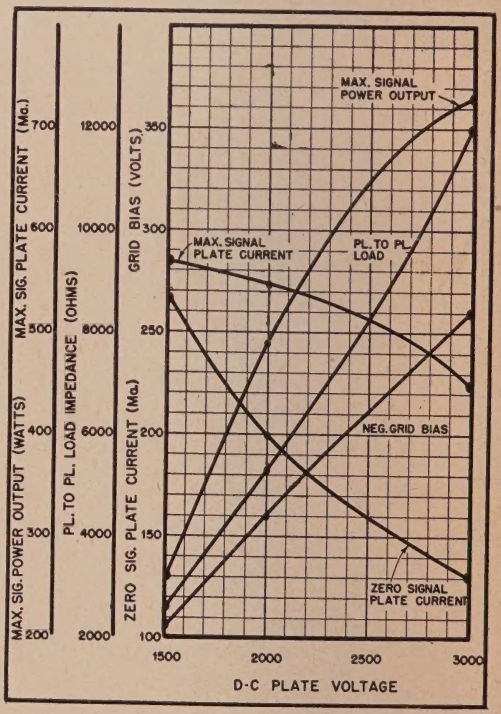


Fig. 1. Typical operating characteristics of 304TLs in Class AB_1. Values are for two tubes. Peak exciting voltage, grid to grid, is twice the operating bias shown.

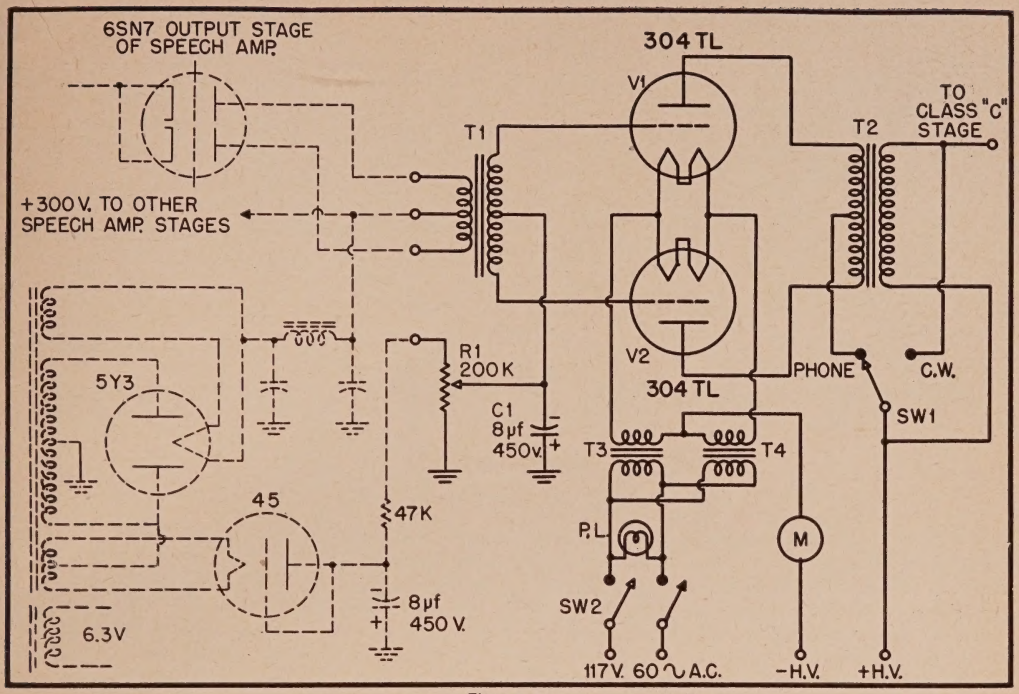


Figure 2

C1——8-mfd, 450 volts electrolytic.

R1——200,000-ohm carbon potentiometer.

T1——Interstage Audio Transformer, p.p. plates to p.p grids 1:3 ratio (Thordarson 20A23).

T2——Modulation transformer (RCA 1-kw surplus transformer or approximate equivalent. See text.).

T3, T4——Filament transformers, 5 volts, 25 amperes minimum current rating (Surplus, 5 volt 30 amp.).

SW1——High-voltage selector switch (from TU10-B tuning unit. See text.).

SW2——D.p.s.t. Toggle switch.

M——0-600 ma d.c. meter.

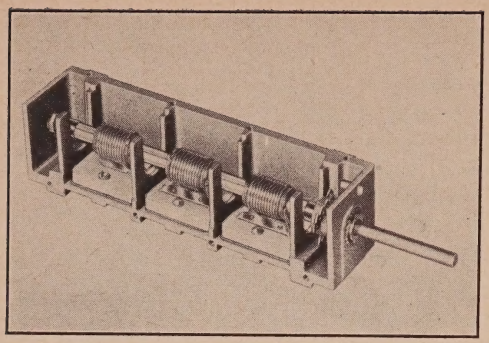
P.L.——115-volt pilot light.

to avoid having to run the high-impedance grid leads of the modulator all the way back to the speech amplifier. A shielded cable is used between the speech amplifier and the modulator. This cable should not be over 20 feet long, otherwise its capacitance will cause some loss of the high speech frequencies. A 4-conductor cable is used with the unit shown, one conductor carrying the 6SN7 plate voltage and one carrying the modulator bias voltage, in addition to the two 6SN7 plate leads. The cable shield is used as a common ground return. A 4-prong microphone connector is used to connect the speech amplifier and the modulator.

Bias voltage for the modulator is obtained as shown in the dotted portion of *Fig. 2*. The speech amplifier power transformer has a separate 2.5-volt filament winding which supplies filament current to a diode-connected type 45, which rectifies the voltage between one side of the high-voltage winding and ground. A simple R-C filter supplies bias voltage to the modulator, which contains additional filter capacitance across the bias-adjusting potentiometer. The maximum recommended grid-return resistance for 304TLs in Class AB_1 is 250,000 ohms, and a potentiometer no larger than the size shown should be used in order not to exceed this value. The bias adjustment is available from the front of the panel, and is provided with a shaft lock so that the setting cannot accidentally be disturbed.

Operation of the Modulator

The process of putting the modulator into operation is quite simple. Before applying plate voltage, check the bias voltage directly between each 304TL grid and ground with the bias potentiometer set for maximum. Having ascertained that adequate bias voltage is available for the plate voltage to be used, set the phone-c.w. switch to the c.w. position, fire up the transmitter, and adjust the Class C amplifier loading to the desired value. Place the phone-c.w. switch in the phone position and carefully set the bias adjustment so that the modulator draws the proper static plate current for the voltage obtained under operating conditions. Both modulator tubes will show approximately the same color if they are well matched. Since there is considerable variation among some 304TLs, it is well to have a spare on hand that can be substituted if necessary for a better match between tubes.



The Mallory Inductuner, a variable inductance tuning device, has been in use for some time by FM and TV receiver manufacturers as the basic tuning element in equipment covering the channels from 44 through 216 Mc. W7HEA set out to see how this device, which covers an exceptional frequency range without the use of bandswitching, plug-in coils, or variable condensers, is going to fit into amateur v.h.f. gear.

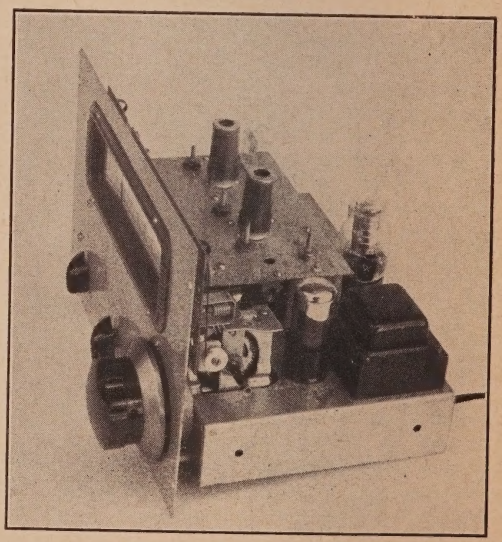
Wide-Range V.H.F. Converter

C. O. BISHOP, W7HEA*

A VHF CONVERTER having a range of 49 to 234 Mc., using the Mallory Inductuner, was recently completed, and the following is a brief description of the circuit and how it works. A 6J6 triode is used as a grounded-grid r.f. stage followed by a 6J6 oscillator and mixer. Considerable trouble was encountered in making the several tuned circuits track throughout the tuning range of the unit, but this was overcome by the addition of slug-tuned inductors, one across each section of the Inductuner. The result of placing inductors in parallel is the same as paralleling resistors—the inductance is decreased—and through the ability to vary the inductance of the slug-tuned coils, tracking is ensured at the low frequency ends of the circuits. The usual condenser across the coils takes care of tracking at the high frequency ends.

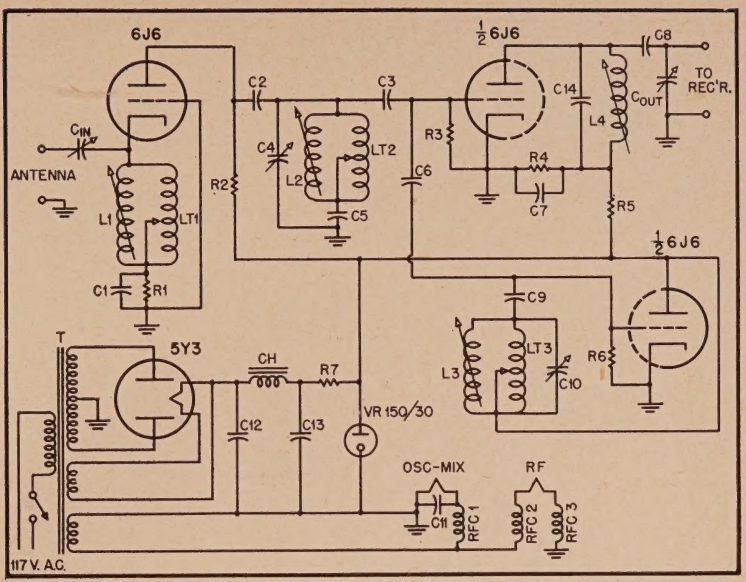
Referring to the circuit diagram, the signal is fed to the cathode of the 6J6 r.f. stage through a small condenser, C_{in}, which, with the capacity of the feed line to ground, serves as a means of improving the impedence match between the feed line and the tube. This, of course, is only effective when the antenna is resonant at or near the frequency to which the converter is tuned. The tuned circuit in the cathode of the r.f. tube is very heavily loaded by the tube and the antenna and is very broadly resonant; in reality, it acts more as a tuned choke in the cathode lead. R_1 is the cathode resistor and it is bypassed by C_1. R_2 is the plate load resistor. The output of the r.f. stage is capacity coupled through C_2 to a second tuned circuit which is actually a band-pass tuner used between the r.f. and mixer stages. C_5 bypasses this combination to ground and its capacity is rather critical. The small condenser C_4 is used to trim the high frequency end of this circuit.

The mixer grid is capacity coupled to the second tuned circuit by C_3, and injection voltage from the oscillator is supplied by condenser C_6 which is about 1¼ inches of twisted hookup wire. A fixed capacity of 2$\mu\mu$f would be satisfactory in this case if available. The mixer obtains its bias by means of the grid resistor R_3 and the injection voltage. The i.f. voltage at 10.7 Mc. is developed across L_4-C_{14} and is fed to the output cable thru C_8. C_{out}, which is across the output, forms an impedance matching network to match the converter output impedance to that of the receiver being used. Plate voltage for the mixer is taken from the voltage divider formed by R_4 and R_5 and, since each mixer has a particular voltage at which the sensitivity is the greatest, this voltage was first determined by using a potentiometer to obtain maximum sensitivity and then substituting fixed resistors. Incidently, the best sensitivity for this



*814 Jefferson Ave., Toppenish, Washington

Simplicity of circuitry is the keynote of the General Purpose V.H.F. converter as can be seen from the schematic. The values of R4 and R5 may need a bit of juggling, as is explained in the text.



C in——4-20 μμf ceramic trimmer. (CRL)
C out——25-150 μμf compression trimmer.
C1——500 μμf midget mica.
C2, C3——25 μμf midget mica.
C4——4-20 μμf ceramic trimmer.
C5——10 μμf midget mica.
C6——2 μμf (may be 1" of twisted hookup wire).
C7——5000 μμf CRL "Hy-Kap."
C8, C9——5 μμf midget mica.
C10——2-6 μμf ceramic trimmer.
C11——500 μμf midget mica.
C12, C13——8 μf, 450-volt filter condenser.
C14——25 μμf midget mica.
R1——150 ohms, ½-watt, non-inductive.
R2——15K, ½-watt, non-inductive.
R3——2 meg., ½ watt.
R4——15K, ½-watt, non-inductive.
R5, R6——47K, ½-watt.
R7——10K, 10 watts.
LT1, 2, 3——Mallory Inductuner.
L1——7 turns, #30 DSC, close wound.
L2——30 turns, #30 DSC, close wound.
L3——10 turns, #30 DSC, close wound.
L4——18 turns, #30 DSC, close wound.
(Above wound on National XR-50 form.)
r.f.c. 1, 2, 3——18 turns, #26 enamelled, close wound on 50K, 1-watt resistor.
CH——15 Hy., 50 ma. filter choke.
T——Power transformer, 250 volts d.c. at 40 ma.

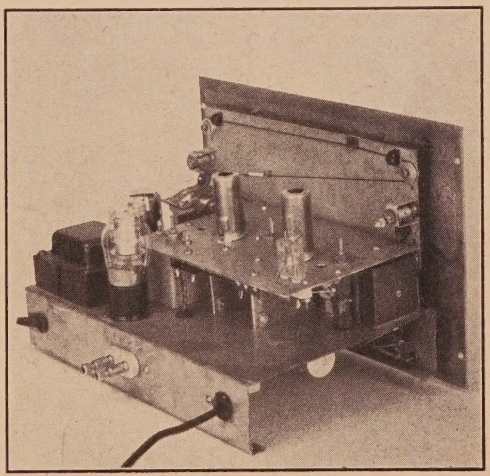
particular unit was obtained with a mixer plate voltage of 38. C_7 is the plate bypass condenser. The oscillator is the conventional two-terminal circuit with C_{10} setting the higher frequency and L_3 the lower frequency limits. C_9 is the grid condenser and R_6 the grid resistor. RFC_1 is a small choke placed in the filament lead of the oscillator tube and is bypassed to ground by C_{11}.

Since the cathode of a grounded-grid amplifier is at r.f. potential, and capacity exists between the cathode and filament of the tube, it is necessary to use similar small r.f. chokes in each of the filament leads, for otherwise considerable signal will be lost to ground. Needless to say, no bypass condensers are needed here. The power supply is conventional, and any supply capable of a few ma of current at 150 volts may be used.

Alignment

The oscillator frequency limits are adjusted first, and any conventional method for determining these frequencies may be used. A calibrated grid dipper was used here, but a receiver such as the National 1-10 or Lecher lines may also be used. Turn the Inductuner so that the inductance is completely out and the oscillator is at its highest frequency. Adjust C_{10} until the oscillator is working 10.7 Mc. above the desired highest frequency, in this case 234 Mc., the oscillator being set to 245.7 Mc.

(Continued on page 74)



Command Set Special

F. A. BARTLETT, W6OWP/6*

Another compact portable or auxiliary station based on the popular SCR-274N. Built-in electronic keying is only one of the novel features incorporated.

HAVE YOU EVER noticed the maze of interconnecting wires, key leads, "outboard meters" and other paraphernalia which so often characterizes portable operation? And balancing a bug on the edge of an orange crate doesn't make for the smoothest sending on the air, either.

The writer must confess to his share of just such installations. But recently when the need arose for an auxiliary layout at W6OWP, it was decided that the new rig would be different. It would be easy to put on the air. And a few of the operating comforts of the home rig would be incorporated. Then, to add the final touch, the transmitted signal must conform to fixed station standards—no excusing a chirpy signal on the basis of "operating portable hr, OM."

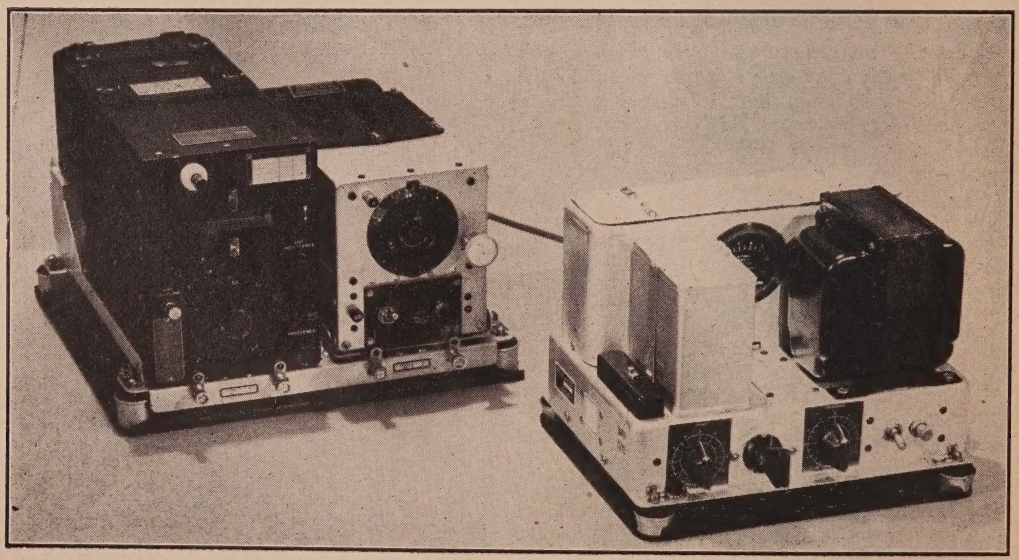
An SCR-274N—the familiar Command Set—was chosen as the basic equipment, both from the standpoint of utility and availability at reasonable cost. Either 40-or 80-meter units may be used, depending on range within which it is desired to operate. At this writing, all SCR-274N components used in the author's set are still advertised by surplus dealers. Here are the items used and SCR designations:

Transmitter, BC-459 or BC-457 (latter retuned to 3.5-mc band)
Receiver, BC-455 or BC-454
Modulator Unit BC-456 (chassis only used)
Dual Transmitter Rack FT-226
Transmitter rack shock mounts FT-227
Modulator unit shock mounts FT-225
Triple-Receiver rack FT-220 (Used for parts only)
Antenna Relay unit BC-442 (Meter only used)
Receiver Dynamotor DM-32

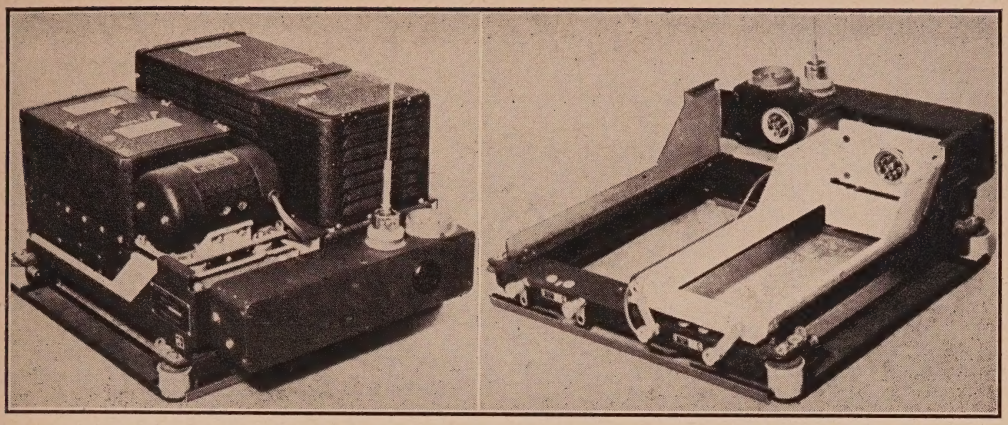
Two major units comprise the station proper: (1) the transmitter and receiver, mounted together in rack FT-226 and, (2) the power supply, keyer and controls, built as one unit on the BC-456 modulator chassis. Shock mounts listed above are used for the respective units. Inter-unit wiring is by means of cable and plugs.

To provide receiver accomodation in the dual transmitter rack, a section from the receiver rack is cut and fitted into the right-hand compartment.

*2210 Cipriani, Belmont, Calif.



Overall view of the complete station. Note the built-in electronic key and many SCR-274N components.



Left: Rear view showing receiver power unit built into DM-32 dynamotor case. The receiving antenna is plugged into a banana jack mounted in one of the two original connectors on rear deck of the rack. Receiver gain-dropping relay for transmitting is mounted inside the rear compartment. Right: Dual transmitter rack with receiver rack installed in right hand compartment. The author converted both 80- and 40- meter Command units. Desired frequency range is covered by plugging in proper transmitter and receiver.

This is chiefly a hack-saw job and step-by-step details will not be given. The photograph shows the final result. The male power plug in the right rear section of the transmitter rack is removed, thus providing an opening for connections to the receiver.

The BC-456 modulator is stripped of all major components, a procedure not nearly as wasteful as it might appear. The present low cost of these units can be written off on the basis of the tubes and chassis alone. The power supply/keyer as seen in the photograph is *not* a converted BC-456. The chassis is all the present and former units have in common.

Transmitter Electrical Conversion

Basically, the Command transmitter consists of a Hartley oscillator inductively coupled to a neutralized parallel beam tube power amplifier. Because of the lack of an isolation stage, keying and antenna loading must be arranged to minimize reaction on the oscillator if a satisfactory signal is to be had.

Oscillator keying is the logical choice in view of the original circuitry since there can be no isolation of a keyed stage from the oscillator without drastic circuit changes. Furthermore the most click-free form of triode oscillator keying is blocked-grid.

To provide power supply load voltage stabilization, the final stage is self-biased to draw 100 ma key-up plate current, nominal loaded current being this same value. However, a swing of 30% can be tolerated without serious signal deterioration with average power supplies.

The combination of these two relatively simple modifications results in an exceptionally clean c.w. signal. Power input (loaded) runs between 50 and 75 watts. It must be conceded that this conversion will not run the power claimed for certain other arrangements. It was felt, however, that the added signal quality made up the difference—especially since a 60-watt high voltage supply is about all a small rig such as this would normally require.

Pertinent circuit data is contained in *Fig. 1.* The former relay control line connection is removed from terminal #5 on the transmitter power socket and this pin is used for the keying lead. Other pin connections are unchanged.

The oscillator grid leak is cut free on the coil side of the grid condenser, then connected through an r.f. choke to pin #5, as shown in *Fig. 1.* Blocking bias of around 100 volts negative is applied from an external source through a 250,000-ohm resistor. Grounding pin #5 keys the transmitter. No other pin connections are changed.

The cathode bias resistor for the 1625s and its associated bypass condenser are located adjacent to the screen grid bypass to the side of the oscillator tuning condenser. If a cathode bypass similar in type to the one used originally for the screen is available, the two may be mounted together by removing the existing mounting screws and replacing with ones of sufficient length to secure both capacitors.

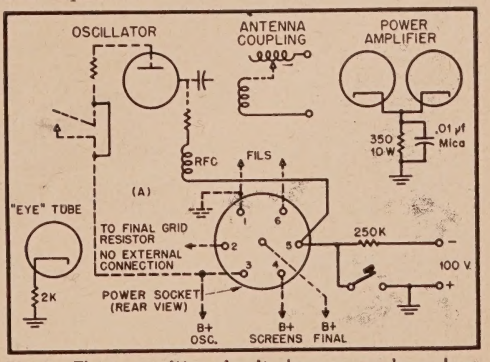


Fig. 1. The transmitter circuit changes, as shown here, can be made in a few moments.

Neither the under-chassis control relay nor the one in the antenna circuit is used. In the latter, the spring contact is soldered directly to the antenna post. In the former, the cathode connection is cut free, the wiring being changed to permanently ground the cathodes through the added 350-ohm self-biasing resistor. The former 51,000-ohm standby bias resistor is removed. The oscillator plate contacts on the control relay are short-circuited by wiring together the contact connections.

Normal operation of the electric-eye tube is achieved by removing the two resistors connected to the eye-tube cathode and replacing them with a single 2000-ohm 1-watt resistor to ground.

Except for wiring filaments in parallel, the only other transmitter change is removal of the chassis ground from the antenna coupling coil. The low side of this coil is connected to an insulated binding post installed in place of the antenna coupling lock. Since the transmitter chassis is common with the ground side of the a.c. line (the result of a receiver half-wave rectifier power supply), the antenna isolation becomes desirable.

Ordinarily, the short antenna used for portable work loads satisfactorily against the a.c. line as a "ground."

The manner of obtaining screen and oscillator plate voltages is important to the proper functioning of this conversion arrangement. A bleeder of from twenty to thirty thousand ohms should be used across the power supply. Oscillator plate voltage is obtained from a tap and should be adjusted to give 150 to 175 volts under load. Screen voltage should be obtained through a series resistor of approximately 15,000 ohms connected to B+. These points are mentioned for the benefit of the reader interested only in the transmitter conversion. The

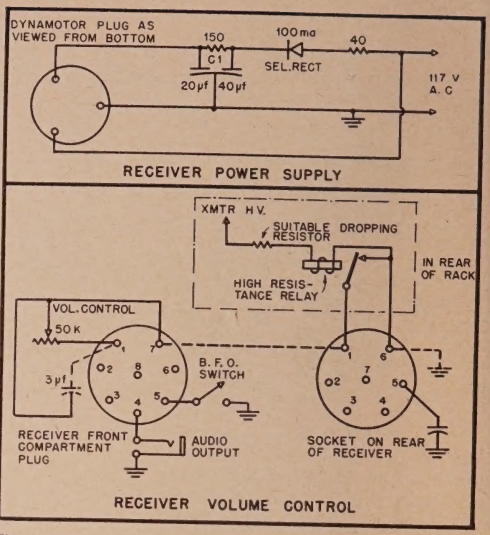


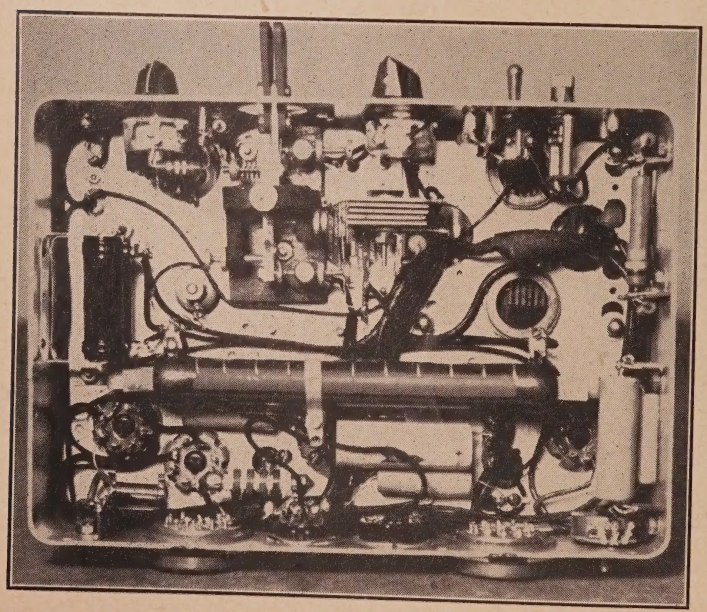
Fig. 2. The receiver power supply (top) fits into the dynamotor housing nicely, and the volume control circuit changes are simple.

required circuit is incorporated in the power unit to be described in a later portion of this article.

Receiver Electrical Conversion

In principle, the receiver conversion follows the lines of previous suggestions carried in the pages of *CQ*. Filaments are wired in series and a 50L6 is substituted for the 12A6 output tube.

Instead of returning the volume control ground lead directly to ground, it is connected to *pin 7* in the front receiver compartment. This pin con-



Under-chassis view of power-supply/keyer unit. Note compactness without undue crowding of parts.

nects to *pin 1* on the rear power socket. The return then reaches ground through contacts of a relay in the rear deck of the rack. This relay operates whenever the transmitter high voltage is applied, opening the volume control ground return. This drops receiver gain to a comfortable level for monitoring the transmitted signal.

Effectiveness of this arrangement requires changing the ground connection of the 3-μf volume control line bypass condenser from chassis to volume control ground return line. This condenser is fastened to the inside front of the receiver adjacent to the control compartment. Since the case serves as its ground connection, it is necessary to mount the condenser on an insulated bracket. This can be made from a composition tie-point connector. The case is then re-connected to the volume control ground return as shown in *Fig. 2*.

The c.w. selectivity of both the BC-455 and BC-454 will be improved by connecting a .02-μf bypass condenser across the audio output. This is most easily done under the chassis and to the rear of the set. *Pin 5* is common with the audio output pin on the front receiver plug. No effort was made to increase bandspread.

Ease of tuning, however, will be enhanced if a wedge-fit knob is substituted for the wobbly, spline-type currently sold for command receivers. A simple five-cent plastic drawer pull can be altered to provide a very satisfactory control. The tapped hole in the base of the pull is first enlarged with a 7/32" drill. Then excess outside stock is trimmed off until the base fits freely into the dial collar. A little pressure will force the new knob onto the tuning shaft spline.

Power supply for the receiver is a half-wave selenium rectifier and filter housed in what was formerly receiver dynamotor DM-32. Once the field coils and armature are removed from the original power unit, there is ample space for mounting the 100 ma rectifier, a dual 40-20 μf 150-volt tubular filter and two resistors making up the assembly.

The a.c. connection is made by means of a line cord directly to this supply rather than through the receiver power socket. Since the supply is a.c.-d.c. a recommended hookup method is shown in the circuit diagram. In this way, the receiver may be used independently of the portable set-up by merely grounding the volume control line at the rear socket (*pin 1* to *pin 6*). The male plug removed from the right-hand section of the transmitter rack when installing the receiver compartment makes a handy shorting plug by merely soldering these two pins together.

Power Supply and Keyer

The over-all schematic for this unit is shown in *Fig. 3*. The mechanical and electrical layout can be seen from the photographs. Perhaps additional comment is needed on the power supply concerning the small filter employed. Stability of the converted BC-459 or BC-457 is so good that further filtering is not required for c.w. operation. Should a BC-458 (tuned to 7 mc) or an 80-meter BC-696 be used, a small input filter choke will be necessary. The lower *"C"* oscillators of these two transmitters result in excessive ripple with the capacity filter alone.

A 5T4 rectifier tube is used since it fits neatly inside the BC-456 shield.

The built-in electronic keyer uses the author's

(*Continued on page 66*)

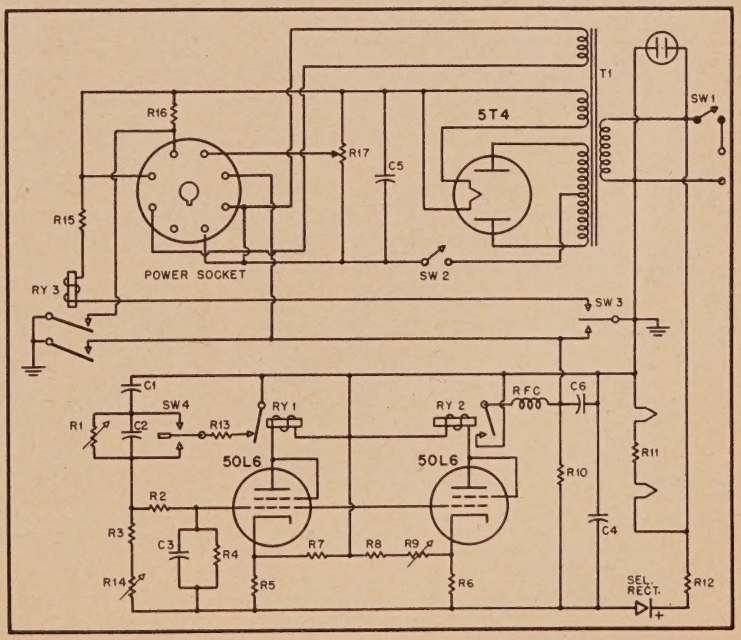


Fig. 3. Power supply-keyer.

C1—.1 μf, 600 w.v.
C2—.03 μf, 600 w.v.
C3—.05 μf, 600 w.v.
C4—40 μf, 150 v. filter.
C5—10 μf, 150 v. filter.
C6—.002 μf.
R1—.5 meg. variable.
R2, R3—.25 meg., 1/2 w.
R4—4 meg., 1/2 w.
R5, R6—2200 ohms, 1 w.
R7—10,000 ohms, 2 w.
R8—7000 ohms, 1 w.
R9—5000 ohms, variable.
R10—.25 meg., 1 w.
R11—150 ohms, 5 w.
R12—40 ohms, 1 w.
R13—500 ohms, 1/2 w.
R14—2 meg., variable.
R15—Refer to text.
R16—15,000 ohms, 25 w.
R17—25,000 ohms, 100 w.
T1—Power Transformer.
Ry1, Ry2—Pulse relay, 3500 ohms.
Ry3—Refer to text.
Sw1—A.C. switch.
Sw2—H.V. switch.
Sw3—Refer to text.
Sw4—Key lever.
RFC—2 1/2 mh. choke.

More on V.H.F. Converters . . .

Since the publication of "The Ultimate in Converters" in September CQ, author John E. Stacy, W1KIM, has been swamped with inquiries from the v.h.f. gang. Here, as compiled from his notes, are found the answers to many of the questions which have been troubling the "short wave" boys.

IT HAS BEEN of great pleasure to this writer to learn of the excellent success that hundreds of v.h.f. enthusiasts have experienced with the Low Noise Converters previously disclosed in **CQ**. There have also been many requests for detailed answers to several questions associated with these units, some specific, others general. The following information is an attempt to clarify the most frequently asked questions for those interested. The theory is fact and is presented as such; the tests and associated results are personal findings and should be treated as such.

By far the most popular question concerns the choice of components—that is, type, brand, value, etc. It is true that the suggested parts are not generally available at most radio houses, and this was entirely overlooked by the writer. Obviously the best of components are not necessary for the units and brand discrimination should not exist. Regarding condensers, the original thought was toward miniature types. The smaller types made for better and neater layout and also gave less capacity to ground in the case of the interstage coupilng condensers. The values for coupling and bypassing are not critical, those cited are the minimum values. Excepting the buttons, 2000 $\mu\mu$f dog bones will work nicely as coupling and bypass condensers for all frequencies down to 30 mc. If larger values of button condensers are available, by all means use them. When in doubt for a coupling or bypass capacitor, check to be sure the reactance is less than a few ohms at the frequency in question. As to physical size and make, let your own personal tastes and your pocketbook be your guide. In general, all resistors used can be classified as not critical—**yes, all of them.** The cathode bias resistors can have a tolerance of 10 percent; all others are approximate values. Type and make follow the suggestion on condensers.

Mica-filled bakelite sockets are equally as good as the more expensive ceramic type—in fact, better in the case of the local oscillator.

Regarding oscillator drift, be sure the ceramic trimmer is zero-temperature-coefficient (NPO), use firm and rugged coil and condenser mounting, have ample ventilation. 6AB4 is more stable than a 6J6. Under-compensation is indicated by frequent retuning upward in frequency, and vice-versa.

The converter can be made fixed tuned by broad banding the i.f. output circuit. This is done by replacing the suggested 47$\mu\mu$f across the i.f. coil with 10$\mu\mu$f. This will assure 4-mc band-with overall. At 30 mc, where only 2 mc is needed, the capacitator may be increased to 20$\mu\mu$f. The number of turns in the i.f. coil will have to be increased, of course. The oscillator is then tuned to the center of the band and left there. Tuning is accomplished in the low frequency receiver. For example, with an i.f. of 14 mc the oscillator is set at 132 mc and the i.f. receiver is tuned from 12 to 16 mc. A xtal oscillator can be used to assure calibration, but it is recommended that frequency multipliers be used rather than attempting to pick off a high-order harmonic from a one stage xtal oscillator.

Regarding tube types, there is much to be said. First, the lighthouse series is definitely inferior to the 6J4 at frequencies below 300 mc. The 6AB4, ditto. This type is not recommended above 60 mc. At 144 mc its performance is still good, but not comparable to 6J4 or 6AK5 because (1) input conductance is higher, (2) grid current and emission problems, (3) lower Gm. If it must be used, by all means make sure 180 or more plate volts are applied. (This type is approximately ½ 12AT7.)

The 2C51 is better than the 6AB4 and will serve nicely up to 144 mc. The G. E. version 5670 is somewhat better and is recommended in preference to the 2C51. The 12AT7 is fine up to 50 mc at 250 v. The 6N4 does not live up to its data sheet. Its perveance cannot be realized without endangering tube life. The ½ 6J6 is still very good up to 144 mc with 100 volts and no grid emission problems. By all means, forget the types 6AN5 and 6AH6 above 30 mc. The 5687 is still being investigated by the writer. The 404A is perhaps better than the 6AK5, but its cost nearly runs into three figures.

When using the Wallman amplifier, always overcouple the input circuit when in doubt. The noise figure is injured less on the overcoupled side than conversely. It must be mentioned that rather large values of coupling coefficient can be obtained with an auto transformer, so a first guess at the input tap may definitely be overcoupled.

It seems that almost everyone is interested in the relative excellence of the many v.h.f. amplifiers in use today. How do they compare? Assuming that the best available tube types are used, here are the comparisons of four popular amplifiers. Let's look at the cathode-coupled amplifier, the push-pull neutralized amplifier, the grounded-grid amplifier, and the Wallman circuit.

(1) **The cathode-coupled amplifier,** frequently employing the 6J6, is a cathode follower driving a grounded-grid stage. It is quite stable and can be used at 144 mc very nicely. However, since the gain of the first stage is quite small, the noise of the stage following is appreciable. It follows that the overall NF is twice that of a single stage. (2) **The push-pull circuit** (also frequently used with a 6J6) may be grounded-grid, cathode, or plate, and so may or may not require neutralization. It makes no difference which type is used. The best feature is balanced input, other than that it falls into the first group as regards NF. Since the output is associated with two tubes, each with a noise source in the grid circuit (and no increase in gain), the overall NF is twice that of a single stage. It apparently seems confusing to some that a push-pull stage doesn't give twice the gain; in order to get twice output the input must be doubled. (3) **The grounded-grid amplifier** is not a wonder as such, but with certain tube types it can be deluxe. With 6J6 tubes, for instance, two such stages are only slightly better than (1) and (2), but with 6J4 tubes the amplifier is tops. Of course, this is due to the very high Gm. As previously mentioned, a NF of 5 db above KTB can be realized at 150 mc. How about 6J4s for (1) and (2)? Simplicity of circuitry, input matching, no need for neutralization, etc., immediately suggest grounded-grid operation. (4) **The Wallman circuit** is merely the best possible combination of two tubes out of nine possible choices. The circuit is fixed in theory, and its effectiveness is governed only by the choice of tubes. Its features are obvious in every detail. It has gain, NF, stability, and simplicity to the most favorable degree. If you want the best in v.h.f. amplifiers, the Wallman circuit must be used.

In general, taking into account all of the variables associated with v.h.f. amplifier design, the four types mentioned here would rank in the following manner. First the Wallman circuit, second the grounded-grid amplifier, and the remainder as you will. It should be mentioned that any of these will easily out-perform conventional pentode circuits.

The last question of interest is the role of the antenna and its effect on the NF. Many are lead to believe that a multi-element array will greatly improve the NF of any receiver. This is a grave error. The inherent source noise is determined by the formula 4KTRB, and nothing else. Now then, it makes no difference whether a dipole of 72 ohms is used or a multi-element array also of 72 ohms is used. The input grid is entirely indifferent as to which antenna it looks at. It is true that the signal to noise ratio is improved over a dipole, but the noise figure is not affected. Once again, one must not discriminate between the actual signal and the QRN. The belief that a sharp beam will eliminate QRN due to horizontal directivity is legitimate, but it has no effect on noise figure.

TVI - Free Rig for 10!

MACK SEYBOLD, W2RYI*

Progressing from a TVI-proof design, as detailed in October CQ, to TVI-proof performance.

THUS FAR OUR disussion has been on the construction of a transmitter capable of producing a full spectrum of strong harmonics, but also capable of keeping the r.f. currents at television frequencies within the confines of the shielding. The transmitter should now be tested to find out if it meets the shielding requirements.

Place a 100-watt lamp in the cabinet near the antenna pick-up coil, and connect the lamp across the output capacitor, C_1. Load the final to about 200 watts input. The lamp will run considerably brighter than normal, but will last longer than the time needed for these tests. Adjust the rig for maximum apparent efficiency. Grid drive

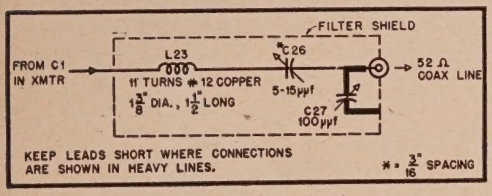


Fig. 10. Single-section band-pass filter for 28 mc.

should be sufficient to develop 80 volts d.c. across R_4. When the adjustments are completed, clamp the lid tight and bolt the hinge cover plate to the cabinet.

There should be no signals above 45 mc emanating from the box. Sampling the spectrum can be done with a superregenerative receiver or a converter-superhet of the Scherer variety.[2] If a signal is detected, listen to the rush from the superregen or watch the meter on the superhet, and probe around the cabinet and filter bank with a three-foot length of wire. A variation of signal strength will be noticed when one end of the probe is touched to the cabinet in the vicinity of a bad solder joint or a defective line filter. Correct all faults of this variety, and when the cabinet has been made to function as a complete shield, the transmitter is ready for operation. We now want to bring a specific signal through the wall of the shield so that it can be coupled to an antenna and radiated. The filter accomplishing this feat must also leave the unwanted signals inside the box.

There are two general classifications of transmission-line filters for harmonic attenuation: the band-pass, and the low-pass types. High attenuation ratios may be obtained with only a few sections of the band-pass variety, and the narrower the pass band, the fewer will be the number of sections necessary. The low-pass filter, although requiring more sections, is the most convenient in that it can be used for any of the amateur bands below 30 mc. Because filters of this type never have to be tuned, once built, quick frequency shifting within any particular amateur band is possible. Although a low-pass filter is more difficult to construct, it is worth the effort if multi-band operation or frequent movement within one band is anticipated.

Single-Section Band-Pass Filter

The degree of harmonic attenuation necessary in any particular location is a function of the TV signal strength and the proximity of the TV receiver to your equipment. In order to get this shielded 10-meter transmitter on the air as soon as it is finished, and to find out how it behaves for TVI in your location, try the simple band-pass filter illustrated in *Fig. 9*. The circuit for this unit is given in *Fig. 10*. Actually, the antenna pick-up circuit inside the cabinet acts as a filter section in this device, and the second section is mounted in its shielding box outside of the Par-Metal cabinet. Make sure that the entire area of the metal surfaces where the two units are

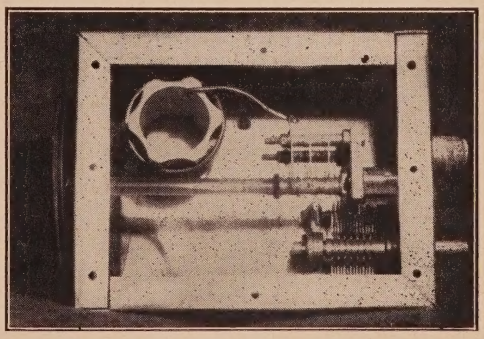


Fig. 9. Single-section band-pass filter with cover plate removed. The co-ax fitting for the antenna feeder is on the right. C26 is mounted on polystyrene insulators, and a polystyrene shaft extension goes to the dial through a bushing in the side of the box.

*c/o Tube Dept., RCA, Harrison, N. J.

2 Scherer, "The Harmonic Chaser," *CQ*, April 1949.

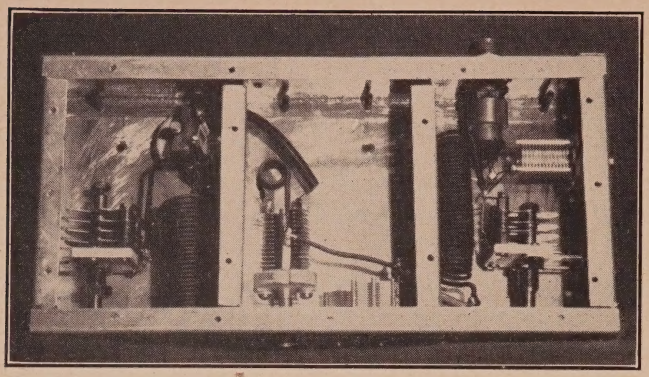


Fig. 11. Two-section band-pass filter. The center compartment contains a test filter section which normally is omitted. Either this two-section filter or the single-section assembly of Fig. 9 can be bolted to the side of the transmitter in place of the low-pass filter shown mounted on the transmitter in Fig. 1.

bolted together are paint-free, rust-free, and clean. An insulated wire from C_1 in the transmitter passes through a hole common to both boxes into the external section, and the output of the filter is taken from a coax fitting. Coaxial cable RG-8/U is used to feed the antenna. All the filters discussed in this article are designed to match a 52-ohm line. Balanced lines make the filters more complicated, so it is advisable to get acquainted with this system of harmonic control by starting with the simple and branching out into the more complex as confidence is gained.

Tuning the simple band-pass filter is relatively easy. Start with a lamp load at the coax outlet. Adjust C_2 and C_{26}, and the plate tank capacitor for maximum power output at minimum usable plate current. For a given frequency there is an optimum setting of C_2 and C_{26} for maximum efficiency. Obviously, the degree of coupling between L_1 and the tank coil is involved in the loading of the 813.

After becoming acquainted with the filter by operating it into a lamp load, remove the lamp and connect the coax feeder. A good match between the antenna system and transmission line is recommended because the filter is designed for a 52-ohm non-reactive load at the fundamental frequency. If the mismatch is too great, heavy circulating current will cause the coils to overheat or the capacitors to arc. In my particular installation, the 52-ohm line is connected to a half-wave dipole, which presents a moderate mismatch, but all of the 52-ohm filters that have been tried on the system have behaved satisfactorily. Even if your transmission line isn't as flat as an Illinois wheat farm, some standing waves on the system will not be too objectionable.

Connect the antenna and touch up the filter adjustments for maximum radiation at maximum efficiency. A 1N34 crystal diode in a 10-meter resonant circuit with a 0-1 milliammeter makes a fine field-strength indicator. When the rig is delivering a good strong 10-meter signal into space, check the harmonic radiation and the effect of the harmonics in the nearest TV set. Make sure that your fundamental is trapped out of the TV receiver[3] before you condemn the transmitting equipment. At W2RYI, the simple band-pass filter at the transmitter eliminates all TVI from harmonics in a neighbor's set located 35 feet away, where signals from TV stations in New York City are attenuated by 15 miles of space and one huge ridge of the intervening Orange Mountains.

Two-Section Band-Pass Filter

If the simple filter is not adequate in your location, another section can be added. *Figure 11* is a photograph of the device. The center compartment was originally intended for a third section. It was also used for a trap section in tests conducted to study an external source of harmonic production, but regular sections in the two end compartments were found adequate for TVI elimination in a set located 3 feet from the transmitter.

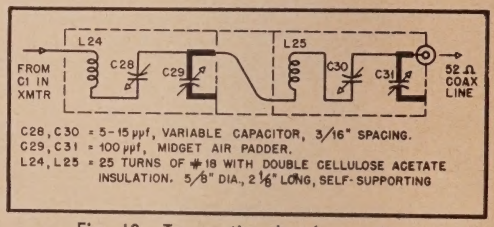


Fig. 12. Two-section band-pass filter.

The tuning of this filter (circuit in *Fig. 12*) is more complicated than that of the simple filter. The same procedure is used for alignment, but it was found that C_{28} tunes broadly, and causes the 813 plate current to drop slightly when tuned in correctly. This drop in power input is accompanied by a small rise in power output, but it only occurs when C_1 and C_{30} are set correctly. Play with a lamp load on this filter, also, while getting acquainted.

In order to get extreme harmonic attenuation with a minimum number of sections, the above filters are designed to have a very narrow pass-band. To QSY more than 30 kc means that the filter has to be retuned. To broaden the pass-band

[3] If you have not already built traps for your neighbor's TV receiver, try W. M. Scherer's "Trap Box", *CQ*, March, 1949.

means adding more sections, so we might just as well build a good low-pass filter and finish the job completely.

Low-Pass Filter

Figure 13 shows the experimental unit I built to test the effectiveness of low-pass filters. When it is used on the shielded transmitter running 300 watts to the 813, the TV set sitting 3 feet away gets no interference to channels 4, 5, 7, 11, and 13. There is no evidence of a harmonic in the presently unoccupied channel 9. Channel 2 is clean when I operate between 27.16 mc and 27.43 mc and also between 29.0 and 29.7 mc.

The interference to Channel 2 when I operate between 28.0 mc and 29.0 mc is not objectionable, but the results are not perfect. In the attempt to achieve perfection at all frequencies, I have worked for months on this particular problem. The following outline illustrates the types of tests being run to determine the source of the difficulty:

A. Shielded transmitter feeding lamp load at 28.5 mc.
   1. Lamp inside transmitter. No harmonic radiation.
   2. Lamp outside transmitter at filter terminal. No harmonic radiation.
   3. Lamp at end of 8-foot length of coax. Strong radiation at 28.5 mc, plus weak 2nd and 3rd harmonic.

B. Operating into regular antenna with low-pass filter and coax.
   1. Regular operation. Weak 2nd and 3rd harmonic.
   2. Tunable 57-mc plate trap at 813.[4] No change whatsoever on 2nd and 3rd harmonic output.
   3. 25-$\mu\mu$f vacuum capacitor at plate of 813.[4] No change.
   4. Vacuum capacitor plus plate trap. No change.
   5. Tunable 57-mc trap at various points along coax feeder. No change.
   6. Stubs at various points along coax. No change.

C. Band-pass filter of *Fig. 12* into coax and antenna.
   1. Results same as with low-pass filter.
   2. Tunable 57-mc trap in center compartment. No change.

D. Regular antenna and filter without 28.5 mc signal.
   1. Detuned C_1 to reduce 28.5 mc radiation. No harmonics.
   2. Same, but lamp load inside transmitter to keep power input normal. No harmonics.

E. 813-final operating as doubler to 57 mc.
   1. No antenna. No 57 mc radiation.
   2. Normal 10-meter coupling and antenna system. No 57-mc radiation.
   3. Same, but 20" length of insulated wire stuck 2" into hole in cabinet. Channel 2 picture disappears.

In addition to these tests, I have bypassed and filtered every rectifier and VR tube in the house. No change in the 2nd and 3rd harmonic radiation was effected. It is definite that no 57-mc component is available unless the 28.5-mc signal is broadcast, so it is possible that an external non-linear system that has nothing to do with my radio equipment is causing the trouble.

I hope to get a positive answer to the problem, but in the meantime, the rig works perfectly on the frequencies designated above and almost as well between 28 and 29 mc, so I'm on the air! You can be, too, and you may not even have a non-linear system in close proximity, or you may be able to establish a good standing-wave ratio on the transmission line and get your fundamental radiator far enough away to circumvent the difficulty. Let's proceed with the low-pass filter.

Construction of Low-Pass Filter

The circuit diagram for this filter with *m*-derived sections is shown in *Fig. 14*. Silver-mica button capacitors were used initially in my low-pass filter, but you will notice that the parts list shows ceramic capacitors for the 150-$\mu\mu$f components. The reason for this change is that the silver buttons drop in capacitance during long periods of operation because the heavy r.f. current slowly opens up some of the thin, silver contacts. The buttons that have failed in my filter have been

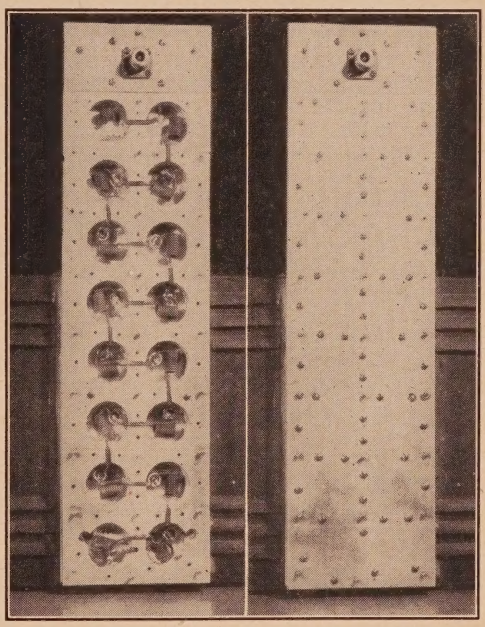


Fig. 13A (left). Sixteen-section low-pass filter. Each compartment houses one section. The filter is connected to the transmitter by a lead which passes through a hole in the bottom of the lower left compartment. Fig. 13B (right). This is how the filter looks when the cover plate is bolted to the case. The coax fitting at the top is for a 52-ohm transmission line.

4 TVI Handbook, Radio Magazines, Inc., N. Y. C.

replaced by ceramics, which behave satisfactorily.

In wiring the filter, keep the connections that are shown in the diagram with heavy lines as short as possible. The case is made of aluminum plates ⅛" thick, and the 1¼" inch diameter holes are oriented so that when the plates are stacked, compartments are formed for the filter sections. The whole assembly is tightly bolted so that no slits are present between compartments. The top plate in the stack is cut with a ⅛" slot between appropriate compartments to pass the wire between adjacent sections. This wire is wrapped with Scotch Tape for additional insulation. The top plate is tapped for the permanent 8-32 bolts that hold the assembly together, and it is also tapped for the ¼", 6-32 bolts that are used to fasten on the 1/16" aluminum lid plate. The bottom plate of the filter case is made of ⅛" aluminum to provide structural strength and to permit deep countersinking for the assembly-bolt holes. The bottom of the filter case is held tightly against the transmitter cabinet by four bolts which pass through holes in the cabinet. A fifth hole is drilled in the cabinet to pass the lead from C_1 to the input section of the filter. This wire is also wrapped with Scotch Tape for insulation.

The last compartment in the filter case has a separate lid, and on this lid is mounted the coax connector for the transmission line. The lead connecting the last filter section to the coax fitting is snaked through an inter-compartmental slot, ⅛" wide, cut in one of the internal laminations.

Testing the Low-Pass Filter

When the low-pass filter is first tested, a lamp load is used at the output terminal. Adjust the coupling coil and C_1 for optimum power transfer. Remove the lamp, connect the coax and antenna, make final readjustments of C_1 and the plate-tank capacitor and you're on the air.

If you happen to have a 72-ohm transmission line, and want to modify the 52-ohm filter described above to fill your requirements, consult *Terman's Radio Engineer's Handbook*, First Edition, 1943, page 228, for the necessary data.

Will Angermeier, W2MJ, and Dick Zucker, the OM at W2QKT, are in the process of constructing shielded transmitters, and they are building low-pass filters with relatively large rectangular compartments. Each section will have #12-wire inductances, and the capacitors will be air-padders. This method of construction is mentioned as a possible variation to be considered.

Although designed for 10-meter phone, the shielded transmitter is also operated on 20-meter phone and c.w. The change is made simply by plugging 14-mc coils in the antenna pick-up circuit and 813 tank. The 1625 quadrupler is padded with an 80-$\mu\mu$f capacitor to make it double. The low-pass filter feeds a 20-meter dipole through RG-58/U, and the power input generally is 300 watts. I get good reports from the gang on twenty, and there is no interference to any channel in the TV receiver in the shack. When the rig was first put on 14 mc, the picture on channel 2 was obliterated. It took several hours to locate the cause of this unexpected predicament. The 14-mc signal from the transmitter was being rectified in the grid-cathode circuit of the first r.f. tube in my communications receiver, and strong 4th and 6th harmonics were being radiated from the receiving antenna. When I transmit now, the 20-meter receiving antenna is grounded to the receiver chassis at the input terminal, and we have *no* TVI.

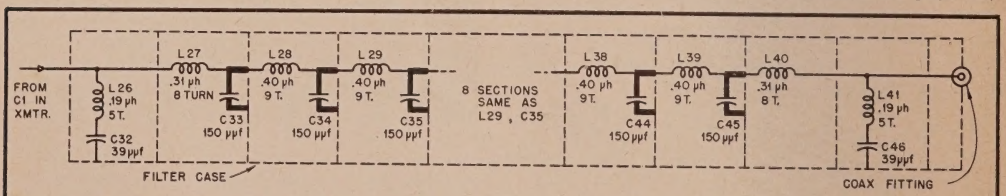
As for the behavior of the shielded transmitter on 10 meters, the actual interference to the TV receiver sitting next to it on the bench has been described in the paragraphs on filters. The receiver involved is an RCA 630TS driving a 16AP4 kinescope. The 10-meter fundamental is attenuated in the RG-59/U TV feeder by a tuned trap in series with the center conductor and one in series with the coax shield. A second set of tuned traps removes the 20-meter fundamental.

The distance between the TV receiver and the shielded transmitter represents the worst condition possible in adjacent suites of an apartment house where transmitter and receiver are placed back to back against a common wall. In addition, the apartment-house situation is duplicated in the extreme by taking the transmitter and TV receiver feeders in almost parallel paths to the roof 30 feet above. At no point in space are the feeders or antennas separated by more than 12 feet.

To make matters worse, I have additional feeders from a pair of 2-meter colinear-arrays, a 20-meter dipole, and a 75-meter antenna coming through the same section of box sill.

Then, nestled among all these wires, is a folded dipole and 300-ohm ribbon feeding a 12-year old television receiver that has an old-fashioned 8-13 mc i.f., and no r.f. stage. That veteran receiver can *produce* TVI, but it doesn't receive any from my shielded and filtered 10-meter transmitter!

(Continued on page 58)



•ALL INDUCTANCES ARE WOUND WITH # 18 DOUBLE CELLULOSE ACETATE COVERED WIRE, 3/16" INSIDE DIAMETER, CLOSE SPACED, SELF-SUPPORTING. • MAKE CONNECTIONS SHOWN IN HEAVY LINES AS SHORT AS POSSIBLE.

• THE CASE OF THE FILTER IS BOLTED TO THE TRANSMITTER CABINET FOR GOOD CONTINUITY TO GROUND.
• ALL CAPACITORS ARE MINIATURE TYPE SILVER-CERAMICS.

Fig. 14. Sixteen-section low-pass filter for 52-ohm line.

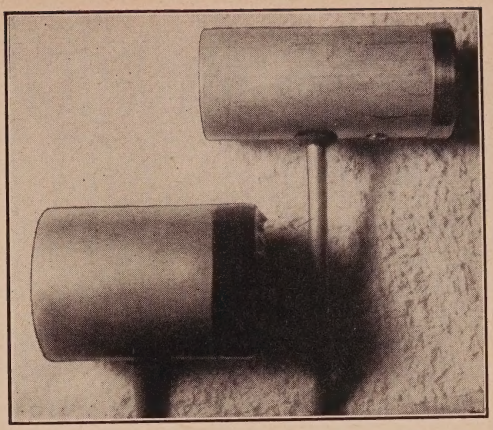


Fig. 7. R5 mike completed. The smaller case is made from door chime resonator. The larger case is sample for components such as transformers or condensers.

THE R5 MIKE

WALTER S. ROGERS, W1DFS*

An all but indestructible utility microphone that gives excellent performance, made from modified headphone units.

WHILE MAKING tests on headphone receivers, the writer came across the very desirable characteristics of a well-known telephone receiver unit called the ANB-H-1, a part of the HS-33 headset. A representative curve of these units is shown in *Fig. 1*. The headset lends itself ideally to conversion as an excellent, almost indestructible, communications microphone at extremely low cost. We have affectionately dubbed our utility mike the "R5."

Variation of impedance and effect of the transformer show a response as a microphone as shown in *Fig. 2*. It will be noted that 200 to 4000 cycles with the 30K shunt presents a response curve which is about ideal for voice communications and particularly for rugged duty in a ham rig. If one wants a rising characteristic, the 30K resistor may be omitted. This also increases the sensitivity about 6 db.

After obtaining the receiver characteristics,

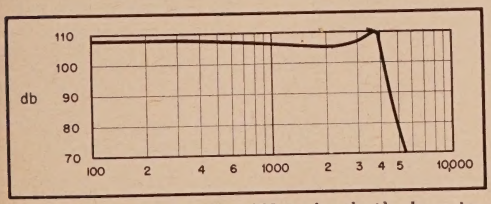


Fig. 1. ANB-H-1 (part of HS-33 headset) characteristics as earphones.

much spare time was spent in trying transformers and locating a suitable housing to make a microphone. In addition, screening to cover the "business end" of the mike had to be secured, and, of course, a good length of mike cable.

Two surplus "ouncer" type transformers were tested. A standard carbon microphone mike-to-grid transformer does a good job of it but was too large for the housing.

The ANB-H-1 units are designed to be 300 ohms at 1000 cycles. Locally,[1] a surplus transformer marked PC 77368, costing about 30 cents, and tagged "7 to 7000 ohms", shown in *Fig. 3*, was found to be by far the best tried here. Undoubtedly there are other types available elsewhere. It appears that an impedance ratio of 1000 to 1 is a good target to start with.

The mike units are shown in *Fig. 4*. There are several makes in addition to the one originally designed by Western Electric—Shure and Best, for example. All are carefully adjusted to rigid specifications. The mike cases used to make the microphones have been the small condenser-type can made for door chime resonators which are cadmium plated and have covers.[2] The larger can was a sample for use with radio components from a local can manufacturer. One may use i.f. cans, condenser cans, and, in fact, one chap is planning to use a "cat food" can. Ferrous cans are preferred.

Assembly is quite simple. Remove the microphone unit from the receiver case by the use of a small "knob" screw driver, if the whole receiver is too large to fit inside the can. Remove

1 Radio Shack, 167 Washington St., Boston, Mass.
2 Wm. J. Murdock Co., Carter St., Chelsea, Mass.

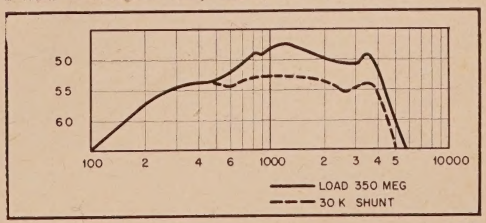


Fig. 2. ANB-H-1 unit as microphone with model PC-77368 transformer. Zero level equals 1 volt/dyne/cm^2.

*24 *Orient Ave., Melrose 76, Mass.*

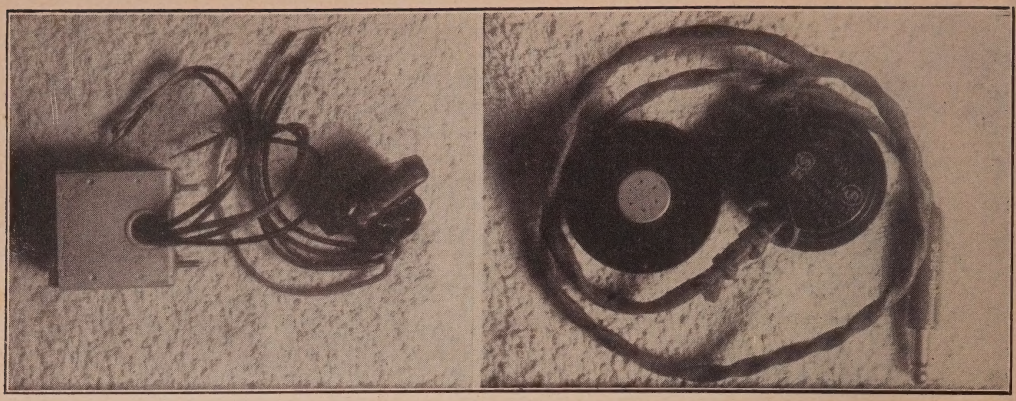


Fig. 3 (left). Model PC77368-C Surplus transformer marked "7 to 7,000 ohms" and unmounted transformer. Fig. 4 (right). ANB-H-1 units (part of HS 33 headset) from which "R5" mike is made.

the transformer from its square case. Prepare the mike container by drilling a cable (and grommet) hole. This may be done at the side, as shown in the drawing of the completed "R5" microphone in *Fig. 4*. This is a good time to figure on mountng, if desired. Most of the mikes, however, are hand held and used for close talking. A second hole was added for bolting on a ground lug. The mike cable is usually run into the mike case through a grommet and connections made as shown in *Fig. 6*, which appears to give best results. It will be noted that there are five leads from the PC 77368 transformer. The plain yellow was not used in any of these units. After connecting, taping, and testing, the transformer was wedged or bolted in first and then the ground lug connection was bolted in place.

Electrician's rubber tape was used to build up the diameter of the microphone unit to fit the case snugly. Usually some backing is needed to prevent this unit's sliding too far into the case. The grill was held by the filed-out cover. With the latter in place the "R5" mike is complete as shown in *Fig. 7*.

It is known that the ANB-H-1A unit also makes an excellent microphone. But the high frequency response has been extended slightly. And a unit marked Type CW 49505 for aviation helmets is very similar to the ANB-H-1 in characteristics. And last but long neglected—the HA-4 receiver unit, which is the companion of the famous F1 handset carbon microphone, and does an excellent job. This unit, however, is not so well shielded magnetically as the ANB series and is much more sensitive to picking up a.c. hum.

Accidental dropping will just humor the mike. It might dislodge the transformer but the Alnico magnets and rugged unit have suggested that the "R5" mike will come in handy as a tack hammer. R.F. and a few volts of d.c. would have to be of giant proportions to damage it. Little trouble should be expected from severe abuse. The output level shows that, except for the ultra high level crystal microphones, the "R5" mike is average—and more sensitive than a sound cell crystal, for example.

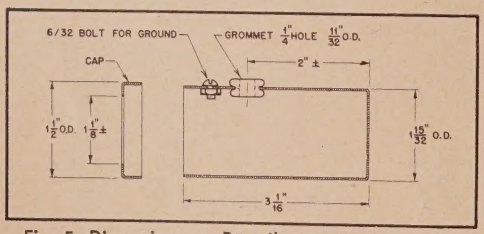


Fig. 5. Dimensions on R5 mike can and assembly.

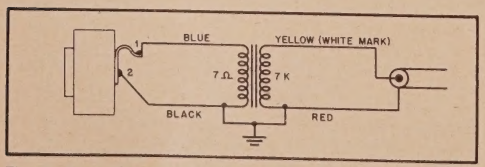
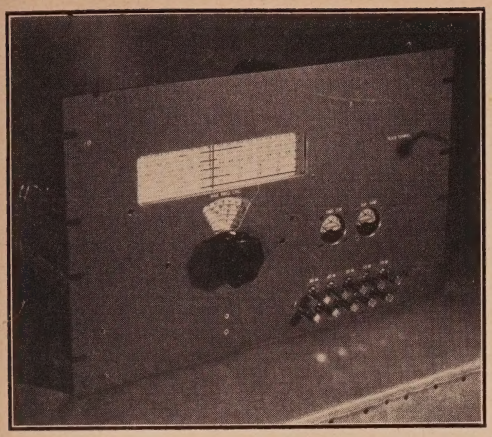


Fig. 6. Typical microphone and transformer connections.

Postscripts

All-European DX Contest

The third All-European DX Contest, sponsored this year by the Czechoslovakian Amateur Radio Society, CAV, will be held during these periods: C.W. section: Nov. 26, 1949, 0001 GMT till Nov. 27, 2400 GMT. Phone section: Dec. 3, 1949, 0001 GMT till Dec. 4, 2400 GMT. European hams will be calling other continents by CQ AW (CQ All World). Stations outside of Europe will use CQ EU (CQ Europe). Contest rules have been sent to amateur radio societies throughout the world. If you wish a copy write CAV, P. O. Box 69, Praha 1, Czechoslovakia.



A Man-Size All-Band Exciter

DON GOOD, W6EZP*

A VFO exciter capable of well over 100 watts output on all bands from 3.5 to 30 Mc., featuring really deluxe construction and a wealth of mechanical ingenuity.

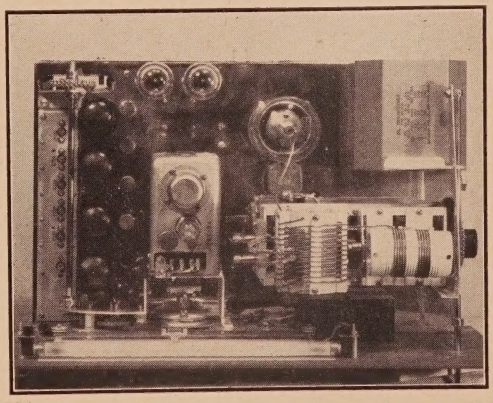
COMMAND SETS used as VFOs at W6EZP had functioned faithfully for several years. Their tendency toward drifting and the uncertainty of the calibration, however, made band edge operation out of the question. We were convinced that a super deluxe exciter to do everything but wake us up and boil coffee was in order.

The requirements of the new exciter were easily set forth. Band changing must be done with one switch. Zero beating our signal with a received carrier must be of the "non-swish" variety. The stability and calibration accuracy of the oscillator had to be of such quality that we could chase an AC4 to the edge of the band without getting a pink ticket.

Our final amplifier uses a pair of surplus 304TLs, which established the output requirement of the exciter to be about 100 watts. The unit herewith described is the result. From the chrome plated chassis to the unusual "see-saw" mounting of the final tank circuit, everything has been tailored for ease of operation and dependability.

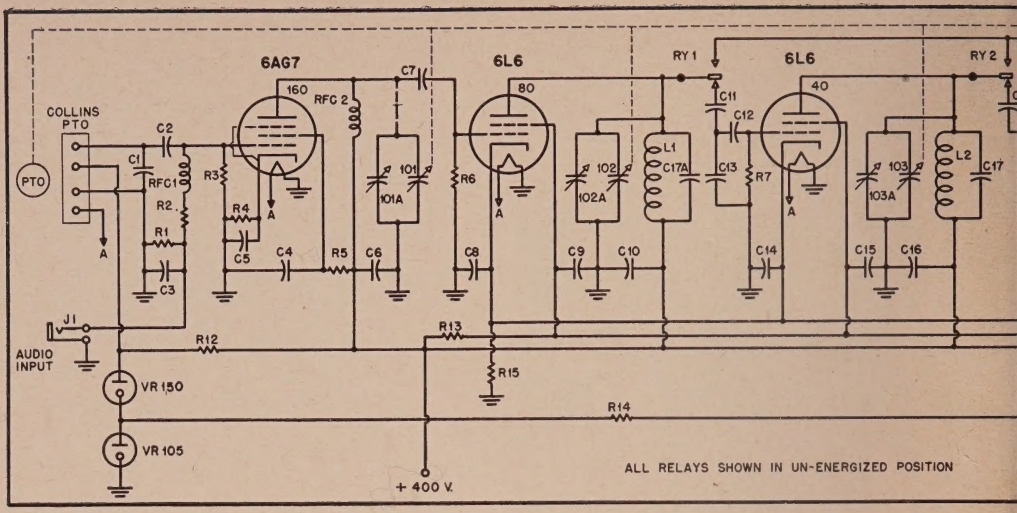
As shown in the circuit diagram, the rig consists of a Collins 70E-8A permeability tuned oscillator, a 6AG7 buffer, and four 6L6 band switched doublers driving a 4E27 amplifier. The six-gang tuning condenser, slug-tuned coil forms, band change relays, and the mechanical push button assembly were taken from war surplus equipment. Although the surplus parts are convenient and inexpensive, they may be replaced by standard catalog-type components.

Now for the construction. Looking at the top view, the Collins PTO and its attendant dial mechanism is mounted to the left of the center of the chassis. Immediately to the left of the oscillator and nestled against a gear case (about which more will be said later), is the 6AG7 buffer stage. The 6L6 frequency multipliers are located in a line near the left-hand edge of the chassis. An aluminum plate along the left edge of the chassis supports the condensers that trim the multiplier stages. At the rear of the trimmer condensers is a sprocket gear that drives the multiplier variable tuning condenser located below the chassis. The shaft and sprocket are driven from the PTO control through a gear train. All of this gearing, shafting, and chaining may appear at first glance to be something of a nightmare. The only requirement, however, is that



Top view, illustrating the clean layout.

*1014 Fair Oak Ave., South Pasadena, Calif.

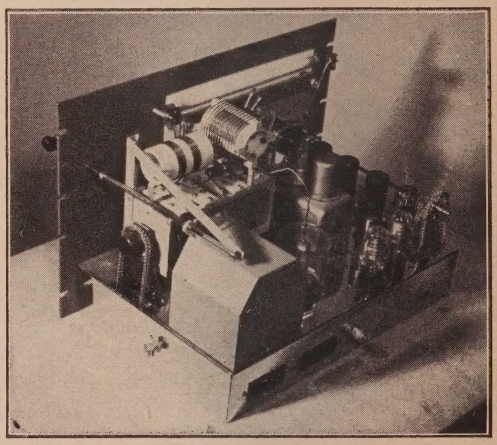


C1——47 μμf, 600 v., ceramic.
C2, 7, 11, 12, 18, 19, 24, 25, 30, 31——240 μμf, 600 v. ceramic.
C3——1000 μμf, 600 v., ceramic.
C4, 5, 6, 8, 9, 10, 14, 15, 16, 21, 22, 23, 27-29, 32, 33——.01 μμf, mica.
C34, 35, 35A, 36, 37——.002 μμf mica, 1500 v.
C38——.002 μμf mica, 2500 v.
C17, 17A——600-volt ceramic. Adjust for best tracking.
R1——5K, ½ w.
R2——4.7K, ½ w.
R3, 6, 7, 8, 9——68K, ½ w.
R4——1K, ½ w.
R5——47K, ½ w.
R10——3K wirewound, 10 watts.
R11——.75-ohm wirewound pot., 75 watts (see text).
R12——5K, 5 w.
R13——2500 ohms, 10 w.
R14——12K, 5 w.
R15——300 ohms, 15 w.
R16——500 ohms, ½ w.

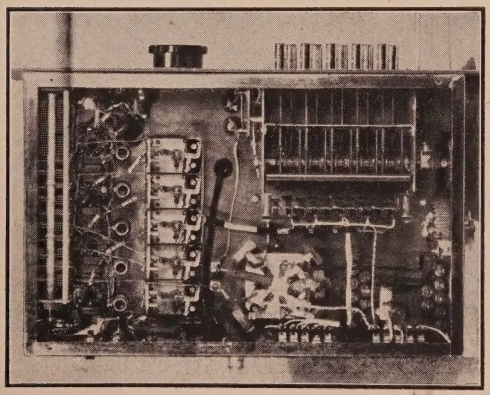
the multiplier tuning gang rotate 170° for full scale travel of the oscillator dial. Fortunately, a good stock of surplus gears was on hand. With this healthy supply of gears the right combination was simple to find. Any system of gearing may be used that will give the 170° rotation. The gear box was fabricated from sheet aluminum and brass spacers. The size and design will, of course, be determined by what is available in the junk box or local surplus houses.

Two VR tubes, which regulate most of the d.c. voltages, are located just to the rear of the PTO.

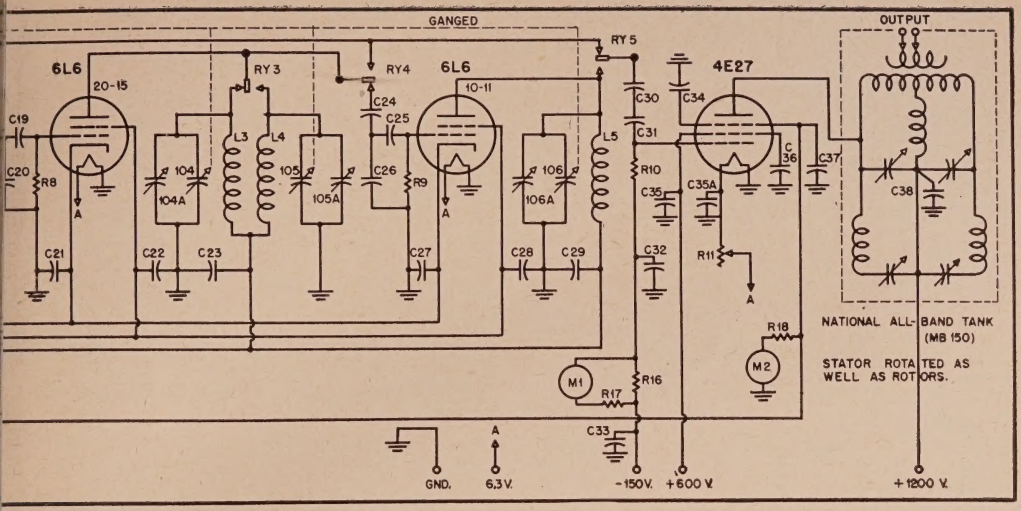
One of National's new all-band tanks, the MB-150, is mounted at the right of the oscillator. A filament transformer for all the tubes in the exciter and the 4E27 amplifier may be seen in the upper right-hand corner. The rod at the right end of the exciter is a toggle arrangement for rocking the stator of the MB-150 tank assembly. This pro-



The rear quarter view presents a really "commercial" aspect.



Looking at the bottom view isn't too appalling, is it?



R17——270 ohms, 1/4 w.
R18——33K, 1/4 w.
RY1, 5——see text.
L1——3.5-Mc. doubler coil. 37 turns #26 enamelled, .85" long.
L2——7-Mc. doubler coil. 28 turns #26 enamelled, 1" long.
L3——14-Mc. doubler coil. 20 turns, #26 enamlled, 1" long.
L4——21-Mc. tripler coil. 15 turns, #26 enamelled, 1" long.
L5——28-Mc. doubler coil. 10 turns, #26 enamelled, 1" long.
(All coils wound on 1/2-inch diameter form.)
RFC 1——2.5 mHy., r.f. choke.
RFC 2——same as RFC 1. (If tuned circuit is desired here, should be wound to resonate in 3.5-Mc. band with capacitor section 101.)
J1——audio input jack.
NABT——National MB-150 All-Band tank.
PTO——Collins 70E-8 permeability-tuned oscillator.

vides a vernier tuning control of the 4E27 amplifier plate circuit. The rotor of the MB-150 is provided with a sprocket and chain that is clearly visible in the rear quarter view.

Don't worry about those chains! The bottom view shows where they go. In the left bottom corner are the sprocket and chain that drive the multiplier tuning condenser. The multiplier tubes, with their associated coils, are lined up to the right of the tuning condenser. Next in line is a series of relays which serve to put excitation on the right grids at the right time. The schematic diagram shows the circuits that are switched by these relays. Operating voltage is applied through contacts on the mechanical push button assembly.

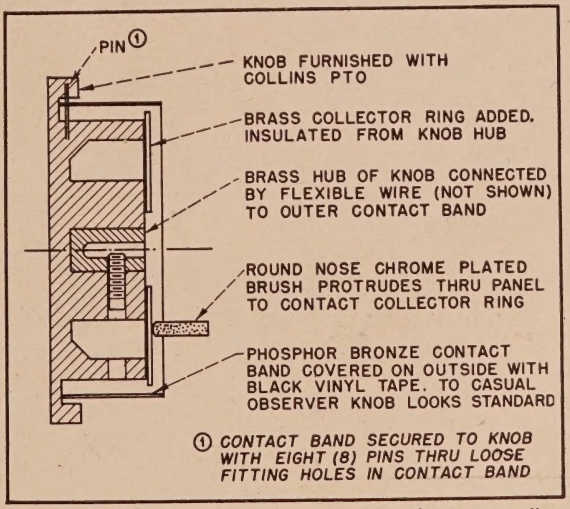


Figure 1: The mechanical reworking of the knob originally supplied with the Collins 70E-8 PTO.

At the upper right-hand corner we see the mechanical band change switch with a sprocket and chain driving the MB-150 tank assembly. It was taken from a BC-604D and is similar to those assemblies found in many broadcast sets. These mechanical selectors serve normally to position a shaft to any of a number of preselected settings.

The operation of the push buttons is quite simple. If the 80-meter button is pushed, two things are accomplished: (1) The rotor of the MB-150 is positioned in accordance with the mechanical setting of the mechanism. (2) The contacts behind the push button cause the proper relays to be actuated to apply excitation to the 4E27 grid on 80 meters. As each button is pushed, the rotor of the MB-150

is properly positioned for the predesignated frequency and, simultaneously, the proper relays are actuated. The unit illustrated has ten push buttons. Two push buttons are used for each band, one each for the lower and upper frequency portions.

The positioning of the MB-150 rotor shaft by the push button is only approximate. This is where the "rocking horse" mounting of the MB-150 and the control shaft which actuates it come in. For example, the push button sets the rotor to the lower half of the 20-meter band. Then fine tuning to the exact frequency is achieved by manipulation of the rod extending through the front panel.

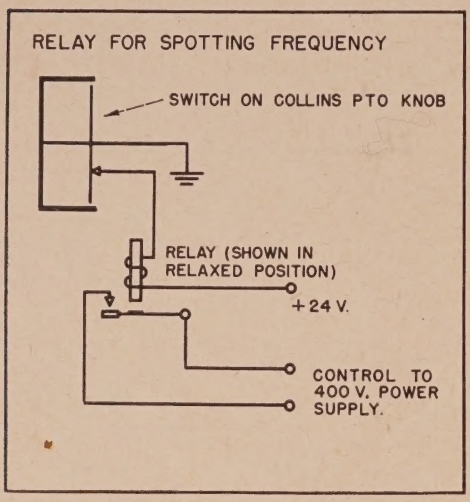
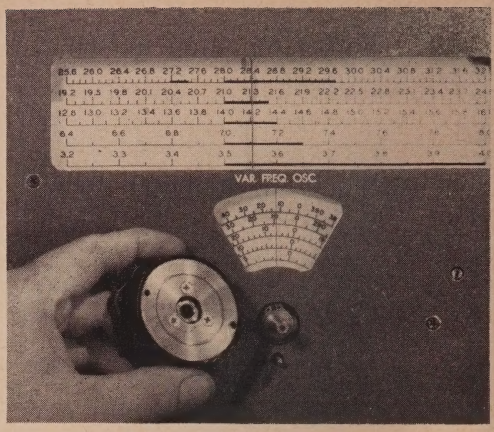


Figure 2: The electrical details of the "non-swisher."

Mounted on the right-hand end of the chassis is a filament rheostat. This was necessary in the original model because the transformer (surplus again) did not provide a 5-volt source for the 4E27 filament. This rheostat can be omitted if an



A closeup of the reworked PTO knob, showing the contact finger protruding through the panel.

appropriate filament transformer is available.

The exciter itself is a beautifully clean looking piece of equipment, as can be seen from the front view. The miniature meters were found to be necessary when using an 11-inch deep chassis. If a 13-inch chassis is used, standard 2-inch or 3-inch meters may be mounted with room to spare. It was quite a job to cut the openings for the Collins tuning dial. Plenty of hacksaw, file and drawfile work was required, but the resulting cleanness of lines more than made up for the time which we devoted to it.

In order to make frequency spotting as simple as possible, the knob of the PTO was modified to act as a switch. This is shown in the closeup view and is in accordance with *Fig. 1*. The knob was reworked by turning the body down about ⅛" in a lathe. A band of phosphor-bronze, slightly larger in diameter than the "new" knob, was secured in place with eight pins. This band normally floats in a coaxial position when at rest. A

(Continued on page 73)

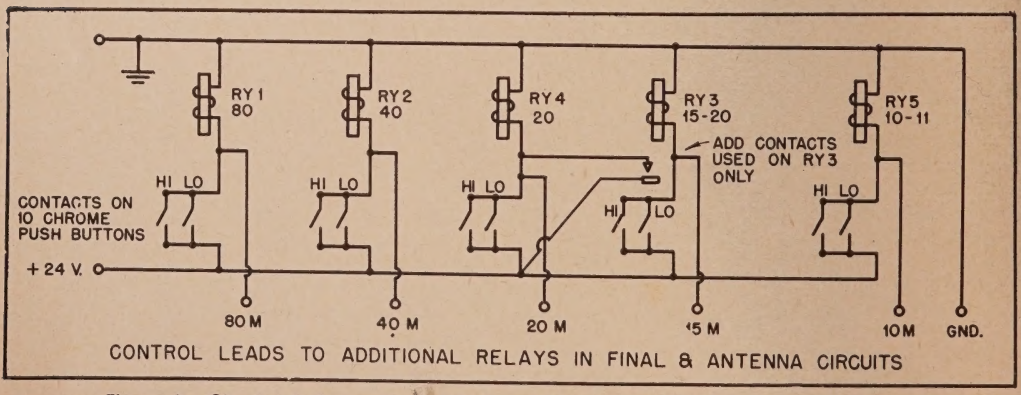


Figure 3: Circuit of the mechanical brain which changes bands at a mere thought.



Conducted by LOUISA B. DeSOTO, W2OOH/7*

IN THE LAST ISSUE we said that by the time you read that column we'd be out in Arizona awaiting a W7 call. Well, we did reach Arizona—after some 3,000 miles of traveling—and we're still awaiting that W7 call. But now we'd like to back track a little and let you share a few of our rag-chews en route.

Left to our own devices we'd like nothing better than to spend all of our time traveling and visiting ham shacks. But since we had a schedule to meet, we couldn't stop as much as we'd have liked. First leg of the trip took us down over the Skyline and Blue Ridge Drives in the mountains of Virginia—that was one time when we *really* wished we'd been able to operate mobile. After a couple of days taking in New Orleans (including a "hot" Dixieland jazz band playing the real Basin Street "blues") we headed west, with San Antonio the first stop.

Holding the enviable position of being the only licensed YL in San Antonio is W5KQG, Frances Hollifield. Frances came to Texas twelve years ago and has been in San Antonio for the past four. She got her ticket ten years ago but following the war shutdown didn't get on again until last November. Then, to make it really worthwhile, her OM gave her a Collins 32V1 (now modified to 32V2 since S.A. is soon to have its first TV station!) and an NC 183 receiver. Unfortunately, her OM didn't have a chance to share it with Frances, for in January he joined the Silent Keys. Ray had built up a large two-way radio business providing sales, installation, parts and service in sixteen counties of Texas. We take our hat off to Frances, for she is carrying on this business herself, with the help of W5OHV and other local hams. They are giving her a hand, too, getting a new 3-element 10-meter beam so she can get back on the air. Her shop is in her home, with the radio gear in the background, so when business and family duties (she has a 14-year old jr. op) permit, W5KQG will be looking for some QSOs.

On across Texas—took us another two days to make it, but we now appreciate why Texans are so proud of their state—to El Paso. Could find no YLs, so contented ourselves with a trip across the border to sample tacos and tequila and hear some genuine Mexican "marachis."

It was only a short hop from there to Douglas, Arizona, where we had instructions to "look for a 10-meter beam as you come into town." What an FB landmark! It belonged to W7PBD, who turned us over to W7KAE, Lily May Hester, who had written, "Come and stay as long as you'd like." Located on the edge of Douglas, only six blocks from Old Mexico, W7KAE gets out beautifully running a kilowatt into a 60-foot 4-element beam, and receiving on an NC 101X receiver preceded by her OM's version of W1HDQ's converter. W7KAE's OM, W7KAD, operates a radio service business, so Lily May has no problem for a station engineer. Though the OM has been licensed since 1933, it wasn't until 1941 that Lily May became sufficiently interested to work for her ticket. They had moved to Hurley, New Mexico, where Lily May had few friends and "nothing to do" (except care for her jr. YL), so decided to investigate "this thing" that had made her more or less of a ham widow. She and a friend, Amelia Doty, began studying, practicing code together every afternoon. Both came up with their tickets—Lily May as W5JZQ and Amelia as W5JXL. A side light: Wayne gave Amelia her Class C exam, but wouldn't give it to his own XYL—Lily May had to go to Douglas, where W7DFE put her through the paces! Moving back to Douglas in 1942, as W7KAE she has been very active on ten, especially at the end of the war when she and W7KAD handled much urgent traffic for the boys out in the Pacific. Now her special pleasure is a daily

(Continued on page 76)

*Associate Editor, CQ. Send contributions to L. B. DeSoto, Verde Valley School, Sedona, Arizona.



Arizonans all, these YLs attended the Tucson Hamfest held September 4th. L. to r.: W7NQG, W7KAE, W7KOY, W7RIJ, W7LIZ, W7ORD.



Conducted by HERB BECKER, W6QD*

This month's Column is by Andy Elsner, W6ENV, pinch-hitting for W6QD

LET'S SPREAD out the welcome mat for these newly certified members of the WAZ Institute.

143	VK3CN	C. Harrisson	40	167
144	W6CIS	Kenneth E. Hughes	40	170
145	W6HX	Ted Gillett	40	190
146	W6PUY	Gene Real	40	160
147	W5KC	Vincent L. Rosso	40	191
148	W7KWA	W. O. Harms	40	98
149	OK1CX	Karel Kaminek	40	144

No introductions seem necessary with this group. We hear them all and know the rest of you do too. After all, you can't work 40 Zones with just a receiver. Our sincere congratulations to each of you, and best wishes for continued DX.

Next in order are a few thousand words from the boss man of this column, Herb Becker, who is *not* at the moment struggling to work a few thousand new countries.

Dear Andy:

Since you're stuck with the column again this month, I will act more like a contributor. What I have to say is about the stand ARRL has taken with the LU1ZA-South Orkney and Newfoundland/Labrador situations. It seems too bad that two groups of American people can't arbitrate a situation and come up with an answer suitable to both. However, since *QST* in September published their stand on LU1ZA, I feel that maybe we should print something about it.

In the first place, they use Rule No. 7 of the DXCC rules as the basis for their decision. Just in case some of the fellows haven't read Rule No. 7, here's what it is:

No. 7. "In cases of countries where amateurs are licensed in the normal manner, credit may be claimed only for stations using regular *government-assigned* call letters. No credit may be claimed for contacts with stations in any countries in which amateurs have been temporarily closed down by special government edict, where amateur licenses were formerly issued in the normal manner."

There is nothing too obscure about this rule. Unfortunately, however, it appears to me that the League hasn't consistently adhered to this Rule No. 7 in allowing credit for DXCC. Since they won't allow credit for cards from LU1ZA, how about ET1IR? He was under cover, sent cards, received cards, and many boys received DXCC credit for Ethiopia when actually he wasn't licensed. Yet, Ethiopia licensed other stations . . . . for example, ET3AB. While I am in the mood, I might as well mention HP4Q. This station was not licensed, and yet there was a legally licensed station in Panama, HP1A. Nevertheless, cards were accepted for DXCC credit from HP4Q. Then ZP3AW, as we all know, was not legally licensed, and Paraguay does issue licenses. Here again, the boys have been getting DXCC credit for ZP3AW.

It would seem to me that as long as they have Rule No. 7, they should abide by it impartially. What surprises me is that in the past they haven't adhered to it, and then, all of a sudden up pops LU1ZA, which they refuse to recognize. It might be that I am overlooking something, and if so, I would like to have it explained, since there are a great number of other Hams who can't figure it out either. We do not have any Rule No. 7, but since we are convinced that these stations are located as claimed, we are allowing LU1ZA to count as the South Orkneys, as we have also allowed ET1IR, HP4Q and ZP3AW. At least, with the latter three, we're in agreement with ARRL.

September *QST* also announced the deletion of Newfoundland and Labrador as a country, effective as of April 1, 1949. This is when it became part of Canada proper, losing its legal identity as a country; however, ARRL is still allowing contacts prior to April 1, 1949, to count as a country. For DX competition purposes, we of *CQ* took the stand that we should delete this country from all postwar lists instead of only disallowing it after April 1, 1949. The reason for this was to leave all DX country totals on the same comparative basis. Some might say it is unfair after a fellow has gone to work and salted away Newfoundland to have it taken away from him. As we see it, if many other countries fell by the wayside, and we continued to count the countries for those who had worked them, and of course they couldn't be worked by the newcomers, then we would never have country totals on a comparable basis. For example, Andy, you might tell me that you have worked 220 countries, and I would ask, "Is that with or without Newfoundland?" Then as a few more countries fell by the wayside as time marched on, we would have a heck of a job trying to compete on an equal basis. Practically everyone I have spoken with feels the same way.

If you have asked, "If we delete Newfoundland from all country lists, why shouldn't we then give credit to the boys who at one time worked a ZC6 in the territory which later became the State

(*Continued on page 42*)

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

W. A. Z. HONOR ROLL

CW & PHONE

WAZ

W6VFR	229
W2BXA	224
W6EBG	224
W6ENV	224
W3BES	221
W3GHD	221
W6ADP	218
W6GRL	217
G2PL	216
W6PFD	216
W6ITA	214
W6MEK	213
W8BHW	211
G6ZO	211
W6SN	211
W6SAI	210
WØ[illegible]XO	210
W2AQW	208
W8HGW	208
W3LOE	207
W4BPD	206
W6FSJ	205
VK3BZ	205
W6TT	204
VE7ZM	204
W6MX	202
W3EVW	202
W7GUI	202
W7AMX	201
W6MJB	201
W[illegible]KOK	200
W4CYU	199
W6DI	199
ZL1HY	199
W6OMC	198
W6SYG	198
W2IOP	197
W6MVQ	197
PY1AJ	196
W9VW	195
LU6DJX	195
W6NNV	195
W6GAL	193
VE7HC	193
W6AVM	192
W6RM	192
W3PKO	192
W6ZCY	191
W5KC	191
ZS2X	191
VK2DI	191
W6DZZ	191
W6HX	190
W6AM	190
WØNTA	188
VE4RO	186
W6AMA	186
ZL2GX	185
W2CZO	185
W6PB	185
W6SA	184
W6UCX	184
W6RBQ	183
W6AOA	181
W6PQT	181
W6KRI	181
W6SRU	181
W6SC	180
VK2ACX	180
W6RW	179
W6TI	173
CE3AG	178
W7DL	177
WØUOX	177
CX1FY	176
W1AB	175
W6PCS	174
W6WKU	174
W7FZA	174
W6TS	174
W6TZD	173
G5YV	172
OK1LM	172
LA7Y	171
W6CIS	170
W6BAM	170
KH6BA	169
W6DLY	169
W5AFX	169
ON4JW	169
W6RLN	168
W6ANN	167
W6GDJ	167
W6UBA	167
W6EFM	167
VK3CN	167
W6PZ	166
W6DUC	166
G3DO	166
W6UZX	166
W8SDR	166
KH6MI	166
W6EPZ	162
W6KUT	161
KH6IJ	161
W6IBD	161
W6PUY	160
W7BD	157
W7BE	156
W6BVM	155
W6BAX	155
G3AAM	154
W6KEV	153
W6BPD	152
WØOUH	152
VK2QL	151
W6LRU	150
I1IR	150
W6LEE	150
W6FHE	150
W6PH	150
OK1FF	148
W7DXZ	146
W6AYZ	146
W9NRB	145
W6MUC	145
W6QD	145
W6LER	145
W6LN	145
ON4TA	144
W6LDD	144
OK1CX	144
JA2KG	143
W6WWQ	142
W6CEM	136
G3AZ	133
W6TEU	133
W6RDR	133
W6MHB	130
W6YZU	129
W7GBW	127
G8IP	127
G5BJ	126
PK6HA	124
W6NRQ	123
W6MLY	123
W6BIL	115
W7KWA	98

39 Zones

WØNUC	211
W2PEO	208
W2HHF	203
W8NBK	203
W9IU	202
W9ANT	202
W4AIT	201
W2HZY	200
W2NSZ	199
W9RBI	199
W2GWE	195
W6OEG	195
W3KT	194
PY1DH	194
F8BS	194
W1JYH	191
W3JNN	191
W3DPA	191
W8JTC	191
W1BIH	191
W3EPV	191
W1ENE	190
W2CWE	190
W3DRD	183
W4GG	183
W8RDZ	184
W4INL	183
W3OCU	181
W5ASG	177
W1ZL	176
I1KN	173
W3DKT	173
W6IFW	172
WØSQO	171
W9LNM	170
W2EMW	170
W1NMP	169
W3JKO	169
VO6EP	168
W2CYS	167
OK1VW	167
KH6MI	166
W8LEC	166
W2CNT	166
W4DKA	165
WØDU	165
W9MXX	164
W9VND	164
W6EAK	163
W3KDP	162
W4BRB	162
G5DQ	160
W9LM	159
WØGKS	158
W4OM	158
WØAIW	157
G8KP	156
W2WZ	156
W9YNB	155
WØEYR	153
G6QR	152
W2RDK	152
G2AJ	151
W9FKC	150
W4VE	150
SM5WI	148
DL2KW	147
G2WW	147
W2COK	146
W2GUR	146
W2MEL	145
W6BUD	145
W6JZP	141
W9DUY	140
G6BQ	140
G3FJ	139
W2BJ	138
W8VLK	137
W6EHV	136
OK1AW	135
W6ID	135
W6BZE	134
W9TQL	135
OK1CX	133
KH6PY	132
G2VD	132
W8WWU	132
G5RV	132
WØOUH	131
VK4RC	131
W6LGD	131
W6RLQ	130
G2FSR	130
W5CPI	130
VR5PL	124
G5VU	124
G3AAK	122
GM3CSM	121
G8RL	120
G5WM	120
W7BTH	120
W6MUF	118
DL3DU	118
G6BS	117
W6NRZ	117
G3QD	116
W7ETK	115
G3TK	114
W7HXG	112
W7ASG	110
W7GXA	105
KG6AL	104
W6LEV	103
W7ENW	101
W6WJX	101
W6AX	93

38 Zones

VE3QD	190
W2PUD	180
KP4KD	168
CM2SW	167
W8KPL	166
W8IYE	161
W8FJN	160
W6CTL	148
W3LVJ	145
W8CVU	141
W2WZ	138
TF3EA	137
W9FRH	135
W4FPR	131
G8IL	131
G5CI	130
W2PQJ	130
W3ZN	129
G6LX	126
W9MZP	126
GW3AX	123
W9TB	122
GW4CX	120
W6ATO	117
W7EYS	107
G3ZI	107
W6VAT	107
C1CH	84

37 Zones

W2HMJ	173
W1KFV	168
W2ZA	160
W2RGV	149
W4IWO	146
W8EYE	142
W3WU	142
W4ML	135
GM2UU	133
W2AYJ	133
W9TQL	129
WØAZT	129
W4DIA	129
W9ABA	128
W3FYS	119
G4CP	117
VE1EA	116
WØFET	115
G4AR	108
W8HSW	104
W7PK	104
G5MR	100
W2BLS	99
G3AAE	99
KL7PJ	98
W2SGK	95
KL7KV	88

36 Zones

W4LVV	147
W4HA	147
W2GVZ	138
OA4AK	128
HC2JR	125
W3AYS	124
W2WC	124
WØRBA	122
SV1RX	119
MD5AK	118
DL1DA	116
W2BF	115
G2CNN	114
ZS2AT	114
G2AKQ	112
W5CD	108
W2JA	102
G2AO	100
W5BK	99
G6WX	95
GM2AAT	75

35 Zones

W4RBQ	138
W8ZMC	137
W4DHZ	132
W1BFT	130
VE3AAZ	130
W9WCE	130
W9CKP	122
W9RQM	119
CO6AJ	119
W9FNR	112
W9LI	118
VE3ACS	117
W6ZZ	114
W8AVB	112
VE1PQ	111
FE8AB	107
W2HAZ	106
VE5JV	103
WØGBJ	101
WØFWW	99
W6ETJ	95

34 Zones

W4IYT	127
W1MRP	104
W8JM	89
W9WEN	83
W8PCS	80

33 Zones

W4QN	110
W2SEI	100
OE1FF	91
W8QUS	85
KH6VP	83

32 Zones

VE3AGC	107
W2OEC	105
G6QX	102
VE1NE	98

30 Zones

OK1WY	103
ZL1QW	82

PHONE ONLY

39 Zones

W6DI	187
W6VFR	164
HB9DS	145
W7HTB	143
VE7ZM	140

38 Zones

W2BXA	171
W4CYU	170

37 Zones

XE1AC	176
W1JCX	170
W8REU	163
W9RBI	162
G2PL	154
W6PXH	150
W6WNH	150
W8BF	146
G3DO	144
W3JNN	136

PHONE ONLY

W1HKK	136
W6KQY	135
W6TT	133
G6LX	124
G2AJ	121
F8VC	115

36 Zones

W1NWO	163
W3LTU	156
W1MCW	152
W7MBX	144
W9HB	139
W4ESP	136
W2D	135
W9BZB	130
W4INL	129
W1FJN	128
GM3UU	127
G6BW	127
VE3BNQ	108
G5YV	106
G6WX	105
W6AM	104
W3DHM	96
W6SA	92
F8DC	87

35 Zones

VK3BZ	151
W4HA	136
W6PCK	129
W6CHV	128
G8QX	123
W2GHV	118
G3FU	115
W9CKP	114
W5LWV	108
W4OM	106
W3PA	105

34 Zones

W8BIQ	120
W2RGV	118
W8ZMC	118
W6UZX	113
W9MIR	113
WØEYR	112
W4LZM	109
W1BPH	105
W8UIG	100
W4IWO	99
W8QBF	92

33 Zones

W9RNX	126
W5ASG	119
HC2JR	115
W2ZW	115
W5ALA	112
WØANF	112
W4LZM	109
WØHX	107
WØANE	106
VE3ZM	100
W2PQJ	100

32 Zones

W9MIR	113
WØEYR	112
W9WCE	111
W8BFQ	101
WØSQO	95
W1BFB	94
WØAIW	93
W2HY	85
W2SVK	84

31 Zones

W4BA	106
W9CZC	100
WØPUE	95
W1MRP	89

30 Zones

WØUYC	88
OA4AK	86
W7JUO	80

Monthly DX Predictions - Nov.

OLIVER PERRY FERRELL*

THE MONTHLY DX PREDICTIONS are based upon the following parameters:

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

The values used in computing the maximum usable radio frequencies were obtained from "Basic Radio Propagation Predictions for November, 1949" (CRPL Series D-60).1 Calculation of the optimum working frequencies (FOT) for radio amateur communication was according to the methods shown in "Ionospheric Radio Propagation" (NBS Circular 462).1 Additional material that appeared in the November 1948 issue of CQ was also used.2

East Coast to India, Burma and Tibet

40 meters: Although conditions still largely depend upon auroral zone absorption and ionospheric storminess, on quiet days3 the band will probably open around 1745 SET. Signals are not expected to be strong and may be under both QRN and QRM. However, don't be surprised to hear signals across this path between 1800 and 1915 EST. The band will drop out around 1915 EST as the signals deteriorate very rapidly. **20 meters:** There will probably be two very distinct and very good openings this month. The first will start suddenly between 0630 and 0645 EST. Signals should be quite strong with phones readable on quiet days.3 Signals will start to drop off after 0830 EST with the last c.w. going out around 1000 EST. The second opening should be equally as good as the first. It will start suddenly with very strong signals around 1945 EST. Phones should be readable through 2200 EST. Last c.w. will probably go out just before midnight on the average day. **10 meters:** Although the CRPL charts do not definitely show it, there is a good chance of some signals being heard around 0745 to 0845 EST. Watch the band particularly during the first part of the month.

East Coast to the East Indies

40 meters: This path subject to aurora zone conditions as in the one above. On some days towards the end of the month the band might be watched for possible DX from 0445 EST through 0715 EST. There is a good sign of a peak between 0545 and 0630 EST. Conditions favor this end of the path during this month. **20 meters:** The band is expected to open with strong signals around 0745 EST. Phones good and fairly steady until 1000 EST on quiet days.3 Last may hold until noon on exceptional days. Peak conditions from opening until 0930 EST. Possibly towards the end of the month this band may also open for c.w. between 1645 and 1800 EST. Openings are expected to be sudden and phones migt be readable during the first half-hour, or so. Last c.w. out after 1830 EST. **10 meters:** Watch the direct path between 1745 and 1900 EST. Sharp peak expected around 1815 EST with very strong signals.

East Coast to Japan

40 meters: Similar auroral zone conditions as above. Band may open with weak signals as early as 0300 EST. However, best period will extend from 0400 EST until about 0615 EST. Some improvement possible between 0530 and 0600 EST. Band deteriorates rapidly after 0715 EST with all signals out around 0800 EST. **20 meters:** On quiet days3 it is to be expected that c.w. will be audible, although not much above the noise from around 1600 EST until 0100 EST the fololwing morning. Conditions may peak between 1745 and 1900 EST and again between 2330 EST and 0100 EST. Closing should be sudden due to rapid decrease in the MUF. Closing preceded by very strong signals. **10 meters:** This month should be peak in working this frequency and path. The band on quiet days with average conditions will open over the direct route around 1630 EST. Signals should be exceptionally strong. Band closes very rapidly after 1815 EST. Peak 1715 to 1800 EST.

East Coast to South Africa

40 meters: Although conditions favor this end of the path we should start hearing their signals shortly after 1600 EST. A broad peak extends from 1800 EST until 2200 EST with readability depending almost entirely upon the background atmospheric noise. Band closes around midnight. **20 meters:** First c.w. breaks through in this direction shortly after 1300 EST. Phones become audible after 1500 EST. Peak conditions from 1830 until closing. The band is expected to be erratic in the closing, but on average days this should be around 2300 EST. **10 meters:** Particularly good month for this path. The band opens around 0600 EST with fair to strong signals. Strengths drop off slightly between 0800 and 1100 EST, however, shortly after 1200 EST a very noticeable increase in strength will be observed. Peak conditions from 1400 until closing at 1645 EST with signals getting better all the time.

West Coast to the Middle East

40 meters: First signals are to be expected between 1630 and 1700 PST. The strengths should build up and peak between 1815 and 2015 PST. Band closes slowly after 2030 PST. Conditions will probably be erratic at best and are subject particularly to ionospheric storminess.3 On the average quiet day the band will open suddenly just after 0600 PST. Conditions will be more or less uniform through this opening which should last until noon. Phones may be unreadable on the far end after 1000 PST. **10 meters:** On somewhat less than one half of the days during the entire month there should be a short opening between 0745 and 0845 PST. When open the signals should be very strong.

West Coast to Europe

40 meters: Starting just before 1600 PST the band may show signs of slowly opening. Signals will probably not be fair in strength until after 1815 PST. The peak is broad this month holding steady from 1830 until 2230 PST. Band slowly folds after 2300 PST with the last signals out just after midnight. Good idea to watch the WWV broadcasts.3 **20 meters:** The absorption across the polar regions due to solar ultra-violet light has dropped down and the band will probably stay open from 0545 PST through 1200 PST. Peak conditions 0600 to 0800 PST. Signal strengths subject to considerable variation, but no later opening is predicted under any circumstances. **10 meters:** First signals will pop through with very good strengths just before 0800 PST. Band should be steady on the average quiet day until 1030 PST. The closing time is erratic and will vary from day to day. Predicted closing time about 1045 PST.

West Coast to India, Burma and Tibet

40 meters: Far end of the path may experience some difficulty in working through the high atmospheric noise level and will thus limit the usefulness of this path. We may hear their signals after 0200 PST. Peak conditions should be from about 0415 PST until 0630 PST. Signals will deteriorate after 0700 and will finally go out after 0815 PST. Doubtful if they can hear anything

(Continued on page 75)

* *Associate Editor, CQ*

1 Obtainable from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.
2 O. P. Ferrell, "A New Method of Predicting Band Conditions," CQ, November, 1948, page 26.
3 Some assistance in ascertaining whether or not "quiet" conditions exist over this particular path may be obtained by carefully noting the WWV ionospheric storm warnings at 19 and 49 minutes after each hour. In these broadcasts the "N" stands for normal, or quiet conditions. The "W" stands for disturbed, or a forecast of disturbed conditions.



Conducted by E. M. BROWN, W2PAU*

With this issue of *CQ* a new name appears on your conductor's badge. We join the ranks of UHF reporters with considerable misgivings as to our ability to maintain the standards of excellence set by our predecessors in this job, the Conklins, and Vince Dawson. It is our fond hope that we will be able to report on the activities of all amateurs active on the "VHF-and up" bands without being accused of prejudice or bias. If we run across any tips on equipment design or operating practices which may be of interest to our readers, we will try to find room for them in the column. Fellows, this is *your* column. We want it to include news from all sections of the country—yes, even from all over the world, if this sort of thing doesn't come under Herb Becker's jurisdiction! With the DX range of most of our high-frequency bands being somewhat limited at this time we can't eavesdrop on the whole gang, so to accomplish our aim we must depend on your cooperation. Until we improve our techniques to the extent that I can QSO all you guys regularly, you'd better play safe and send in your contributions via the mails. The mail bag has been rather flat this month. It seems as though the news about the change in management has been slow in circulating. However, there has been enough going on within range of our receiver to provide material for a column, so here goes:

Top billing for performance and activity during the past few months must be awarded to the two-meter fraternity. While the six-meter band settled into its annual summer slump, at least in our northern latitudes, the two-meter band took over and provided plenty of thrills for its habitues.

Early in the season openings occured which brought reports of one-way transmissions in excess of 1000 miles. It seemed to be merely a matter of time before suitable conditions developed over a record-length distance with well-equipped and active stations set up on both ends of the path.

On the night of July 22 good conditions spread over the midwest section of the country like a blanket. The fringes of this blanket were tickling the east coast, for, in spite of the fact that no outstanding DX contacts were made, signals from 400 and 500 miles away were received by east coast stations. Literally dozens of QSOs were accomplished over distances which would have equalled or broken last year's record. The most fortunate station during this session seemed to be WØBIP whose signals were heard from as far away as Toronto, Ontario, by VE3AIB. His best two-way QSO was with W3CUM, at Butler, Pa. Chet, W2YT, portable at State College, Pa., is sure that he heard WØBIP just before running out of gas for his portable power plant. Chet is now considering wing-tip tanks for his trailer! The record as of July 23 stood at 794 miles—from Elliot, Iowa (near the western border) to Butler, Pa. (near Pittsburgh.)

Old-timers on the band shook their tired heads and commented that it must have been a once-in-a-lifetime opening and that the record would stand for years. The record, apparently, was fated to stand for less than two months. On the night of September 16 another opening developed, this one perhaps centered a bit farther east. Full reports have not yet been received as to the extent of this affair, but we know that sometime after midnight on Friday night, signals from W9-land were dropping into New Jersey. W2DAJ informed us that he was hearing stations in Illinois S6 on peaks. Doc added that his receiver isn't doing too well lately either, which indicates that it really must have been a hot opening. But the untimely hour found most of the W2 big guns tucked away between the sheets (or under the tables, a more likely assumption!). The boys to the south were on the job, however, and the climax to this evening's activity was a solid two-way QSO between W4JFV, Roanoke, Virginia, and WØEMS, Adair, Iowa. This distance has been checked as 833 miles based on the city-center spacing.

What Kind of Propagation?

We have heard considerable speculation as to the mode of propagation which has made these long-haul contacts possible. For a while it might have appeared that the ionosphere was playing an important part in returning signals to the ground far beyond the line-of-sight distance. When only a few spotty reports of long distance work were available, there may have been some justification for this idea. As a matter of fact, Perry Ferrell assures me that on at least one of these early-season two-meter breaks a very definite tie-in with intense Sporadic E activity on six meters was established. However, the more recent two-meter band openings do *not* seem to be the result of ionosphere disturbances. During the openings described above, the record-breaking stations were both heard at intermediate points along the path between them. Generally excellent propagation conditions prevailed over wide areas. Phone signals were not garbled. The polarization of the signals

(Continued on page 54)

**Associate Editor, CQ, Send contributions to E. M. Brown, 88 Emerald Ave., Westmont, N. J.*



Conducted by RALPH V. ANDERSON, W3NL*

WITH THIS ISSUE Mobile Corner becomes a permanent department to appear every other month with a regular editor. With limited time for preparation, this issue is not as complete as we would like to have it. By the next issue, however, with time available for organization, the column should emerge with a regular format. Lots of contributions will be required though, so let's have them, fellows. It is suggested that each mobile club direct its secretary to foward the name, address, operating frequencies, etc., of the club, plus any items of interest to Mobile Corner. Send in your reports of states or maritime mobiles worked. Who holds the 80-meter mobile DX record? How many countries has any mobile worked? Have you any unusual QSOs to report?

When you plan a trip don't fail to make a schedule with a fellow ham simply because you will be out of working range with him. Set a definite time and frequency (preferably the same frequency for both) for the schedule. Then, when you're on the trip, work a third station; he can quite likely hear your sked station, and since you know the time and frequency, contact can be established. Also, before you start on a trip, make a schedule with a KZ5 or a KP4 for a definite time each day. These fellows can work almost any part of the U.S. and are very willing to assist a mobile station. It's wonderful to be able to send ahead messages to friends and relatives and receive a reply the next day through the medium of mobile radio and fixed stations.

Your editor has just returned from a three-week vacation into Canada and the Midwest, and the trip was made much more enjoyable by mobile radio. One "sour note" of the trip, however, was the inconsistency in operating procedure. There is only one correct procedure—that specified by the FCC. It should be noted that *FCC Rules and Regulations, Part 12—Rules Governing Amateur Radio Service* (obtainable from the Government Printing Office for 15c in coin) the term "portable-mobile" does *not* appear. One wouldn't think of using the term "fixed-mobile," yet "portable-mobile" is equally inapplicable. You may be either mobile or portable, but not both. We still hear "W3ABC mobile 5" (purporting to mean a W3 operating in the 5th call area). *Part 12.82, FCC Regulations,* states (in part):

> When telephony is used, the call sign of the station shall be preceded by the words "this is" or the word "from" instead of the letters "de," followed by an announcement of the geographical location in which the portable or mobile station is being operated.

Example 4. — Portable or mobile amateur radio-telephone station operating in the third call area calls a fixed amateur station: W1ABC W1ABC W1ABC "this is" or the word "from" W2DEF W2DEF W2DEF operating portable (or mobile) 3 miles north of Bethesda, Md., over.

Note that the call area does not appear in the procedure, and note that the words "this is" or the word "from" *must* precede the transmitting station's call sign and that this call sign comes last.

Keep a record of maritime mobiles worked. Next issue will contain details of a certificate to be awarded for working them. W1AVY submits a list bringing his number of maritime mobile contacts up to 40. The maritime mobile boys recently presented DL4PN (Col. Tharp, USA, now in Washington) a gorgeous Ronson set in appreciation of his activities as a clearing house for them during the past two years. He sends his thanks through *CQ*, but will write each personally.

All operators please note: When you QSL a mobile station, please indicate he is mobile, perhaps by a slant and an M after his call. If possible, also give his location. Without this, the card looks like a QSL for the home station and isn't much good for claiming states and zones worked.

To the fellows who have trouble with sectionalized antennas slipping down: One manufacturer says that trouble is experienced only when the element is used as a radiator. R.f. anneals the springs which furnish friction to hold the sections extended. One remedy is lightly to center-punch the tip of each section to increase the tension.

Specs. on Your New Mobile Editor

Native of NE Kansas—Born 1909. Licensed September 1929—W9BWV. First operated mobile 1931-32 under call W9ZZW. Other calls held: W9DVG, W9NL, W9EHH, W3JRT, and W3NL. Member U.S. Naval Reserve since 1929. During war was assigned to Navy Department, CNO, Cryptographic Section. Released to inactive duty May 1946 as Commander USNR. Presently, Assistant Chief, Division of Cryptography, Department of State. Past President of Washington Mobile Radio Club. Member MARS and Organized Naval Reserve (Communications Division).

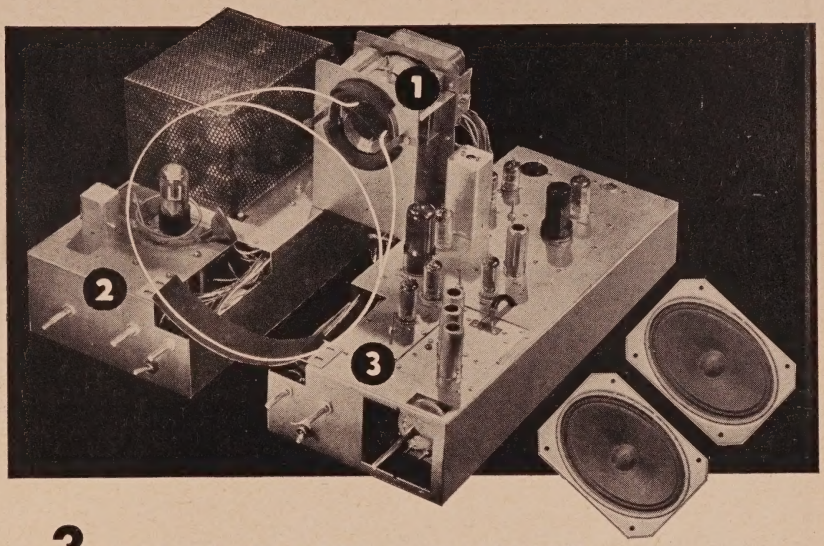
Pacific Division Convention

The 22nd annual ARRL Pacific Division Convention will be held in Reno, Nevada, on Oct. 29-30, 1949, the host club being the Nevada Amatuer Radio Assn. Pre-registration requests (until Oct. 5th) should go to P. O. Box 1003, Reno. Program will include open forum, Wouff-Hong, banquet, DX and VHF breakfast groups, hidden transmitter hunt, and prizes.

*Send contributions to R. V. Anderson, 2818 Que St., S. E., Washington 20, D. C.

1 2 3

NATIONAL TELEVISION chassis



3-UNIT DESIGN FITS ANY CABINET . . .

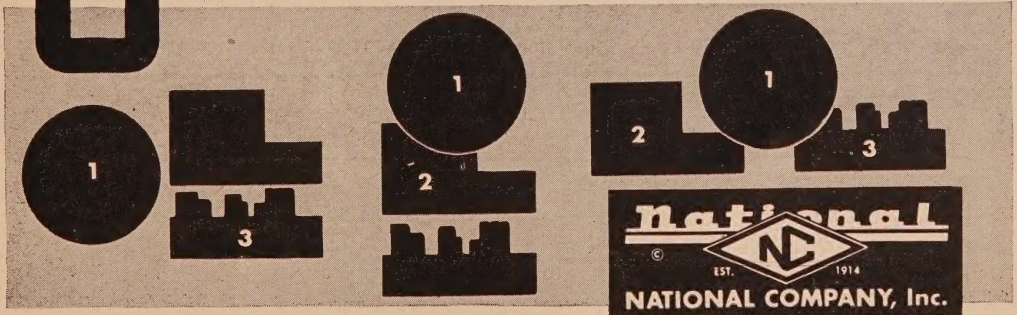
The most versatile television chassis yet designed! Three basic units — power supply chassis, RF chassis and deflection yoke assembly — may be placed side by side, one above the other, etc., to conform to any cabinet. Simply plug in the cable connectors. Each unit is soundly engineered and built to famous National standards of performance.

1. Choice of 10" (TV-10C) or 12½" (TV-12C) chassis. 2. Tunes all 12 channels. 3. Wired, pretuned and tested — not a kit. 4. RF stage employs tuned grid and plate for maximum gain and optimum band width. 5. Unique 36 mc IF minimizes interference. 6. Fine tuning control covers range of 2-3 mc. for maximum tuning accuracy. 7. Improved intercarrier sound. 8. Magnetic deflection and "flyback" high voltage supply. 9. 72-ohm unbalanced and 300-ohm balanced inputs. 10. Supplied with two six-inch PM speakers.

$149.50 *(less picture tube)*

Specify either TV-10C or TV-12C when ordering

All prices slightly higher west of the Rockies



National

© EST. 1914

NATIONAL COMPANY, Inc.

MALDEN, MASSACHUSETTS

SECOND EDITION *Now Available*



Television Interference
Its Causes and Cures

The revised Handbook by Radio Magazines, Inc., covers in detail the important facts of TVI. The TVI Handbook is edited to fill the pressing requirements of amateurs and other technicians confronted with the problems of TV interference, or otherwise unsatisfactory television reception. Included in its thorough treatment of causes and cures are a comprehensive set of TV screen photos depicting all types of reception, many case histories, preventive design data, and other equally pertinent facts. It is a vital publication for radiomen wherever TV is on, or about to go on the air.

Price 50c, plus 10c postage, or order from your local dealer.

CQ—Radio Magazines, Inc.
342 MADISON AVE., New York 17, N. Y.

Enclosed find $.....for.....copies of the TVI Handbook, Second Edition.

Name .....

Address .....

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

New hallicrafters Portable communications receiver . . .

MODEL S-72

$79.95



• All set to go places with you this summer. Extra *sensitivity* for weak signal areas . . . extra *performance* for good Ham operation.

The newest thing in portables, just introduced by Hallicrafters.

One r-f, two i-f stages. Range 540 kc to 31 Mc in 4 Bands. 8 tubes plus rectifier. AC, DC, or batteries.

See it at your nearest Hallicrafters distributor now.

the hallicrafters co.

4401 W. Fifth Ave. • Chicago 24, Ill.

Manufacturers of Precision Radio and Television Equipment

DX

(*from page 34*)

of Israel?" Personally, I see no comparison between the two situations, because, in the first place, you can't be given credit for a country until it actually becomes a country. But, more important is the fact that you can *now* work Israel, because it does exist as a country. In other words, in this case, no one is penalized, because the country is there to be worked, whereas Newfoundland is not.

As you know, we were in the midst of hashing these things over with ARRL when September *QST* published *their* stand on both situations. Apparently, the boys in West Hartford have decided it is good to collaborate as long as things go the way they want them. I hope it isn't true, but it looks like from now on in they will judge their DX problems independently, and we will continue to do what we feel is right for the DX man, when each situation arises.

I would like to have all the DX boys know that in coming to decisions on various and sundry country situations, the DX committee does not go behind any closed doors and make decisions without feeling the general pulse of the DX man. For example, in the above two described situations, as you know, most of the DX boys whom we have contacted feel as we do, and this more than ever makes me feel that I am right in printing this explanation.

Andy, it's all yours now. . . . I have had my six-bits worth, and thanks a lot for taking over. 73.

Herb

Maldive Islands

For those of you who have been champing at the bit for Maldive Islands, the outlook is rather grim. Our best information is that VS7AD was there on a certain Monday recently, but due to power supply trouble did not get on the air. Both he and VS7CC are supposed to be back in England now . . . . for good. Guess we will have to start all over again, at least most of us. Of course, ole Ed Willis, W6TS, can sleep . . . . he worked VS7AD/VS9 in Maldive last March. After a long vigil of looking for something new, Ed fell into this one. Seems to pay off sometimes . . . . this getting up early! Another nice one was FP8AA on St. Pierre. This jaunt was engineered by the Frankford Radio gang, the operator being W3BXE on vacation. For some strange reason, the signal was only on 7 mc, not 14 mc. Needless to say, no one out here has to bother with waiting for a QSL from FP8AA. Others are also planning trips to FP8, and perhaps they will find a shorter piece of antenna wire convenient to use.

Repeated reports keep coming in to the effect that EA8AO is actually in Rio de Oro, and not in Madrid as he says. This we understand to be in error. At first, the original Rio de Oro station signed EDZ, and later EA8EDZ. Then for a short time, EA8AO, although this call was actually licensed to a friend of EDZ, for Canary Island use, and was just "borrowed." We believe that the present EA8AO signal comes from the real owner of the call, who is at present in Madrid. Also, Rie de Oro may appear some day in the not too distant future, in the form of EA8JM, or something similar, JM being the initials of old EDZ. None of this can we guarantee, but it sounds good, doesn't it?

Some of you have been disappointed to see the minimum Zone position of the Honor Roll fluctuating back and forth with apparently no rhyme or reason, but seemingly with the unerring effect of leaving you out. We are sorry that it has worked out this way, but, frankly, we've been trying to get the layout modified so that we can list as many of you as possible. We think that this has finally been accomplished, and unless too many newcomers change things, it looks like the minimum Zones as shown in this month's Honor Roll should stick for a while. If anyone that should appear has been left ou let us know, and we'll try to straighten it out. It is nc necessary to send in a new list, or even your recentl reported additions, because we've been keeping them u to date, even though they may not have appeared i print recently.

W4BA lets us know that F9QU/FM8 prefers to QS at a later date after he has received an official FM8 cal He usually runs around 100 watts to a 211 final and doublet antenna, and listens through an SX-25. Whil on the subject of Martinique, new hope for cards fro FM8AD is offered by Dave Traer, W4AZK, who has deal cooking. Dave has offered to take care of FM8AD QSL problems with rubber stamped post cards up t about ten buck's worth, after which you fellows wi have to send him your own penny post card to l stamped. These cards will be backed by FM8AD's log which, incidentally, has not as yet arrived. We wis Dave lots of success in his endeavors, and hope that thi deal does not go the way of other similar ones in th past . . . . A nice shiny new one showed up on phon about 14,130 kc, with the call of CR5UP, located on Sa Tome Island, in Principe & Sao Tome, a part of Portu guese West Africa. He has a good signal, speaks Englis quite well, and doesn't expect to be there long!

W8WEN passes along word from MD4JG, now VQ4CJ in Kenya, that patience will bring the MD4 QSL, as h is slowly making a dent in a backlog of about 500 cards Jack also mentions that cards for ZC6PM should be sen to W8WEN. Doc Sievers, ex-KR6BG and ex-J9ADX, wil take care of any missing cards from his home QTH . . . W8AYS has moved to Dayton, Ohio, and is again on th air, but with a new call—W8EBC, or from Wrigh Field—K8AIR.

W8NBK wants to know if we have any dope o UY5AK, who claims to be a new Russian Republic i Zone 20 or 21. Sounds a little undecided himself, doesn' he? We agree with Arkie in his opinion of this guy He can't be worth a hoot. Furthermore, Arkie, if yo work him again, tell him that the 5th district of USSI is not in either Zone 20 or 21, but Zone 16. Or, bette yet, tell him to try UY6AK, and he will sound mor reasonable! . . . . Suppose most of you have hear EK4AO, now EK1AO, who is none other than old EA4AO ex-EAR96, Jesus M. de Cordova, one of the best know hams in Spain before the war. We had heard that h was executed during the Spanish civil war. It's good t hear that he's alive and active again.

W2EMW says that George Elliott, G5LI, told him tha Bert of ZD9AA has been ordered back to the mainlan by his doctor. Red is the name of the new operator a ZD9AA . . . . Rumor has it that W1FH finally bumpe into AC4YN. Congrats, Charlie, and we hope that th card comes through in a hurry. If there is anyone wh can get a card in a hurry, I'll put my dough on W1FH Everyone seems to be buzzing about Mick of ON4QI going to PX and CZ lands. It can't be too soon! LX1QF of course, was ON4QF on a short trip.

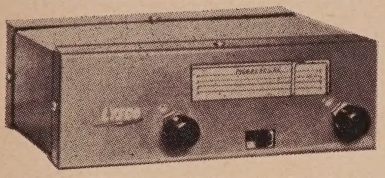
VU7AH

Several of you apparently thought, or at least hoped that VU7AH was in Nepal, but unfortunately, 'taint so VU7AF has been the only active station in Nepal, and he is back in India now. The Prefix VU7 has been used for several different countries, so don't depend on it. Just what its present status is, we aren't certain, but it may be just for the Northern portions of India and vicinity.

A letter from our old friend Dan Lockyer, LI2CL, MD1D and ZC1CL, now back in England, brings up an interesting, although touchy, subject, namely Palestine, or Arab Palestine, as it appears to be. It seems best to quote his letter, so here goes. "I don't mean to rob anyone of a country, or overwork the DX Committee, but it would appear to me that 'Arab Palestine' is nonexistent! I'm not dead certain, but I believe that the whole of Arab occupied Palestine has been incorporated with Transjordan into the new Hashemite Kingdom of Jordan. I suggest you look into it, and if I'm right, 'Arab Palestine' and 'Transjordan' will disappear from the Countries List and be replaced by **'Jordan.'** Don't ask me what the prefix should be! ZC1 for Transjordan was wrong anyway, as Transjordan was not in the British Commonwealth, but we had to use something, and ZC1 was continued from the days when Transjordan was a Mandated Territory under Britain. Transjordan wasn't represented at Atlantic City and had no allocation of call sign blocks in the first list published." This is sad news, Dan, but we'll look into it anyway. Incidentally, Dan worked all 40 zones and 141 countries in just short of one year, excluding the known phonies.

HARRISON IS HAM HEADQUARTERS

VFO for MOBILE RIGS



You'll get more QSO's per mile when you QSY to the other stations' frequency with this—

NEW LYSCO MOBILE VFO!

Stable 6J6 "Clapp" Oscillator, 6AK6 Buffer, 6AK6 doubler provides plenty of drive to replace any 3.5 or 7 MC crystal. Compact, convenient size—2" x 6" x 5" deep. Direct reading, illuminated, slide rule dial. Operates on 200 to 400 volts at 25 MA DC! Provision for keying (FB for home station, too!)

Complete, with tubes ready to operate — Lysco Model 380 $21.95

ONLY HARRISON HAS IT!

FLASH! FLASH! FLASH!

Lysco Model 380 adapted for remote VFO control for rear trunk mobile xmtr installations. VFO mounts on dash. 15' of coaxial cable and tuned output circuit provided. Replaces only 40 meter xtal. Item 380R $27.95

OTHER MOBILE GEAR

SUBRACO MT-15X for 10-11 Meters. Complete $87.50
Subraco DS-400 6V Dynamotor Supply for MT-15 .... $59.95
Subraco 115VAC Power Supply for MT-15X $39.50
LYSCO 10-11 Meter Transmitter (less tubes) $23.95
Lysco 75-Meter Mobile Transmitter (less tubes) $23.95
Complete kit of tubes for Lysco Transmitters ..... $ 4.98
Latest Lysco 28 MC Mobile Converter (less tubes) $25.50
Complete kit of tubes for Lysco Converter ..... $ 3.49
GONSET "10-11" or "3-30" Converter Specify $39.95
Gonset Noise Clipper. Complete ..... $ 8.25
PREMAX 96" Stainless Steel Whip Antennas ..... $ 3.09
Premax 96" Cadmium Plated Steel Whip ..... $ 2.35
Premax Base-Loaded 75-Meter Mobile Whip Antenna. Also FB for home station use. Stainless Steel. $6.62
"R" Universal Mount **$6.76**. "NA" Bumper Mount .. $3.53
JUST ARRIVED!! Dynamotor starting relays for 6V. Conservatively rated at 50 amperes! Compact, completely sealed. Complete with hardware. Only $1.89

10-METER DX TIME IS HERE!!

Get your share of the DX with PREMAX's amazing value in the WORLD'S MOST VERSATILE, three-element, 10-meter array. Fully adjustable, this beam can be used on 6, 10 or 11 meters, using the same boom and elements. Kit includes all-aluminum frame (boom), three sets of seamless dural elements, T-Match, insulators, hardware, and detailed instructions.

Formerly $50.00 list!! Premax RB-6309 Special $26.46

Here's another FB antenna buy! HY-LITE "SKY-LITE", 3-element, 10-11 meter, all grounded array featuring sturdy all-dural construction with machined aluminum castings. Supplied complete with T-Match, mast section, and complete instructions. .1 and .15 spacing. Only a screwdriver required—assemble in 15 minutes PD3E10 Only $24.95

CRYSTAL BARGAINS

You can't beat these crystal buys! Active oscillators cut from highest quality quartz, accurately ground and etched, mounted in genuine FT-243 holders (½" pin spacing), and marked with exact frequency!

All crystals are brand new—never used in any way—perfect condition! Order all you can use at these low prices. Quantities limited on some frequencies.

2 METERS	6 METERS
8036.25 KC for 144,652 KC	6506.25 KC for 52,050 KC
8047.50 KC for 144,855 KC	6618.75 KC for 52,950 KC
8058.75 KC for 145,057 KC	6708.75 KC for 53,670 KC
8070.00 KC for 145,260 KC	**10 METER PHONE**
8111.25 KC for 146,003 KC	7256.25 KC for 29,025 KC
8126.25 KC for 146,273 KC	7361.25 KC for 29,445 KC
8160.00 KC for 146,880 KC	7368.75 KC for 29,475 KC
8171.25 KC for 147,083 KC	

Your choice of any three crystals $2.59

SYLVANIA 1N34

1N34 Xtal Diodes — Individually "matchbook" packed.
Each 85c 3 for $2.49
Ask for booklet, "21 Circuits for Germanium Crystal Diodes" with each order for Sylvania 1N34's.

TRANSFORMER BARGAINS

5 KW PLATE TRANSFORMER

Conservatively rated, cool-running, CCS Broadcast Quality! Provides rated 4000 Volts DC at 1.2 Amps out of full-wave rectifier and choke input filter. 230 Volt primary, with taps to reduce output voltage to 3500 or 3000 Volts. (Run on 115-volt line to get 2000, 1750, or 1500 V DC at 1.2A) 9" x 17-¾" x 12½" high, 150 lbs.

What a terrific buy! — less than manufacturer's cost! Shipped directly to you F.O.B. the THORDARSON factory in Chicago.

What a buy! Only $99.75

Hurry! Only a few left!

HV PLATE TRANSFORMERS

Our two unbeatable plate transformer bargains are still available. Brand new stock in factory sealed cartons! Primary is for 115V, 60 cycle AC! All ratings clearly marked. These are the BLACK ONES — conservatively rated for CONTINUOUS COMMERCIAL SERVICE at 400 MA DC! (CCS) Handsome, sturdy case, completely shielded and potted, porcelain high voltage terminals! Mounts upright or inverted.

KW! 2600-0-2600 VOLTS AC at 550 MA ICAS!—50 lbs! 7¾" x 7¾" x 8½" high. Item TP-18 ..... **$28.95**

1750-0-1750 VOLTS AC at 550 MA ICAS! — Over 37 lbs! 6¾" x 8" x 7½" high. Item TP-17 ..... **$19.95**

(If shipped, add 85c each to prices above for crating)

866A FILAMENT TRANSFORMERS

Filament transformer made expressly for 866/A and Z-225 rectifier tubes. 2½ volts CT at 10 amperes! 7500 volts insulation! (Also FB for 816's) Brand new stock! Famous manufacturer! Lowest price in the country!

Smash Value! Item TF-1 Only $2.39

1200 WATT MODULATION XFMR

Here's an unbeatable value! KENYON, Ken-O-Tap, Universal Modulation Transformer. Conservatively rated at 600 watts Audio, 1200 Watts Class C! Primary Range: Taps from 500 to 18,000 ohms! Secondary Range: Taps from 200 to 19,000 ohms! Beautiful "T" Line case, 7¾" x 6⅝" x 7-3/16" high. Mounts upright or inverted. Weight 45 pounds. Furnished with complete instructions for matching any modulator to any Class C load!

KENYON No. T-442 Fully Guaranteed $41.46

TVI ELIMINATED—OR YOUR MONEY BACK!!

Our "TVI-Chaser Package" will get rid of your TVI to your complete satisfaction or your money back! Nothing to tune, adjust, or change when QSY'ing, even from band to band, 10 to 160 meters. No alterations of transmitter or TV receiver required! Write for details of this sensational offer!

Beginners! - Newcomers!

Want help in getting started? Our special Beginners' Edition of the HARRISON HAM-A-LOG has plenty of good info for you. A postcard will bring you a copy without obligation. Send for it, today!

Club Secretaries — How many can you use??

HARRISON
NEW YORK 7, N.Y.
225 GREENWICH STREET
(10 West Broadway, at Barclay St.)
BArclay 7-7777

as well as VU4AC (Laccadives). He jumps the gun on us with this one, as we were planning to make a Christmas present for some by scratching VU4AC at the end of the year. A card from AC4RF should bring Dan into the bold-face type of the Honor Roll. We want to take this opportunity to commend him for one swell job done while in Libya and Transjordan. He really put these places on the map, and in a very cooperative and intelligent fashion too. Many thanks, Dan, and let us hear from you again.

Another sad bit of news came from VS1DA, just before he left for England. John informs us that French India, FN8, was incorporated into India proper on August 15, 1949. It can't be . . . . I hope! They're going faster than we can work 'em. Nothing official yet, however, so let's go on to happier things, such as FY8UD. Seems to be O.K., and, of course, W2AGO is handling the QSL situation. 14 mc is the band, but where, and when next, I wouldn't know. FN8AD is quite active on 14 mc, both c.w. and phone, as is FN8MS on phone only. Better catch 'em quick, so you can get DXCC credit before they become "duds!"

FI8AK

Hal, W9VW, thinks FI8AK is a "really choice joker" and refuses to claim credit for working him. He doesn't come from the right direction out here, just a little too far North in the mornings, and over Europe in the afternoon. So . . . . we don't want him . . . ZS7C is a recent addition to the morning struggle out here, but it's a slow lengthy process to work him. A message from VS6AX, via W6DSY, says, "I want 'old Herb,' W6QD, and the gang like W6GRL and W6EGH, etc., to know that old Titch, VS6AX, is back and happy to rag chew with any, repeat . . . . any, ham station like the old days." There sure are a lot of "old" guys in this old business . . . . FU8AA has finally sent out a bunch of cards, and, of all things, I saw a card from FA8IH. Yes, FA8IH does have cards, although this is probably the only one that any living ham ever saw. It was for none other than our own committee member, Mr. Edward A. Hayes, W6SA. W6EBG says if he ever gets one, he will return it with a brief description of his thoughts for the past few years. Ditto . . . . VR4AC says he will be active on 14,270 kc phone. This from W6KQY, who seems to be doing all right on phony.

We are indebted to someone, we know not to whom, because the rest of the letter was separated (we apologize), for the following: "VQ4SC says that if the boys who haven't received QSL cards will let him know, he will send a second card." Also, he says he is sorry that he could not work more Ws from ZD6SC, but he had only 40 minutes in which to operate, and with a borrowed commercial rig. Happily, Bunny, ZD6DH/-VQ2DH took care of the rest of us in good style. The cards are being printed and should be along before long . . . . VQ4SC still needs Iowa, Vermont, West Va., Wyoming, Arkansas, Montana, and Utah for WAS and can be found on 28,110 kc phone. ZS8A plans to be more active, and likes 28,210 kc phone. He still needs a couple of states for WAS. PJ5DV and PJ5HM are on 28 mc phone and PJ5RX is on 14 mc phone. CR5UP has also been on phone at 28,270 kc. Latest word from FB8AB doesn't brighten that situation much. Looks like a long pull before he will be workable. KM6AO is active on both 20 c.w. and 10 phone, and expects to be there for the next year and a half. They are Navy boys running a BC-610 on 20 and a 50-watt peanut whistle, as they call it, on 10 phone. 20 is usually worked between 0330 and 0800 GMT, and 10 when the band is open, and they promise to QSL 100%.

Doc, W4VE, has finally worked Zone 26 with his vertical. Five stubs on his antenna coil make his TV-minded neighbors happy. Bob Wilson, W3GHD, adds a bunch of nice ones which leaves him tied with his buddy, W3BES at 221. Two weeks vacation swimming and fishing should put GHD in the pink for the winter struggles. For the benefit of Bob who wanted a hot tip, there appears to be a dearth of VS4s at the moment; one VS5BJ who is dubious if even on now; one ZC2AC, who is as phoney as CZ2AC; and one every fine CR1ØAA who is rather difficult to raise, but is on occasionally around 0900 GMT, 14,010 to 14,020.

W6PXH wants to file a $9.80 claim for power against CR5UP. Wasn't it worth it, Cy? Should be. The first TV receiver in W6EFM's neighborhoood was just installed 160 feet away. Oh, you lucky . . . . W6TI keeps adding them steadily. I have to mention Horace each time, so he won't drop the axe on my QSL cards. I thought I had him lined up to give extra QSL service by threatening to chop his country total in half, but he finally reversed the situation and threatens me on my cards if we don't give him double credit for each country worked. That's why his total is shooting up so fast.

W7GUI wants to put in a bid for one of our California hill tops. He thinks we ought to make room for a spent W7. Thinks it is tough sledding up there (no snow). Then he adds three more, and says he has missed fourteen in the last two weeks. Heck, Bud, you just don't know when you're well off. Down here, we can't even hear 14 in two weeks to miss. From GD3UB, via W9TQL, we learn that GD3RX is a phony. 3UB received a great number of QSL cards addressed to GD3RX, but upon investigation, found him to be NG. W9RBI is quite happy with a two-way phone contact with UA9CL, Zone 17. Ross managed to switch him over from c.w., as did W6AM and W6DI. Also from RBI is word that VP8AI will be on phone at 28,125 kc. He's in the Falkland Islands, you know, and the only active one there at present, we believe. We welcome a newcomer to the Honor Roll, DL1DA, who signs his name "Conny," but says, "Nix on the 88s." Conny has about decided his receiver must have a filter for VK6, as he has never heard one, and needs that zone. XE1AC adds seven good ones on phone, including LZ1ID! Here's a good catch on either phone or c.w., and will be remembered as LZ1XX a while back. Seems to be a little allergic to Ws at the present moment, however.

We apologize for putting HC2JR in the combined c.w.-phone section, and omitting him in the "phone only" section of the Honor Roll. If you will look in this issue, John, you will find everything in order, unless that printer again crosses us up. John is the President of the Guayaquil Radio Club, and is very active, mainly on phone. Incidentally, we ordinarily do not list country totals in both sections where the totals are within a few countries of one another, unless requested to do so. By this I mean, where a station is, say, primarily phone, but has worked two or three countries on c.w. However, you can have it any way you want. We don't really care.

VE4RO is getting good results with three new "V" beams, only 341 feet per leg! George is one of the lucky ones to add CR1ØAA. Old Ev, KP4KD, sent in a post card, all in a dither. He thought he had been short-changed on one zone, and it could have been, but wasn't. Ev had it all figured out with the aid of his map, whereby UA9CB (Sverdlovsk) was now in Zone 18, which would give him 39 zones. However, the next mail brought another card from Ev, taking it all back. He found that he had been looking at the wrong parallel on his map, so still needs Zone 18. Can anyone help him?

VE1NE would like to know of other hams collecting postage stamps, who would be interested in swapping some. From VE3BNQ comes the very sad news of the death of our friend VE3ZM who was accidentally electrocuted while monitoring his rig. Al adds seven new ones on phone, bringing him up to 36 and 108 with 75 watts input.

ZS7B back in Swaziland

W9RNX has received a card from VR4AC, but says that apparently due to some difficulty about Americans using VR4 calls, the station is now signing W5FYV/VR4. Russ also says that ZS7B will be back in Swaziland again, and that ZS5AW has applied for a ZS7 call, and will operate there on weekends, while visiting his family who live there. W9WCE has been promised the old W9VW vertical on the strength that it may have a little DX left in it. This we doubt, 'cause Hal has most likely drained it dry of everything except W6s, why else would he put up a new "rotary bird roost" as he calls it? To make the story standard, 9VW worked AC4YN on the new roost the morning after it was put up. This is a fiine beginning, and it should probably be left alone, but Hal has to tune it. Now, let's see what happens! Hal says he hears AC4NC and AC4YN more than he does Herb. How about it, Herb, shall we let him in on the secret? No. let's wait a while. Anyone who works 40 Zones and 195 countries on a vertical from the 9th district is not in a hurry.

From W7MBX, we hear that W7HTB is known as Jack "Dream Ears" Staley, the "Dream Ears" coming from the fact that many years ago, Jack was the international champion SWL, and received a large loving cup in recognition thereof. MBX says that HTB can really hear things when no other mortal can. We believe this, because we've heard Jack calling all kinds of Russians on phone, but we never hear the Russians. Of course, Jack doesn't come back to them, but that's beside the point. Seriously, though, HTB is really in there after the Russian zones on phone, and if hard work and per-

MORE FOR YOUR MONEY **EVERYTHING FOR THE HAM**

yes sir.. it is easy to buy by mail and prices are right

Vertical Antenna

MAST KITS

Fully Adjustable 5 to 35 Feet

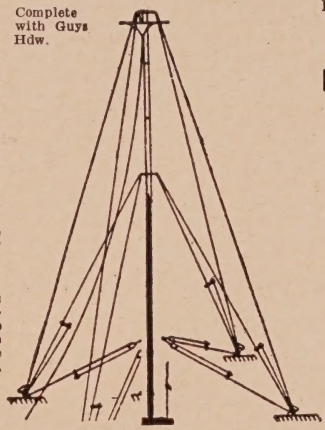
Easy to Set-up

FOR FM, TELEVISION AND ROTARY BEAM

COMPLETE

$19.95

Complete with Guys Hdw.

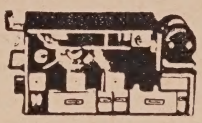


Doublet Antenna Kit used with the famous Hallicrafters BC-610, consisting of 7 steel-alloy mast sections in a handy canvas bag. Each section is 5' 6" long, 1⅛" OD with the last 6" rolled to a smaller OD to telescope into the end of the preceding section. No taper. Assemble high or shorter by any multiple of 5'. Finished in weatherproof olive drab. **Ideal for erection of FM and Television Beams!** Drop your coaxial cable right through the center! Brand new, export packed.

SCOOP! 110 (MC) Rec. Bargain

BC-733 D Localizer Receiver

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



Individually Boxed **$3.95**

BARGAIN **2 FOR $6.95**

SPECIAL FOR YOU



CATHODE RAY

5FP7, 5BP1, 5GP1

$1.95 each

2 for $3.00

5BP4

$1.95 each

TUBES JAN TYPE BOXED

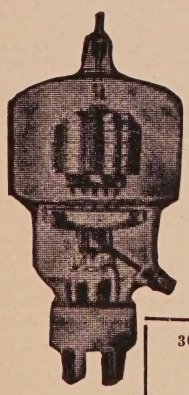
24 G	**$1.00**
28 D7	**.29**
807	**1.49**
874	**.98**
HY-615	**.39**
803	**7.95**
12SL7gt	**.29**
211	**.39**
VR150	**.75**
814	**4.95**
12SK7gt	**.75**
845W	**3.45**
2051	**.69**
927	**1.95**

SURPLUS UNUSED

24V relays all types..... **90c** ea.

2 FOR **$1.49**

POWER!! POWER!!



EIMAC 304TL

BRAND NEW
JAN. INSPECTED
SUPER VALUE
BETTER ODRER
4 OR MORE

79c EA.

4 for $3.00

While They Last
Any Quantity

304TL SOCKETS
BRAND NEW
JOHNSON
$1.20 ea.

Gibson Girl Transmitter SCR 578B (New) **$19.95**

SPECIAL

150 ohms twin lead in 50 ft. coils with eyelets on one end..... **49c** ea.

3 Coils **$1.00**

SAVE ON THESE VALUES

300 ohm Amphenol. Per hundred	**$2.34**
150 ohm Amphenol, Per hundred	**2.16**
75 ohm Amphenol (small.) Per hundred	**1.98**
Kilowatt 75 ohm Amphenol. Twin lead, Per C. ft.	**7.20**
3 Gang 410 mmfd. per Sect. Cond. Excellent Quality	**2.95**
4 Gang 150 mmfd. Variable	**.95**
Condensers—New:	
2 mfd. at 2500 W.V. Each	**2.95**
4 mfd. at 600 V. Oil—round can. Each	**1.19**
Relay, Leach, 115V-AC DPST. New	**1.50**
SPDT—Center off .39 each.....3 for	**1.00**
Toggle Switch—SPST—plus spring return	**.19**
Toggle Switch—H.D.-DPST—12 amp. 125 V.	**.39**
Phosphor Bronze dial cable 16 str.—250 spool	**.69**
Cable—6 wire No. 16, glass insul. shielded, plastic covered—perfect for beam control. 15c per ft. 100 ft.	**12.00**
Cable—6 wire No. 18, unshielded. Per ft.	**.08**
Cable—4 wire No. 18, plastic—Shielded. Per ft.	**.10**
100 ft.	**5.50**
Cable—Single shielded grid wire No. 20-An Specs. Special—Per hundred foot coil	**1.50**

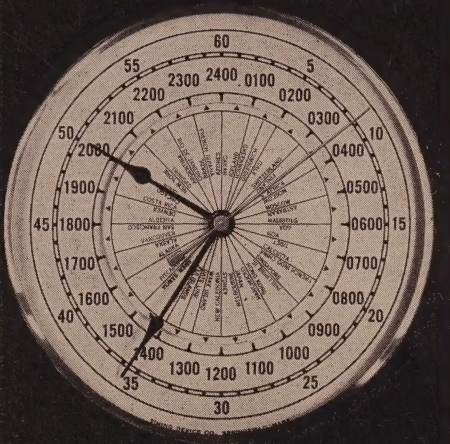
TERMS: F.O.B. Pasadena unless postpaid. No C.O.D.'s under $2.00 25% deposit on ALL Orders. All C.O.D's shipped by Rail Express. Save freight and C.O.D. fees by sending full price with order and we will ship by fast truck, transportation collect. Californians include 2½% sales tax.

WRITE FOR OUR SPECIAL SURPLUS BULLETIN

DOW TRADING CO.

70 W UNION ST.
PASADENA 1, CALIFORNIA
Tel. Ryan 1-7944, Sycamore 3-8281

Want to
SIMPLIFY DX LOGGING?
DRESS UP YOUR RIG?



MODEL TD-2400

This is the
2400-HOUR CLOCK
you've been waiting for

Every feature the Ham requires:

- **Electric, self-starting**
- **World-wide time — shows time directly in every Time Zone**
- **Easily adjusted to any Zone**
- **Big 10-inch dial, lithographed in color (key cities clearly shown)**
- **Sweep second hand; chrome plated bezel**
- **A.C. operated — 110 volt, 60 cycle**
- **Wall or panel mounting**

Imagine how easy and pleasant this will make DX logging. Sold through authorized dealers only. If your dealer doesn't have them yet, send us his name — or write for name and address of nearest authorized dealer.

Timing Devices Co.

Springfield, Massachusetts

SUPPLIERS: Write us for details immediately. Your customers will be looking for this clock!

sistence means anything, he will bear watching. 7MBX also mentions that ZS2F lately has been calling W6DI "Emperor" because he has the loudest phone signal coming from the USA. More recently, he has been calling Guy "King Emperor," and has advanced MBX to the rank of "Grand Duke." Now it develops that ZS2FA has a bet with ZS2F that 7MBX can drown out 6DI. So it goes with the phone men, on and on into the night. I'll bet they both have forgotten the code. No, I'm wrong, I heard Guy coaxing UH8AA from c.w. to phone the other a.m.

WØOUH tells about a good one he heard recently. Bill was cruising up the band when he heard a mob after ZD2FB. Says there must have been ten guys in the pile-up, and more gathering after each round of calling. Finally, a W2 announced to all and sundry that he had been calling ZD2 on sked, but guessed he must be QRL elsewhere, and then told the boys to scout up their own DX! Goes to show how far the fine art of blind calling has progressed in DX "technique" today.

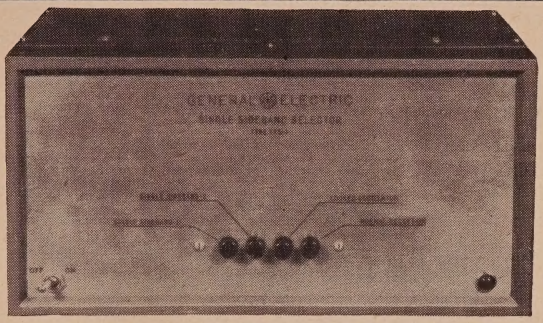
From the FEARL NEWS: JA2KG has left Japan, but not without one last parting shot at the band which brought ST2DD, Lloyd's 162nd and last country. His job as QSL manager for FEARL has been taken over by Lt. George V. Hamson, exW6ZHV, and Station Manager of JA2US. Dave Fugman, W8SIR and exJ9SIR, W8SIR/KG6 and KG6FH is now in JA2 land, on duty with the AACS, and should be on the air by now. W3EPV has received a QSL from ZAA (Radio Albania) in answer to his card to ZA1B. We weren't counting him anyway, Bob, but thanks for confirming his phoniness! ZA5AC fits into the same picture. W3KDP has assembled parts for a new 3-element wide spacer for 14 mc. Ren wants to know how to get a card from Zone 19. Patience is the only answer we know. The Zero Trio (the Quartet lost a member), YXO-NUC-NTA have all been made happier by one or more AC4s. Wonder if WØPNQ has taken over ole Doc's standing in this association? Vince, ØNTA, in in the process of putting up a 3 and 4 element wide spaced job for 20 and 10 on a new tower. There goes another 10 kc out of the band here. WØNUC is really is really full of info this trip. Says that VK9NR (Norfolk) is leaving for VK3 around the first of November, and therefore would like all QSL cards sent via WIA. Noel thinks that he has worked all the DX gang over here except W3BES and W2GWE. According to W3BES's country list, you've worked him too, so better check that log again, Noel. Don't know where W2GWE is these days, but it looks like he may be left Norfolkless. VQ2DT, exZD6DT, will take care of any missing Nyasaland cards from his present QTH which is listed in the usual spot. Lastly from Leo is word from F9QU/FM8 that the French government is sending a ham, or hams, to FG8 in the very near future to give all possible an FG8 contact. The reason is to advertise Guadaloupe. Sounds like the French are really on the ball.

Dave Brown, ZL1HY, is so excited that he starts out his letter: "Dear Reg, Hooray, hooray, etc." Yes, of course it's AC4YN that caused all the excitement. He just received a card from VR2AZ/VR1, so if you are among the underprivileged, you might give Dave a buzz and find out what the secret is. LU8BF was surprised to hear AR8AB speaking perfect Spanish on 10 meters, but soon discovered that it was XE1NJ at the mike. TI2SA is exTI2GG. PJ5KO told LU8BF to send his QSL via W6MEK. Are you handling all of them, Frank?

From MP4BAD we learn that MP4BAC has returned to England, and MP4BAJ to South Africa, leaving BAD as the only station in this area. Two others are awaiting licenses and will be on 10 and 20 from Sharjah, Oman. BAD is now running 50 watts c.w. and 25 watts on phone. A ½ wave Windom and a Super-Pro complete the layout. Ken has only been in ham radio for two years, and in spite of all the troubles of being "rare DX" wouldn't think of leaving it, although he will have to along about the first week of December in order to reach England by Xmas. Next year should see him in either DL2 or MB9. All cards should now be sent via RSGB and not direct. Ken apologizes for not being able to QSL more promptly, but is doing the best he can, considering that all supplies must come from England, and promises to eventually take care of all.

One of our very modest readers sends along some fine stuff, but insists upon remaining anonymous, to you that is, on account of he doesn't want to blow his own horn. This may be OK, but we think he has the wrong slant on this business. Aren't we all just one big, happy family? Pull that last knife outta me back . . . It's longer than the others. If you fellows

HARVEY does it AGAIN!



Harvey's great purchasing power and understanding of ham needs and values combine to bring you one of the greatest values ever offered to the radio amateur.

SINGLE SIDEBAND SELECTOR
GENERAL ELECTRIC Type YRS-1

Single Sideband SELECTIVITY with no loss of audio response.

Here is a push-button controlled single sideband selector that permits you to *instantaneously* select either sideband, or to cut in an oscillator that reinforces the carrier approximately 20 times. Or you can cut the selector out entirely!

..LOOK AT THESE FEATURES..

- Single sideband reception of modulated, unmodulated (CW) or single sideband transmissions.
- Provides the effect of extreme selectivity without restriction of audio fidelity.
- Push-button selection of either sideband — other sideband attenuated.
- Audio distortion associated with selective fading is greatly reduced.
- Intelligibility of fading signals is improved.
- Can be connected to practically any communications receiver having an intermediate frequency of approximately 455 KC.
- Normal operation is in no way disturbed when single sideband selector is not in use.

All units in Brand New, Factory-Sealed Cartons
Immediate Delivery From Stock
Quantity Limited, Order Early
Write for Descriptive Literature

Shipping Weight 20 lbs. — Prices Net and FOB N.Y.C.

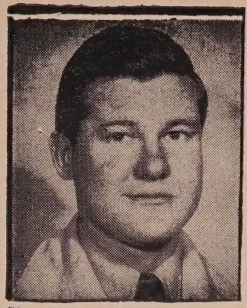
HARVEY SPECIAL PRICE 49.50

Complete with tubes and instructions

Telephone: LUxemburg 2-1500

HARVEY RADIO COMPANY INC.

103 West 43rd St., New York 18, N. Y.



ESSE Specials!

40-42 WEST SOUTH STREET, INDIANAPOLIS, INDIANA

SCR-625 MINE DETECTOR

Brand New **Metallic Objects Only**

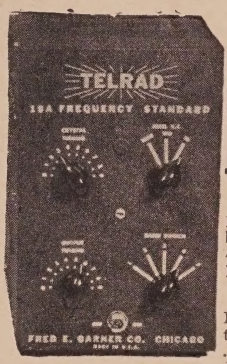
Used by the Army to detect buried metallic mines. Its private use suggests the location of underground or underwater pipes, cables and ore bearing rock, the location of metallic fragments in scrap materials, logs, etc., and the screening of personnel in plants for carrying of metallic objects.
The unit consists of a balanced inductance bridge, a two-tube amp. and a 1,000 cycle oscillator. The presence of metal disturbs the bridge balance, resulting in a volume change of the 1,000 cycle tone. The tubes used are low-battery drain types such as 1G6 and 1N5. The circuit may be modified for control of warning signals, stopping of machinery, etc., when metal is detected. Operates from two flashlight batteries and 103 V. "B". However, a power supply operating from 110 V. may be used. Comes complete with spare tubes, spare resonator and instruction manual—in wooden chest 8¼"x28¼"x16". Weight in operation is 15 lbs. New, complete in original overseas packing container. Originally sold by War Assets for $166.00. The U. S. Forestry Service has recommended procedure for using the SCR-625 Mine Detector to find concealed metal in tree logs and other timber products.

Price **$39.50**
Batteries ..... **$4.00** extra

APN/PRS-1 MINE DETECTOR

The detector is designed to detect metals, non-uniformities (rocks, tree-roots) and may be used to detect metal buried in logs, to locate cables, pipes, sewer tile and etc. It is widely used by lumber camps, miners, prospectors, plumbers, treasure hunters and explorers.
A portable device used in the detection of both metallic and non-metallic by aural (ear) and visual (eye) means. These are brand new outfits, complete with instruction book and spare tubes. Shipped in original overseas moisture-proof container. The set consists of the detector head with antenna and reflector meter, a meter housing and lower section of exploring rod, amplifier assembly, exploring rod extension, bag designated to carry equipment while operating, and wooden case for storing or transporting the complete unit when not in use. This detector is not nearly as sensitive as the SCR-625 Mine detector. However, because of its price and its simplicity, you cannot go wrong on buying one for $14.95. Shipping weight, 125 lbs. Weight in operation only 22 lbs.
Batteries are not included but we can supply them for $8.25 per set.

Our Price $14.95
Shipping Weight 125 lbs.
Weight in Operation Only 22 lbs



TELRAD 18-A FREQUENCY STANDARD

Checks signals in the range of 100 Kc. to 45 Mc. with a high degree of accuracy. Self-contained power supply is 110, 130, 150, 220, and 250 V 25-60 cycle AC. Complete with tubes, dual crystal and instruction book. Brand new. Price.... **$24.95**

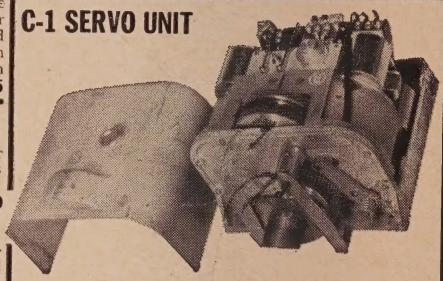
RF TRANSFORMER

For experimental use. Covers four bands. Range unknown. Measures 4" x 4⅞" x 2¼". Brand new.
Price ..... **.50**

HASH FILTER

Mounted on strip 3½" x 1". Contains two hash chokes & one dual .135 MFD 400 Volt bathtub condenser.
Price ..... **.50**

C-1 SERVO UNIT



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

COLLINS AN/ART-13 XMTR.

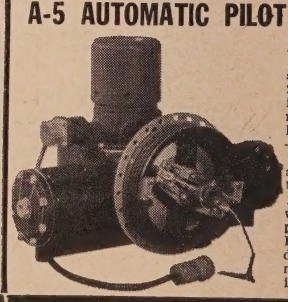
FOR AIRLINE USE

A compact light-weight, modern, high-powered transmitter. Frequency range 2—18.1 Mc. on any of its 11 autotune crystal controlled or master osc. channels. Dec. 1947 "Radio News" has data for converting from D Cto 110 v. AC. These are in exceptional condition, tested in our laboratories Net weight 66 lbs. Dynamotor included **$234.50**

BL-SELENIUM RECTIFIER

Type 23751, half-wave. Use 2 of these for full-wave circuit converting 110 V. AC to 135 V. DC at .75 amps. or parallel for higher current ratings. Voltage output controlled by condenser across output.
Brand new. Price..... **$1.75** ea.

A-5 AUTOMATIC PILOT SERVO M1



Made by Delco-Remy. Has ¼ horsepower shunt type DC motor 27.5 V. 11 amps input, speed 6000 rpm. Has hydraulic lift — (Intended use —Hydraulic lift actuates Ailerons on airplane). Overall length 16", width 12", height 11". Net weight 28 lbs. Shipping weight 35 lbs. Hardware for cable drum included. Brand new in original packing boxes. **$4.95**

ESSE RADIO CO.

Esse's Special Offer

INDIANAPOLIS, INDIANA

AUTOMATIC RECORD CHANGER RECORDER COMBINATION



Model GI-130
or RC130L

play records
cut records

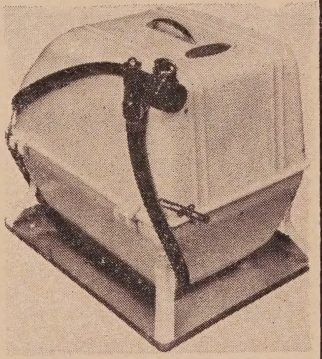
Manufactured by General Industries Company, this unit is ideally suited for installation in your phono-combination or can be used with any amplifier having approximately 5 watts output (although a power level of approxi-¼ watts is all that is required for satisfactory cutter operation). Cutter head is an Astatic Crystal X-26.

$22.50 each

Record player mechanism is automatic and plays twelve 10-inch records or ten 12-inch records. Pick-up head is a Shure crystal.

These mechanisms are brand new in original shipping boxes and we are selling them at a fraction of their original cost (original price $79.50). Our Price, complete with operating and service manual, brand net, Close-out sale. **$22.50**

Here's a Special Bargain we are able to offer to our many Friends & Customers the famous "HER MAJESTY" AUTOMATIC DISHWASHER



Clean, Sparkling Dishes in 2 Minutes Flat

Now you can free yourself of the everlasting drudgery of washing dirty, greasy dishes! Just put 'em in "Her Majesty" Automatic Dishwasher for a couple of minutes and forget 'em! No more chapped, dishpan hands, no more dirty dish towels! Not only does "Her Majesty" save you lots of time and trouble, but it saves on soap. Just a thimbleful of detergent does the trick . . . thoroughly! You'll be amazed . . . and delighted at the job "Her Majesty" does. "HER MAJESTY" DISHWASHERS NOW GIVEN AWAY ON THESE COAST-TO-COAST RADIO PROGRAMS:

"Second Honeymoon," Welcome Traveler," "Times a Wasting," "Take a Number."

A Wonderful Xmas Gift for her - - -

THIS IS THE MOST STUPENDOUS BARGAIN THAT WE'VE EVER OFFERED. THESE DISHWASHERS WERE MADE TO SELL FOR MANY, MANY MORE DOLLARS THAN WHAT WE ARE ASKING. THEY ARE BRAND NEW; IN FACT, STILL PACKED IN SHIPPING BOXES.

Because of the low price that we are selling these dishwashers for, we absolutely do not offer any guarantee or refund whatsoever.

$20.00 each

Look at these Sensational Features

- Dishes Dry by Themselves!
- Easy to Use—Slip hose on faucet . . . put in dishes . . . turn on the water!
- Fits on Drainboard
- Holds 16 Dishes at once . . . Extra Basket for cups, saucers and silverware.
- No Motor . . . No Electricity . . . No Expensive Plumbing!
- Light Weight (only 12 lbs.) Rust-Proof Aluminum with Baked-on Finish.
- Double-Action Spray.

ESSE RADIO CO. *Esse's Special Offer* INDIANAPOLIS, INDIANA



15 WATT POWER AMPLIFIER UNIT
Brand New

Model F Power Amplifier Unit manufactured by Personal Music Company, Newark, New Jersey. Formerly sold to jobbers at $129.50 each.

Chassis size 11½" x 17½" x 2½" high (with cover 11½" x 17½" x 7½" high)) Net weight about 50 lbs. Gray crackle finish.

OUR PRICE *BRAND NEW COMPLETE* **$35.00**

This amplifier delivers 15 watts of undistorted audio power with excellent frequency response. The tube line-up is 1—2D21, 1—6AL5, 1—6SJ7, 1—6SN7, 2—6L6G's, 1—5U4G. The total power drain is 300 watts from the 110 V. 60 cycle AC power source. Treble, bass, vernier volume and master volume controls are provided. This amplifier is beautifully designed and is sturdily constructed with the best of components. It can be used for continuous day and night service. Deluxe features such as high—low AC line switch, AC line fuse, good ventilation of chassis and cover, external carrying handles, lock and key, and heavy duty AC line cord are provided.

You can use this unit for microphone, phonograph, or radio input or fix it for combinations of such inputs. It will make an excellent foolproof and trouble-free unit for dance bands, lecture halls, schools, sports events, for rental purposes, for inner-office communication. It will handle a number of loudspeakers. Originally sold for $129.50.

ESSE RADIO CO.

Esse's Special Offer

INDIANAPOLIS, INDIANA

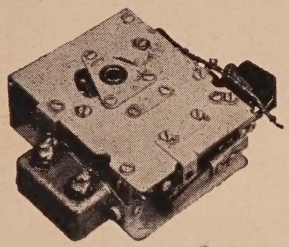
RADIO TUBES — 38c

Your choice. Mix up the types, we don't care.

Your choice—in Quantities of 1000. Brand New. Individually, attractively boxed. Unconditionally guaranteed against anything except breakage, for 90 days. Any tubes found not satisfactory, return to us for credit.

Price each ..... $ .50
100 or more ..... .45 ea.
250 or more ..... .42 ea.
1000 or more ..... .38 ea.

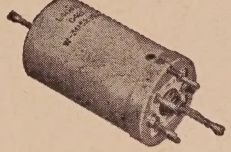
OZ4	1V	6A4	6D8	6SF5	7A4	12H6	19T8	46	117Z6
1A5GT	2A5	6A6	6F5	6SG7	7A7	12J5	24A	47	VR90
1A7GT	2A6	6A8GT	6F6	6SH7	7A8	12J7	25A6	50	1619
1B5	2A7	6AC5GT	6F8	6SJ7	7B6	12K7	25AC5	50B5	VR150
1C5GT	3A4	6AF6G	6H6	6SK7	7C4	12K8	25L6	50C5	182B
1C6	3A5	6AG5	6J5	6SL7	7C5	12Q7	25Z6	50Y6	183
1D8	3B7	6AK5	6J6	6SN7	7F7	12SA7	26	51	482B
1G4	3D6	6AL5	6J7	6SQ7	7H7	1201/7E5	27	53	483
1H5	3Q4	6AQ5	6J8	6SR7	7Y4	12S8	30	56	954
1H5GT	3Q5	6AT6	6K6	6SS7	7Z4	12SC7	31	57	717A
1J6	3S4	6AU6	6K7	6ST7	10Y	12SF5	32L7	58	955
1JG6	3V4	6AV6	6K7G	6SU7	12A6	12SF7	35	70L7GT	956
1L4	5FP7	6B4G	6K8	6T7	12A8	12SG7	35/51	71A	957
1LC6	5R4G	6B8	6L6	6T8	12AT6	12SH7	35B5	75	1005
1LH4	5T4	6BA6	6L7	6U6G	12AT7	12SJ7	35W4	76	1626
1LN5	5T4G	6BA7	6N7	6U6GT	12AU6	12SK7	35Z5	77	1629
1N5	5U4G	6BE6	6P5GT	6U7	12AU7	12SN7	35Z6	78	2051
1Q5	5Y4	6BF6	6Q7	6V6	12AV6	12SQ7	36	80	2050
1R4	5W4GT	6BG6G	6R7	6W4	12AX7	12SR7	37	81	9003
1R5	5X4	6BH6	6S7	6W7	12BA6	12Q7	38	83	CW931
1S5	5Y3GT	6BJ6	6S7G	6X4	12BA7	12Z3	39/44	84/6Z4	307A
1T4	5Y4G	6C4	6S8	6X5	12BE6	14A7	40	85	9001
1T5	5Z3	6C5	6SA7	6Y6	12BF7	14Q7	41	89	
1U4	5Z4	6C8G	6SC7	6Y7	12C8	14X7	42	117P7	
1U5	6A3	6D6	6SD7	6ZY5	12F5	19	43	117Z3	



RACHET MOTOR

Operates from 12 to 24 Volts. Similar to motor used for automatic tuning of SCR-522 transmitter and receiver. This motor measures approximately 3" x 3⅞" x 1½". Has provision for coupling ¼" shaft. Ideal for remote tuning of mobile and other equipment. Rotates approximately 1 revolution per second.

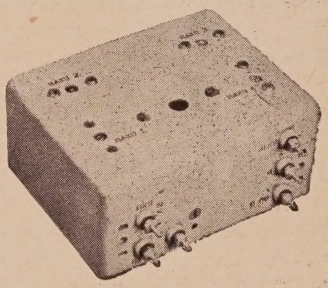
Brand new ..... Price **$1.25**



LOW FREQUENCY RCA I. F. TRANSFORMER

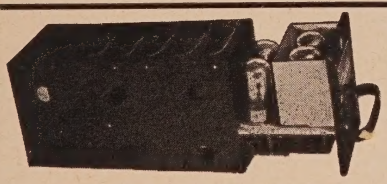
Used for R.F. power supply or double conversion transformer, etc. 3½" x 1⅞". Brand new.

Price **35c**



I. F. TRANSFORMER

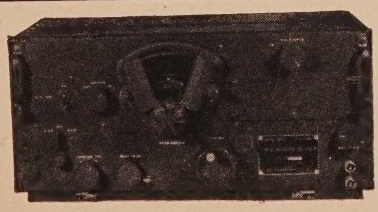
2½" x 3-3/7" x 1⅝" marked 142.5 KC IF - 243.5 KC IF. Six connectors on bottom grid cap. Connection out of side. Trimmer condensers readily accessible. Brand new aluminum case. Price **75c**



TURBO AMPLIFIER

Used for parts—shipped complete with the following tubes: 2—7C5's, 1—7Y4, 1—7F7.

Price ..... **$1.00** ea.



A TREMENDOUS BARGAIN
Quartz Crystals without Holders

Get an assortment of these and grind to your own frequencies or use them as they are. .5x.6" B-cut lapped on faces and squared on edges. (Ready to use). We will give you an assortment of these from approximately 13 thousandths of an inch to 24 thousandths of an inch whereby you can grind to frequencies desired. These crystals are now ground to the approximate following frequencies:

3880	4640	6225	7300
3900	4900	6275	7400
4140	5300	6700	7500
4600	5580	6850	7800
4650	5800	6900	7900

Formula for converting thicknesses of B-cut crystals to frequency is as follows: F=98.4/T where F is frequency in kilocycles and T is thickness in inches.

AN ASSORTMENT OF 20 DIFFERENT THICKNESSES **$1.50**

BC-348 COMMUNICATIONS RECEIVER

6 bands, 200-500 Kc. and 1.5-18 Mc. 2 stages RF, 3 stages IF, BFO, crystal filter, manual or AVC. Complete with tubes and 24 V. dynamotor. These receivers have been thoroughly checked in our work-shop and found in excellent condition. Converted to 110 V. AC 60 cycle $80.00

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

ESSE RADIO CO.

ESSE WILL BUY

INDIANAPOLIS, INDIANA

ANYTHING ELECTRONIC

Attention Factories, Hams, Dealers, Individuals

. . . just Anybody

Some of the equipment listed below is urgently needed by our company to meet the demands of customers and we will pay the highest cash prices. Send letter with full description describing condition and quote price. We will immediately answer and if we can use your equipment, we will authorize you to send it to us COD.

We are dealers in surplus electronics and we are interested in anything dealing with radio or television. We are especially interested in large quantities of surplus and anything that can be bought at a bargain price. Please don't hesitate to write us immediately. Quote us prices on what you have and give us a full detailed description. We will not answer any letter unless description and price is quoted.

WE NEED AT ONCE!

We Are Especially Interested in Large Quantities

BC-348 Receivers, AC or DC models
BC-312 Receivers
BC-221 Frequency Meters
SCR-522 Transmitters & Receivers
Hallicrafters BC-610 Transmitters
Any factory built transmitters and receivers such as Hallicrafters, National, Temco, Collins, RCA, RME, Hammerlund, Millen, Meck, Harvey-Wells, Meissner, Sonar, McMurdo-Silver, Gonset, Stancor, Bud, etc.
Amateur or commercial sets
Large stocks of tubes
Large stocks of transformers
Large stocks of condensers
Large stocks of resistors
Large stocks of speakers
BC-224 Receivers
BC-342 Receivers
Police type VHF transmitters and receivers for mobile application
Collins ART-13 Transmitters
APS-13's
SCR-269F or G Fairchild or Bendix ADF's
Headphones in quantity lots
Microphones in quantity lots
Field telephones
Sound-powered telephones

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

ESSE Radio Co

40-42 W. SOUTH STREET
INDIANAPOLIS 4, IND.

Unless Otherwise Stated, All of This Equipment Is Sold As Used
CASH REQUIRED
WITH ALL ORDERS
Orders Shipped F.O.B. Collect

didn't send in this stuff, there wouldn't be a column. (Is that bad?—**Herb.**) We mention your calls in connection with it for two reasons. First, it gets us personally off the hot seat if the info is later found to be incorrect . . . . and second, if you go to all the work of giving us this info, we think that the least we can do is to acknowledge it. Further, our silent reader says that it would give him no thrill to read that **HE** has worked so and so, so and so, etc., so he just keeps silent. Frankly, OM, we don't think that this would thrill anyone, and we don't particularly encourage it. In fact, we try to keep it out of this column. There are other places where this type of stuff can be read by those who do like it. What we want is just the kind of information that you have sent in, and if this is looked upon as "blowing your horn," then "Blow, Gabriel, Blow." Here is his contribution: W6CRE/KC6 and W6ATB/KC6 are now KG6GC and KG6GD, respectively. They are back on Guam and with no indication of returning to Palau or any other DX location. A note from HB9IM states that HB9EC has never operated from Lichtenstein, so HE1EC is definitely a pirate. However, HB9IM says that for some unknown reason, during the last three months of his life, HB9CE sometimes signed HE1EC. The son of HB9CE is sending out cards for his last contacts. HB9EL has operated at his rig a few times. PJ1KO has changed his call to PJ5FN to avoid confusion with PJ5KO, and is now sending out QSLs.

A letter from Jules, TA3AA, says that no one has ever operated an official ham station in Turkey. TA3FAS has very vague permission for an Air Force circuit, so they just included ham frequencies. All others have been and are unlicensed, just like TA3AA. TA3GVU is behind a movement to permit licensing hams in TA which is going before the General Assembly, but it will probably be several years before any definite results can be expected. Jules had planned a big week end in Lebanon during August, but gave it up for a 12-day trip through I, ON4, SM, OZ, PAØ, F and even an evening at Monte Carlo, which cost him only 3 bucks on the roulette wheel! He still plans on going to Khios or Mytline Islands, Greek Islands off Turkey, from which SV7AA may be heard at 14,000 kc. The July trip to Khios was postponed, and fortunately, because the Island had an earthquake causing it to sink 35 centimeters. Next spring should take Jules to Lebanon, and he hopes to be able to operate there offically. Thanks, Jules, but we wish we could finance you into Kuwait.

According to FE8AB, FD8RG may return to French Togoland in the near future for a two-year stay. VP5XX, on Caicos Island, is vouched for by W4LVV, and hopes to be officially licensed before too long. ZS6PE on Marion Island, we think phone only, is on occasionally, but is unusually busy with skeds.

QTHs

CR5UP	Leonel Pias, Sao Tome Is., Port. W. Africa
EA3DY	268 Aragon St., Barcelona
EA7AU, EA7CP	Box 52. Seville
EK1PA	c/o RCA Communications, P.O. Box 57, Tangier Zone
FA9RZ	Jack Burye, 16 rue du Fondouck, Oran
F9QU/FM8	c/o FM8AA
FM8AD	c/o W4AZK, D. S. Traer, Box 993LR, Miami, Fla.
FN8MS	Radio FN8MS, Doyerdhar, Chandernagore, Fr. India, via Calcutta
KM6AO	C. A. Clarke, Navy 1504, c/o F.P.O., San Francisco
KR6BG (J9ADX)	Doc Sievers, 1720 Alexander Ave., Owensboro, Ill.
LZ1ID	c/o Radio Sof'a. Sofia, Bulgaria
M1B	Mario Graziani, Piazza dello Stradone, San Marino
MD4JG	c/o VQ4CJG, Nairobi, Kenya
MP4BAD	via RSGB
OX3MC	A.P.O. 858, c/o Postmaster, N. Y. City
PJ5FN	c/o W5FNA
PJ5TR	c/o W4BYF
TA3AA	M/Sgt. J. Wenglare, U.S.A.F., T.U.S. A.F.G., Attaturk Blvd., Ankara
TI2SA	Guillermo Guell, P.O. Box 1266, San Jose
VP4TAQ	Cecil A. O'Brien, 4 Woodford Rd., St. James, Trinidad
VS6AX	P.O. Box 541, Hongkong
ZC6PM	via W8WEN, 576 Detroit Ave., Youngstown 2, Ohio
ZD6DT	c/o VQ2DT, Fort James, No. Rhodesia

BUILD IT YOURSELF IN A FEW EVENINGS!

TRANSMITTER TRIUMPH!

the JOHNSON VIKING 1



Available in Complete Kit Form Only

Here it is! Commercial transmitter efficiency and appearance at kit prices!

Novice or oldtimer alike can assemble and get brilliant performance from the VIKING I. Everything is done for you . . . a wiring harness containing all AC and DC leads is furnished, eliminating assembly errors . . . chassis is drilled and punched. All bands, 160, 80, 40, 20, 15, 10 - 11.

All parts are furnished except tubes, mike, crystals and key. Tubes required—RF tubes: 6AU6, 6AQ5, 4D32-AF tubes: 6AU6, 6AU6, PP807S.

Write for your illustrated catalog today!
Amateur Net Price $209.50

Check These Features

- Output—100 watts, with AM phone on all bands, 115 watts cw.
- Pi-section output stage—for operating ease—efficiency.
- Most any antenna can be used without external couplers.
- Advanced Design—there are no plug-in coils. It's entirely band switching, from front panel.
- Final Tank Circuit—has variable inductor with variable pitch for high Q throughout range. Additional inductance switched in for 160 meter band.
- Select any one of ten crystals from front panel.
- 807 modulators, frequency response limited from 300 to 3,000 cycles.
- Switch provides meter in all important circuits.
- Unique crystal oscilator.

E. F. JOHNSON CO.
WASECA, MINN

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

(from page 37)

remained the same over the entire transmission path with little evidence of dispersion. Six meters, according to our data, was practically dead. In short, the openings showed very few of the characteristics usually connected with ionosphere skip, and practically all of the characteristics of extended-range tropospheric work. My own opinion —blame it on the atmosphere.

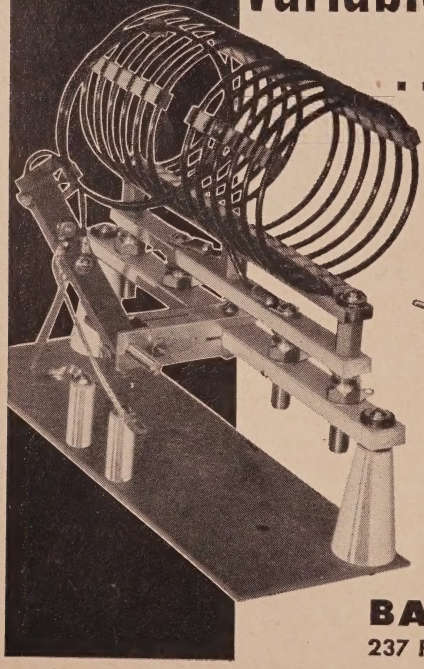
The Polarization Problem

As was pointed out in the paragraph above, the polarization of the signals seemed to remain essentially constant in spite of the extended range transmission via the atmosphere. This dashes the hopes of certain "pacifists" who had long cherished the idea that when really long distances were covered, the signal polarization would be twisted and scattered to the extent that the polarization of the receiving antenna would be unimportant. This thinking was probably based on experience with lower frequency transmissions in which the ionosphere played an important part. But even in some cases of aurora reflection on two meters the polarization has appeared to be definitely either horizontal or vertical. W3RUE of Pittsburgh reported that during the aurora disturbances of last winter he received two-meter signals emanating from the East on vertical and from the West on horizontal—fairly convincing proof that it is wisest to use the same polarization as the station you are trying to work, even on aurora. It is obvious that standardization would be desirable.

But let's look at this problem on a nation-wide basis. The heavily populated north Atlantic coast regions are still predominately vertical, on a numerical basis. A few stations, not more than 10 percent of those now active on the band, are set up for both polarizations. A very small minority are exclusively horizontal. The Midwest, in Vince Dawson's words, is "horizontal, of course." We have not heard lately how the vertically polarized gang in the Chicago area have made out, surrounded as they are by so much enemy heavy artillery. Quantitatively, activity in this section is still lower than on the east coast. On the west coast, especially in the regions around the major cities, vertical polarization seems to be the more popular. Judging from the scores turned in from this section during recent contests, activity is high, in fact, nearly as high as on the east coast. The south west gang have apparently not accepted either polarization as best, to date. Most of their attempts were made on vertical, at first, but now a very vocal representation headed by W5CVW is trying to swing the rest to horizontal. The Florida delegation at the last reckoning seemed to be trending toward vertical. The middle Atlantic states were always a haven for horizontal-antenna men, but many of the stations in that region made provision for vertical operation to permit more frequent contacts with the Yankees to the northeast of them.

For some reason Ye Ed has been typed as a strong proponent of vertical polarization. This situation no doubt developed due to a letter which was published in a contemporary publication over our signature in which we stated that there was no good scientific evidence, experimental or theoretical, which proved that one or the other polariza-

Variable Center Link Inductors
. . . for matching impedances



B & W pioneered the variable link coil several years ago and today, it is a standard, not only with most amateurs, but in many commercial applications. This type inductor is ideal for stages where variable loading is required and may be adjusted easily for matching impedances.

Introduction of the new B & W Plug-in Links, increases the flexibility of this type coil and makes matching a wide range of impedances just a matter of pulling out one coil, and plugging in one having the required number of turns.

Write for information on B & W Variable Link Inductors and Plug-in Link Coils to: **CQ-119**

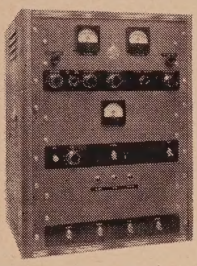
BARKER & WILLIAMSON, Inc.
237 Fairfield Avenue **Upper Darby, Pa.**

LEO LEADS!

Join the parade to WRL's ***More Watts Per Dollar*** values. It doesn't pay to build your own rig when you can save money by owning one of my XMTR's. I guarantee my XMTR's for ONE FULL YEAR against all defects in workmanship and materials.



LEO I. MEYERSON
WØGFQ



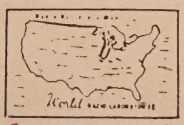
THE NEW WRL "400" GLOBE KING

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

DOWN PAYMENT 20%

$399.45 WIRED

$379.45 KIT FORM



GIANT RADIO REFERENCE MAP

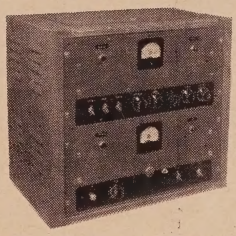
Just right for your control room wall. Approximately 28"x42". Contains time zones, amateur zones, leading short-wave stations, monitoring stations. Mail Coupon Today and **25c**

FREE



The most complete HAM CATALOG ever assembled. Everything in radio from soup to nuts. Send for your copy today!

WRL 175 WATT GLOBE CHAMPION

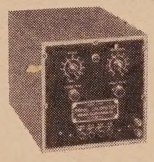


R. F. Section a complete 175 watt XMTR—provisions for ECO—automatic bias on Final and Buffer—voltage regulated Oscillator and Buffer—class B Speech Modulator—175 watt input from 10 thru 160 meter band—complete with tubes, meters, and 1 set of coils. Specially crated for safe shipment.

20% DOWN — E-Z PAYMENTS

$299.00 WIRED

$279.00 KIT FORM



MEISSNER SIGNAL CALIBRATOR

Precision Frequency Standard

NEW—not a surplus item! 100 KC, 50 KC, and 10 KC "markers" up to 20,000 KC. Push-button control of frequency—delivers modulated or unmodulated signal. Easily set—instantly checked. Well ventilated cabinet. Complete with AC power supply and 7 tubes.

20% DOWN

(FORMERLY SOLD FOR $78.75).... **$29.95**

WRITE—WIRE
PHONE 7795

World Radio LABORATORIES INCORPORATED
COUNCIL BLUFFS, IOWA
EVERYTHING IN RADIO

WORLD RADIO LABORATORIES C-11
744 West Broadway
Council Bluffs, Iowa

Please send me:

- ☐ New Catalog
- ☐ Radio Map
- ☐ List of Used Equipment
- ☐ "400" Globe King
- ☐ 175 Watt Globe Champion

Name.....

Address.....

City..... State.....



A PRECISION TEAM!
Crystal controlled output on 2 and 6 meters using a Bliley AX3 crystal in a Bliley CCO-2A oscillator.

CCO-2A Oscillator $9.95
AX3 Crystal $3.95

Leading Amateurs Know That Bliley Advance Design And Quality Craftsmanship Is Their Assurance of Top Performance On All Ham Bands. *Always Specify: Bliley!*

Bliley
CRYSTALS

BLILEY ELECTRIC COMPANY
UNION STATION BUILDING
ERIE, PA.

tion was superior for the type of work that most hams want to do on two meters. Thus, we reasoned, why not standardize on the system which was in wider use—namely, vertical? That was our opinion two years ago, and there is still no good reason to change the original idea. However, in the light of the developments of this past summer, the supporters of horizontal polarization have a pretty strong

(Continued on page 58)

Radio Amateur Scientific Observations Observers as of September 26, 1949

W1s ATP, BWJ, CGY, CGX, CLH, CLS, DGV; DJ; EIO, GJO, GJZ, GHZ, HIL, HMS, JQA, KEX, KHL, LSN, MEP, MOP, OIR, PWW, QXE, RDA; RGY.

W2s ADA, BAY, BYM, COT, GYV, IDZ, KZG, LAL, MEU, ORA, PRW, PTC, PWP, PAU, RLV, RUA, RYT, SYR, TUK, TZU, WSM, RPZ; ZUW

W3s BGT, CIR, CUB, EVW, FWO, HC, IZL, JVI, KEM, KFM, KKN, KMN, KMV, IUN, KXI, MFY, MKL, MQU, MXW, NKM, OJU, PCB, RUE, TIF.

W4s AVT, BEN, BSS, CDC, CNK, CPZ, CVQ, DRZ, ED, EID, ENL, EQM, FBH, FBJ; FBL, FI, FLW; FNR; FQI, FWH, GMP, GYO, HBE, HHK, HVT, HVV, IUJ, KHL, KIP, KKU, KYW, LEC, LNB; LNG, LVA; MKT, MS, NEE, OMP, OVT, OXC, QN, RBK, WMI.

W5s AFX, AJG, ATJ, BAJ, BFA, BHO, CUH, CXS, DFU, EKU, EMY, FAL, FFM, FRM, FSC, GNQ, GTP, HKI, HLD, HTZ, IRP, IVU, JAK, JBW, JGJ, JKB, JLY, JME, JNG, JTI, KSW, KXO, LF, LIU; LOW, LWG, MAW, MJD, ML, MYP, MXI, NHD, NLP, NS, NU, ONS, OTU, PFC, PFD, PKX, UW; VV, VY, WX, ZZF.

W6s AMD, ANN, BLZ, BQR, CAN, CDQ, DQY, EIB, ERE, FFF, FPV, GGM, IWS, JRM, NAT, NAW, PSQ, PUZ, QUK; SFL, SK, SUK, TMI, UOV, WNN, ZUX, K6BF.

W7s ACD, BYK, CJN, COL, DYD, EHP, ERA, FDJ, FGG; FIV; FLQ, GBI, GCS, HEA, KKB, ILL, JPA, JRG; JXC; KLK, KOP, LLO,MWQ, OWX, QAP, QLZ, QNC, SP, TJY.

W8s CMS, CVQ, DGG, EP, FAZ, JKN, LBH; NBM, NQD; NSS, RDZ, RFW, TDJ, TOB, UZ, WSE, YLS, VDF.

W9s ALU, AQQ, BIQ, GDD, GWL, HGE, IZQ, KAJ, LMX, MBL, NJT, PK, PNW, QKM, QUV, RQM, TMI, UIA, VZP, ZBK, ZHL.

WØs BJV, BPL, CJS, DER, DNW, ELL; GSW, IFB, INI; IPI, IZF, JHS, JOL, JON, JRP, KRZ, KSB, KYF, LQW, MVG, NFM, PKD, QDH, QIN, SHW, SII, TI, TKX, UEL, URQ, VIK, VMY, YXS, ZJB, ZJY.

CO6WW, HC2OT, KH6PP, KL7NT, KL7UH, LU5CK, OA4AE.

VE1EI, PQ, QY, QZ, VL

VF2AGT, SR

VE3AAJ, AET, AGB, AJS, ANY, ARV, ATB; AXM; AXT, AZV, BYZ, DDT, YY.

VE4FU

VE5NC

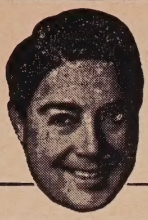
VE7AAH, AEZ, BQ, CN, DU, NM, OE

XE1FU, XE1GE, XE1QE

XE2FC, XE2C

YV5AC

SWLs, Brennert, Patterson, Hubbard, Lesser, Horton



HENRY HAS COLLINS

Henry Radio stores in Butler, Missouri and 11240 West Olympic Blvd., Los Angeles, California have complete stock of all Collins and of all other amateur receivers, transmitters, and parts. I promise you that you can find nowhere else lower prices, more complete stocks, quicker delivery, easier terms or more generous trade-ins. I give you 10-day free trial and 90-day free service. I promise that you will be satisfied on every detail. Write, wire, phone or visit either store today.

Bob Henry
W6ARA

A FEW ITEMS I STOCK ARE:

National NC-33	$ 57.50
National NC-57	89.50
National NC-173	189.50
National NC-183	268.00
National HRO-7	292.50
National HRO-7C	372.45
National HFS	142.00
Hallicrafters S38	39.95
Hallicrafters S72 portable	79.95
Hallicrafters S40A	79.95
Hallicrafters SX71	179.50
Hallicrafters SX43	159.50
Hallicrafters SX42	275.00
Hallicrafters SX62	269.50
Hallicrafters HT18	110.00
Hallicrafters HT19	359.50
RME HR-10-20	77.00
RME VHF-152A	86.60
RME DB22A	71.00
Hammarlund HQ-129X	177.30
Signal Shifter EX kit	49.75
Telvar T60-2	150.00
Harvey-Wells TBS-50	99.50
Harvey-Wells TBS-50A	121.25
Hunter 20A Cyclemaster	169.50
Subraco MT-15X	79.95
Hallicrafter & National TV sets	

Gonset, Silver, Meissner, Milen, Sonar, Stancor, Bud, Mon-Key, Vibroplex, B & W, Johnson, RCA, Gordon, Amphenol, Hy-Lite, Elincor, Workshop, Premax; I have everything for the amateur.

Some prices higher on west coast

FOR EXAMPLE:

Collins 75A-1 receiver	$ 375.00
Collins 32V-2	575.00
Collins 30K-1	1450.00
Collins 70E-8	40.00
Collins 310C-1	60.00
Collins 310C-2	75.00
Collins 310B-1	190.00
Collins 310B-3	215.00

COMPLETE STOCKS

Henry has *everything* in the ham field.

QUICK DELIVERY

Shipments *4 hours* after receipt of order. Send $5.00 with order and shipment will be made at once C.O.D.

TRADE-INS

You can't beat Bob Henry for trade-ins. Write, wire or phone today about your equipment and Bob Henry will make you a better offer than you can get anywhere else.

TIME PAYMENT

Because Bob Henry finances the terms himself you get a better break. Save time and money, deal with Bob Henry on his personal, profitable time payment plan.

Butler, 3, Missouri

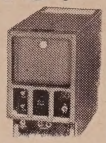
HENRY RADIO STORES

11240 Olympic Blvd.
LOS ANGELES 25
CALIF.

"WORLD'S LARGEST DISTRIBUTORS OF SHORT WAVE RECEIVERS"

WAR SURPLUS
Special Sale!

BC-605 Interphone Amplifier



Easily converted to an ideal inter communications set for office - home - or factory.

Original — New.....**$4.95**
Like New **3.95**
with schematic

Conversion Diagram

and instructions complete with necessary parts. This kit consists of 3 tubes—2 speakers—1 speaker baffle (for remote speaker) 100 Ft. 2-cord cable—1 switch—1 line cord—2 etched plates—miscellaneous resisters—condensers—hardware—and all that is necessary to convert. New.....**$8.25**

BC-604 Transmitter FM 20-28 MC

11 and 15 meters. Can be operated on 10 meters—10 channel push button crystal. With all tubes and meter but less dynamotor.

Excellent Condition.....**$12.95**
Crystals—Set of 80..... **14.95**

Receiver

Easily Converted for use in **Citizens Band** Crystal Controlled Local Oscillator. Broad Band Pass — 20-7 MC I.F.'s. Complete with 7-6AJ5, 1-12SR7, 2-12SN7, 1-28D7, relays, crystals. Schematic furnished — used.....**$7.95**

AN/APN-4

Indicator: Uses 5 CP1, Loran. convert to test scope, panadapter, etc. Contains extremely accurate 100 kc xtal to time sweeps and marker pips at 2, 20 and 100 kc. Two parallel horizontal sweeps, obtain time differences between signals, between half power points on passband curves, and numerous other scope uses. Experimenters' delight! Use the counter circuits to try the new system of FM demodulation (July Proc. IRE) or to time camera shutters, 25 tubes. Condition: used, excellent. With schematic.....**$29.50**

DYNAMOTORS

	USED	NEW
DM 28—For BC 348 with Mount and Filter	**$3.95**	**$6.95**
DY 12—For ART 13 less filter and base	———	**9.95**
DM 36	**.95**	**1.95**
BD 77	———	**5.95**
PE 206	**2.75**	**6.95**
PE 101	———	**2.75**
DM 53 .....3 for $2.00	**.95**	**3.95**
DM 32 .....3 for $2.00	**.95**	**1.95**

Surprise Package

20 lbs. asst'd radio parts . . .
A $25.00 value for only $1.95

Resistor Kit

(Long leads, New) 100 Asst'd.....**98c**

Special

Tubular—and—"FP"—AC-DC popular brand condensers—Good numbers—High and low voltages . . . 10 Asst. — **$1.69**

NEW Catalog

listing many surplus values. **Write for your FREE copy TODAY.**

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

ARROW SALES, Inc. Dept. Q

1712-14 S. Michigan Ave., Chicago 4, Ill.
North Side Branch: 1802 N. Humboldt Blvd., Chicago 47, Ill.
West Coast Branch: 1260 S. Alvarado, Los Angeles, Calif.

TVI-FREE RIG FOR 10

(from page 26)

Typographical errors occurred on page 64, October '49 *CQ* in the first installment of this article. Part of the original text was omitted, eliminating two significant points.

(1) The 813, when mounted in a horizontal position should always be oriented so that the plate structure of the tube is in a vertical plane.

(2) In *Figure 7* it can be seen that the quadrupler plate-tank is mounted on the side of the BC458. Space can be saved if the antenna loading coil is removed from the v.f.o. unit, and the quadrupler tank installed in its place.

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

(from page 56)

case to use in future discussions. The evidence is largely circumstantial, but it appears that more DX contacts covering greater average mileage were made by stations using horizontal than by those using vertical. Whether the same work might have been done if vertical polarization were the vogue in the areas affected by the year's big band openings is a question which will probably never be answered. Again speaking from my own experience, I'm certain that identical results could have been obtained using vertical. We have run tests using both polarizations, under as carefully controlled conditions as we could set up. Our results have been strictly inconclusive. W1HDQ of Canton, Connecticut, has also run many tests, and, to date, he has announced no conclusions. You may well ask "What about these cases where two fellows tried in vain to hook up using vertical, and couldn't—then, when they switched to horizontal the signals were S8?" Durned if I know the answer to that, but I can state without fear of contradiction that the *biggest* difference we have ever noted in all the tests which we have run with the stations within our range who are equipped for "flip-flop" tests was a single S point, and the average difference was nil.

Gazing into our crystal ball, we will venture a slight prediction that in the future just about all the long-range DX chasing will be done on horizontal polarization, but the vertical antennas will still be the mainstay of the day-in-day-out activity on the band, especially around the major cities. Enough editorializing, let's get on with the news.

The September 16 Band Opening

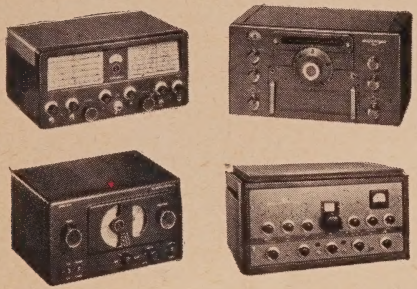
WØEMS, co-holder of the new record, states that the night of the 16th of September and the morning of the 17th were **really** "hot." During the course of the evening he worked 10 states in 5 call areas, which is not bad, considering that his total to date is 13 states and 5 call areas. All this in only 2 months on the air. Frank thinks that he has had his share of luck, and maybe a bit more, too! His transmitter is a simple SCR 522 running about 15 watts input. (Who said it takes high power?) The antenna is a four-element rotary only about 33 feet high. The receiver consists of a 6J6 preamplifier feeding into a 522 operated as a converter feeding an HRO. Frank hopes to get a 16-element



Your NEW 1950 ALLIED CATALOG is Ready Now!

196 VALUE-PACKED PAGES

YOU'LL FIND ALL THE NEW GEAR IN THE BIG 1950 ALLIED CATALOG



Have Every Buying Advantage

- World's Largest Amateur Stocks
- A Real Break on Time Payments
- A Square Deal on Trade-Ins
- Fastest Service on All Orders
- Ham-to-Ham Personal Help

Send for the Leading Amateur Buying Guide

Get and use the *only* Buying Guide in Amateur Radio that gives you *complete* selections of station equipment at consistently lowest prices. The new 1950 ALLIED Catalog offers all the newest and best in receivers, transmitters, parts and station gear, ready for immediate shipment from the world's largest stocks.

Expert service by our seasoned ham staff—dollar-saving trade-in allowances—an amazingly liberal Time Payment plan—15-day trial on receivers—full 90-day guarantee—all these add up to the most reliable and economical service in Amateur Radio. Get all these advantages now—send for your 1950 ALLIED Catalog, the world's leading Amateur Buying Guide.

IT PAYS TO BE "EQUIPPED BY ALLIED"

Keep this Buying Guide Handy... **FREE**



ALLIED RADIO

Everything for the Ham

ALLIED RADIO CORP., D. L. Warner, W9IBC
833 W. Jackson Blvd., Dept. 16-L-9
Chicago 7, Illinois

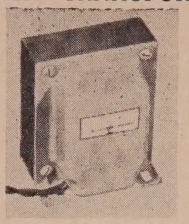
☐ Send FREE New 1950 Catalog

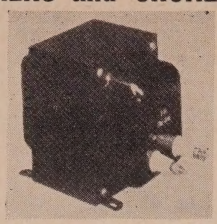
Name .....

Address .....

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

NEW TRANSFORMERS and CHOKES





TRANSFORMERS — 115 V.A.C. 60 CYCLE INPUT:

OUTPUT: 750-0-750 V.A.C. (600 V.D.C. after choke input filter at 250 MA.) Includes 6.3 V.A.C. winding at 5 amps and 5.0 V.A.C. winding at 4 amps. CH-106 . . . . . **$7.95**

OUTPUT: 625-0-625 V.A.C. (500 V.D.C. after choke input filter at 250 MA.) Includes 6.3 V.A.C. winding at 5 amps and 5.0 V.A.C. winding at 4 amps. CH-107 . . . . . **$7.35**

OUTPUT: 600-0-600 V.A.C. at 250 MA. 12 V.A.C. at 3 amps; 12 V.A.C. at 3 amps; and 5 V.A.C. at 3 amps. Designed for Army surplus transmitters. CH-108 . . . . . **$6.90**

OUTPUT: 250-0-250 V.A.C. at 60 MA. 24 V.A.C. at .6 amps; 6.3 V.A.C. at .6 amps. Designed for Army surplus Receivers. CH-109 . . . . . **$3.00**

OUTPUT: 6.3 V.A.C. at 6 amps. CH-110 . . . . . **$2.25**

OUTPUT: 24 V.A.C. at 2 amps. CH-111 . . . . . **$2.25**

OUTPUT: 2.5 V.A.C. at 10 amps. Center tapped and shielded. Open frame mounting insulated for continuous operation at 5,000 Volts. CH-113 . . . . . **$4.20**

CHOKES

CH-115—8 Henries at 500 MA. filter choke, 5,000 volt insulation **$9.95**

CH-116—5-20 Henries at 500 MA. swinging choke, 5,000 volts insulation **$9.95**

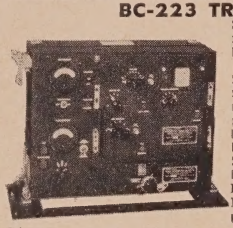
CH-117—8 Henries at 700 MA. filter choke, 7,500 volt insulation **$14.95**

CH-118—5-20 Henries at 700 MA. swinging choke, 7,500 volt insulation **$14.95**

CH-121—15 Henries at 250 MA. filter choke, 1,500 volt insulation **$4.95**

ALL TRANSFORMERS AND CHOKES ARE CASED!
All Above Items Are Brand New . . . Not Surplus!

BC-223 TRANSMITTER



30 Watt Transmitter with crystal oscillator control on four preselected channels — also master oscillator. Frequency coverage 2000 KC. to 5250 KC. by use of three plug in coils. Five tube operation, 801 oscillator, 801 power amplifier, two 46 modulators, and one 46 speech amplifier. Price with TU-17 Tuning Unit, 2000 to 3000 KC. and cable from transmitter to dynamotor. Prices:

NEW **$24.95**

USED: **$19.95**

CABLE only for Transmitter to Power Supply for BC-223 Transmitter. Price **$1.75**

ADDITIONAL TUNING UNITS:	NEW:	USED:
TU-17 2000 to 3000 KC.	**$3.50**	**$2.50**
TU-18 3000 to 4500 KC.	**3.50**	**2.50**
TU-25 4500 to 5200 KC.	**3.50**	**2.50**

PE-125 POWER SUPPLY for BC-223 Transmitter. Operates from 12 or 24 volts and supplies 500 volts at 150 MA. Prices: NEW . . . . . **$9.95**; USED **$7.95**

WHIP ANTENNA EQUIPMENT



MP-22 MAST BASE—(Ill.) mounting with spring action and 4″ x 6″ mounting bracket. Insulated at tope to receive mast sections listed below. Price **$2.95**

MP-47 MAST BASE—has heavy coil spring and large base insulator, used with BC-610 Transmitters, etc. **$5.95**

MP-48 MAST BASE—has heavy coil spring and insulated at top, requires 1⅜″ mounting hole **$2.95**

MP-37 MAST BASE—has heavy coil spring and 8″ insulator at bottom, requires 2″ mounting hole **$3.95**

MP-57 MAST BASE—same as MP-37 but has 5″ insulator **$3.95**

MP-132 MAST BASE—has 1″ dia. heavy coil spring, 2″ insulator at bottom. Requires 1″ mounting hole. Overall base length 11½″. Price **$3.95**

MAST SECTIONS FOR ABOVE BASES: Tubular steel, copper coated, painted, 3 foot sections, screw-in type. MS-53 can be used to make any length, with MS-52-51-50-49 for taper. Price - any section . . . . . **50c Each.**

ORDER NOW — ADDRESS Dept. CQ — PRICES F.O.B., LIMA—MINIMUM ORDER $2.00—25% DEPOSIT on C.O.D.'s

FAIR RADIO SALES

123 South Main St. Lima, Ohio

beam up soon. On his biggest night, he worked Iowa, Illinois, Indiana, Michigan, Ohio, Pennsylvania, West Virginia, Virginia, Missouri, Kentucky, W8EP at Terra Alta West Virginia, was S8. Solid phone QSCs were held with most of the stations contacted. W8BFQ had the S-meter up against the pin for over two hours. Wotta night! All in all, WØEMS worked 34 stations on two, which for him represented a nightmare of activity.

On the other end of the record hop was John, W4JFV, who is an operator at WSLS-FM. He has his equipment set up at the FM transmitter house, 12 miles southwest of Roanoke, Virginia. This site is about 3900 feet above sea level. Since winds are high and icing conditions develop frequently, the two-meter antenna is a mere six elements. The rig is an SCR 522 with an 829 outboard amplifier, running about 80 watts input. The receiver used a 6J6 pre-amp into a BB-144 broad-band two-meter converter into an HQ-129 X. John was on duty on the night of the 16th and WØEMS, W8MBI, and W9GZQ were among the first stations heard, at 8:30 p.m. Since W4JFV was set up for operation on 147 mc, the "Virginia" frequency, he had a lot of trouble getting the Westerners to tune up to his frequency. Apparently the activity above 145 mc is very low, out in those parts. In fact, WØEMS had to re-align his receiver to permit tuning to 147 after he heard that W4JFV was up there! But in spite of the liability of his high-end crystal. John managed to scrape up 20 contacts with Ohio, Indiana, and Illinois stations. It was midnight before WØEMS was finally raised for the record-making QSO, and a solid phone contact was carried on for almost 20 minutes. The log shows that during the evening John worked 7 states and heard 10. He has arranged that in the future the operator on duty at the FM station will call him on the land line whenever there seem to be signs of a band opening. There is a TV receiver on hand to check conditions on the channels close to our frequencies! Under the circumstances it would be wise to look for W4JFV during the next opening—no longer on 147 but on 145.35 mc. See, it pays to tune up into the band after all!

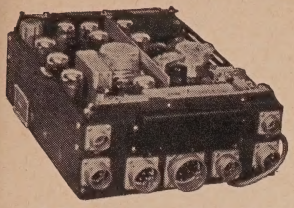
Two Meter Notes

To W4AO, Falls Church, Va., goes the medal for being the most persistent ham on the East Coast. On August 24 we had a bang-up opening up and down the seaboard and VE1QY was really getting out. W4AO must have called VE1QY about fifty times during the evening, all to no avail. It is either W4AO's modest power or VE1QY's receiver that brought about this failure. Ross intends to do his part, because it has been heard on good authority that a final amplifier capable of much more than a kilowatt output and a very heavy shipment of high-power components arrived at Falls Church the very next week! Ross operates consistently on 146 mc, and has one of the finest receivers in these parts.

W2NGA, Doc, of the Bronx, N.Y., has been trying horizontal polarization. Doc has a suggestion which makes sense. When testing the effect of a new antenna system, Doc runs low power—barely adequate to get through. When the signal is so weak that it gets down into the noise level any changes are much more apparent. The tests then depend to a much smaller extent on the accuracy of the other fellow's S meter. Since one of my own biggest gripes on this two-meter band is the way the gang seem to hand out db reports as if the doggone meters were actually accurate (which very few are) we can sympathize with Doc's approach. He also gains a very important bonus through his low-powered activity. He can operate his rig right through the evening hours when TVI formerly kept him off the air. At the moment Doc is trying horizontal polarization, and he says that on an average the signals he can hear on horizontal are better than the signals he got on vertical from the same stations last year.

A sobering note in the midst of all these almost unbelievable DX stories is furnished by the announcement of the results of the Two Meter Mileage Contest which was run by the Amateur VHF Institute of New York last April, when the band definitely did not open wide. Scores were submitted from 17 ARRL sections, and the winners from each of these sections will receive a very fancy certificate. Best total mileage run up during the two day contest period was turned in by W2BV who operated mobile at High Point State Park, New York. His 32-element **mobile** beam and 522 transmitter accounted for a cumulative total of 4,249 miles. W1RMZ, listed as operating in Eastern Massachusetts, was runner-up with 3,805 miles. The best single-contact DX was made by W6ZOE and W6IFE. This contest stimulated considerable interest in some quarters, and the boys of the VHF Institute wish to thank participants.

"HARD-TO-FIND" SPECIALS:



BC-645-A TRANSCEIVER For CITIZENS BAND

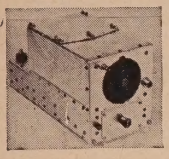
● 15 Tube Transceiver ideal for conversion to 460 MC. Citizens Band. Frequency coverage 435 to 500 MC. Complete conversion instructions for Citizens Band furnished. Price.....NEW and BOXED.....**$16.95**

DYNAMOTOR PE-101 f/BC-645-A 13 or 26 V. input. Required voltage output..**$2.95**

TRANSFORMER for BC-645-A—110 Volt 60 cycle input; output 400 Volt 150 MA after filter. 12, 9, & 6 VAC 4 amps and 5 V. 3 amps. #CH-645.....**$6.95**

CHOKE—15 Hy. 150 MA. #CH-646.....**$2.95**

COMMAND RECEIVERS—TRANSMITTERS—and ACCESSORIES



	USED:
BC-453 Rec. 190-550 KC....	**$12.95**
BC-454 Rec. 3—6 MC.....	**6.95**
DUAL or TRIPLE REC. RACK..	**1.50**
BC-450 Triple Con. BOX.....	**1.95**

TRANSFORMER—F/Comm. Rec. 110 V. 60 Cy. input; output 250-0-250 VAC., 60 MA., 24 AC .6 A. & 6.3 VAC., .6 A. #CH-109.....**$3.00**

DYNAMOTOR—Can be used on 6 VDC to supply 240 V., 50 MA. f/Comm. Rec. Mobile operation. USA/0515.....**$2.95**

	USED:	NEW:
BC-457 Trans. 4—5.3 MC.....	**$7.95**	**$ 9.95**
BC-458 Trans. 5.3—7 MC.....	**5.95**	**8.95**
T-18 Trans. 2.1—3 MC.....	**8.95**	
T-20 Trans. 4—5.3 MC.....		**9.95**
T-23 Trans. 100—156 MC.....		**29.95**
DUAL TRANSMITTER RACK.....		**1.50**
BC-442 ANTENNA RELAY BOX w/Cond.....		**2.95**
BC-456 Trans. MODULATOR Re-issue.....		**2.50**
BC-451 Trans. CONTROL BOX.....		**1.50**

TRANSFORMER—F/Comm. Trans. 110 V. 60 Cy. input; output 600-0-600 VAC 250 MA.; 12 VAC 3 A. & 12 VAC 3 A. & 5 VAC 3 A. # CH-108.....**$6.90**

CHOKE—15 Hy., 250 MA. # CH-121.....**$4.95**

EXTRA SPECIALS:

CO-213 CABLE—Seven Conductor # 20 AWG., two cond. separately shielded within an outer shield for all 7 cond.s. Insulated, rubber covered, 35 Ft. length.. **$1.25**
4 Cond. Cable, rubber covered, shielded, 50 Ft.....**$2.00**

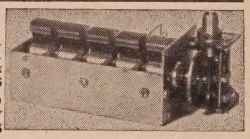


MOBILE DYNAMOTOR

680 Volts 210 MA. output at 12 VDC input. 6 VDC input; 300 Volt 150 MA. output. As Illustrated. Size: 7" x 4". #DM-680 Price: **$7.95**

DYNAMOTOR—9 VDC input; output 450 V. 60 MA. 6 VDC input; output 275 V. 50 MA. with Blower. # DM-9450.....**$3.95**
D-402—12 V. input; output 220 V. 100 MA.....**$3.95**
D-104—12 V. input; output 440 V. 200 MA., 220 V. 100 MA.....**$9.95**

CONDENSER ASS'Y



5 GANG with vernier tuning. 25 MMFD. to 450 MMFD. each section. Size: 7½" x 3½" x 3½". Price: **$2.95**

3 GANG. 25 MMFD. to 450 MMFD. each section. Size: 6" x 3-¼" x 3". Price: **$1.95**

Selsyn Transmitter & Indicator System

Ideal as radio beam position indicator for Ham, Television, or Commercial use. Complete with 5 inch I-82 Indicator, Autosyn Trans., 12 Volt 60 cycle Transformer, and wiring instructions.
Prices — NEW:.....**$9.95** USED:.....**$7.95**
PL-118 PLUG for I-82: **$1.00** Autosyn Trans. only: **$2.95**

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

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

TRANSFORMERS — 110 VOLT 60 CYCLE PRIMARIES:

Sec. 12 V. 1 amp...**$1.50**	Sec. 24 V. .5 amp...**$1.50**
Sec. 24 V. 1 amp... **1.95**	Sec. 36 VAC 2.5 amp. **2.95**
Sec. 24 V. 2 amp.... **2.25**	
Sec. 14-14 or 28 Volt—7½ or 15 amp.....	**4.95**

PL-8A FILTER—1200 CPS.....**$1.95**

SELSYN SIZE V—No. C-78428—110 Volt AC 60 cycle. Can be used to turn small antennas or for position indicator systems. Size 3½" x 5½". Price—Per Pair.....**$5.95**
SELSYNS 211G1—WITH CAPS—Can be used as position indicator for antennas. 110 Volt 60 cycle. Instructions furnished. Normally operates from 57.5 V. 400 cycle. Price: Per pair **$3.00**
Price: Caps only.....**50c Ea.**

INVITATION — IF YOU ARE NEAR LIMA, STOP IN TO SEE OUR LARGE VARIETY OF SURPLUS AND NEW RADIO EQUIPMENT AVAILABLE IN OUR BRAND NEW SALES ROOM.

MISCELLANEOUS:

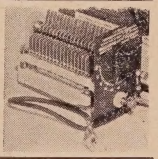
Cable for BC-375 w/PL-59 ea. end.....	**$1.75**
Cable for BC-375 w/PL-61 ea. end.....	**1.75**
Cable for BC-375 w/PL-64 ea. end.....	**1.75**
Tuning Unit f/BC-375 TU-6-8-10-26.....	Each **3.95**
FT-151 Mounting for BC-375-191.....	**1.50**
GN-45 Generator.....	**5.00**
Leg & Seat Ass'y. for hand generators.....	**2.75**
Crank for hand generators.....	Each **.75**

BC-1206 RECEIVER



SETCHELL - CARLSON
200—400 KC. 5 Tubes. Operates from 24 — 28 Volt DC. IF Freq. 142.5 KC. Size: 4" x 4" x 6". Price: LN.....**$7.95**

A-27 PHANTOM ANTENNA



Designed to approximate load of antenna. Permits loading of transmitter without radiation. Contains 151 MMF. Variable Condenser Resistors, etc. Steel case w/calibration chart and dial scale. Used with BC-191, 375, 653, and others.
Price **$1.75**
A-62 PHANTOM ANTENNA — Designed to approx. load of antenna. Contains var. cond. resistors, tuning dial, indicator light, etc. Used w/BC-604 Trans. Price.....**$1.50**

Limited Supply . . .



MARK II B19 TRANSMITTER AND RECEIVER SETS!

15 TUBES ● 2-8 MC., 240 MC., and INTERCOMMUNICATING!
IDEAL FOR MOBILE AND STATIONARY USE!

Set Transmits and Receives 2 to 8 MC. Phone, C W and M C W 25 Watt Master Oscillator Control. Transmits and Receives 240 MC. Phone. Also an Intercommunicating Set. Complete with 15 Tubes, Headset, Micro., Antennas, Control Box, 12/24 Volt Power Supply, and instructions. Ready to operate. Set size: 27" x 10" x 13¼".
Prices. **NEW**.....**$59.50** **USED (Tested)**.....**$39.50**
ALSO AVAILABLE—ALL PARTS AND ACCESSORIES FOR B19 MARK II SETS!

Address Dept. CQ • Minimum Order $2.00 • Prices F.O.B. Lima • 25% Deposit On C.O.D. Orders

FAIR RADIO SALES • • 132 SOUTH MAIN ST. LIMA, OHIO

W2QNZ, one of the most active stations in the North Jersey area, is going to school in Southern California this winter. He is planning to do all he possibly can to get a high-powered CW transmitter going on one of the mountains out there with the biggest practical beam he can hang up headed east. He even cherishes hopes of arranging for automatic transmissions from this test signal source. Let's hope that the VHF gang out that way will assist Ed in his campaign, because if such a transmitter can be put on the air it will most likely be a very valuable source of information on just how our atmosphere behaves. The reason we have a freeze on TV station allocations today is simply because too little is known about the frequency and extent of two-meter band openings.

Six Meter News

As was mentioned earlier in this column, the six-meter band has been pretty dead during the past couple of months. We have heard increasingly frequent comments to the effect that something is really screwy when the hams let a band like this go practically to waste. After spending several fruitless evenings scanning the band and hearing nothing, although two meters was open from Nova Scotia to Virginia and west to Ohio, we are beginning to wonder whether the six meter gang nave forgotten how to work ground-wave stuff altogether. Or maybe they just don't like to talk to their neighbors—anti-social DX men, perhaps! It is easy to see why there is such a small influx of new activity to this band. One chap near my QTH went to a great deal of trouble getting set up for six meters. We checked his rig out on the air—everything was swell. Wha hoppen? He called CQ about a hundred times—long CQs, too, over a period of weeks, before he raised his first station, about two miles away. That is precisely why activity lags on six. When a newcomer to the band cannot find anyone to work, he isn't going to stay around long, even if he is convinced that he is doing ham radio a great service by populating the band. Perry Ferrell tells me that there are over 400 stations active on six in this country. Heck, we have almost that many on two in the Philadelphia area alone, and even at that the band sounds dead much of the time. As I see it, we need new blood on six meters, and lots of it. I'll certainly welcome any ideas which you fellows may have for stimulating activity. Increasing six meter occupancy will make the work of the Scientific Observations Project more valuable, as it will provide more frequent possibilities of stations being on the air at the right time and in the right places.

The idea of putting continuously operating unmanned transmitters on the air to serve as "beacons" to aid in plotting six-meter openings appeals to many of the boys. Project Supervisor Ferrell assures me that obtaining permission to operate these transmitters will be easy, if the technical problems can be worked out. Let's call him on this, fellows, if you think the idea is a good one. It seems to me that a rig could be tucked away in the attic or the hay loft, locked up and safe from tampering, keyed by a simple clock-motor-powered keyer, and all we would have to contribute would be the power. Of course, the idea of QRMing one's self during a band opening isn't so attractive at that!

A novel idea is used by W4CVQ, Fayetteville, N. C., whenever the 6-meter band appears likely to open for short skip. Jake has been putting his carrier on the air (50.210.5 mc) with the beam antenna automatically rotating. The power is fired up to 800 watts input and a CQ is given after the carrier has been on for about 5 minutes. While the variation in the signal strength as the beam rotates might cause some confusion and make the DX think that the signal is in a long fade, the idea nevertheless seems to have some merit.

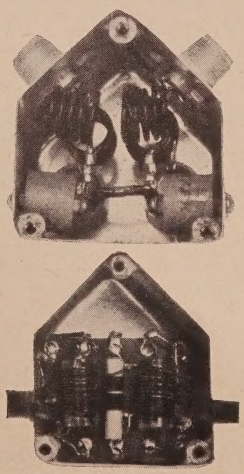
By the middle of September, HC2OT had worked 16 States and 10 countries. Steve has been using 300 watts input, a 4-over-4 stacked antenna 80 feet high and a VHF-152A/HRO-7 combination. Although v.f.o., his usual frequency is 50.016mc. The 6-meter DX continues to follow a cycle, and Steve advises everyone to watch for him, particularly between November 20 and 27th. HC2OT has made a 6-meter convert in the form of a ZP, who is supposed to be on the air in the near future. In order to promote interest in 6-meter DX Steve has designed a certificate for operators who work across the equator. This is presented to anyone who has a vertical two-way contact. The certificate is from the Order of the Tropical Tramps and is suitable for framing. Well, here's where everyone starts looking south.

XE1FU, Mexico City, using his automatic band-sweeping receiver on six meters heard his first South American DX of the season on September 8. Openings followed on September 9, 10 and 11 with HC2OT, LU6DO, LU9MA and LU1BV providing the best signals. XE2FC, Tampico, heard the South Americans on September 6, 7, 8, 9 and 10 with the regulars providing signals well over S9. Roberto mentions how odd it is that these signals are not heard further north. Time and again he has heard the LUs call CQ in their poor English hoping for a contact with the boys in the States. XE1GE operating as XE1PM/XE3 in Acapulco heard what appears to be the first north-south opening on August 29 when OA4AN was received at 2255 EST. The following night HC2OT and LU9MA contacted various YV stations.

220 Megacycles and up

VE1QY, of Yarmouth, Nova Scotia, is an active pioneer on the 1½-meter band. We have heard him lining up contacts on the 2-meter band and tuning both bands at the same time. It was by these tactics that Jerry hung up the present DX record of 275 miles. On August 24 Jerry had one of his best two-meter sessions; he was heard as far south as Falls Church, Virginia. Here in

(Continued on page 70)



These M-derived filters with a 40-mc cutoff are not a cure-all. They will reduce harmonics radiated through the antenna by better than 60 db.

A New Lease on Ham Radio! TVI can be cured and Eldico's got the medicine. Here are filters that have been proven to work in ham transmitters literally buried under TV antennas. Just insert in series with the antenna and harmonic attenuation will exceed 60 db. Best of all the cure won't even dent your budget. Here is the complete story:

- Two types—one for the rig (low-pass), one for the TV receiver (high-pass).
- Two models of each type—coax cable or Twinex.
- In kit form, complete in every detail. Simple assembly in 30 minutes.
- Transmitter filters good for power to 1 kw. Receiver filters efficient on any manufacturer set.
- Insertion loss negligible. No effect on antenna performance.
- Amazingly low priced!

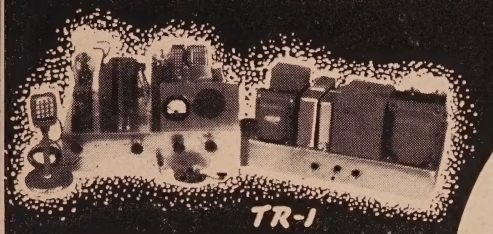
Transmitter Filters..... **$4.59**
Model TVT-62 Coax
Model TVT-300 Twinex

Receiver Filters..... **$1.98**
Model TVR-62 Coax
Model TVR-300 Twinex

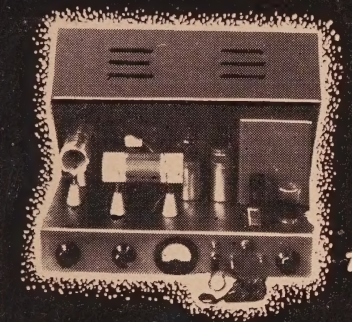
(Add 25c for postage and handling on all orders)

W2UOL's ELDICO OF N.Y.

44-31 DOUGLASTON PARKWAY-L.I.,N.Y.



TR-1



TR-75



MD-40



HV-1500



GDA

Transmitter Kits — top quality components — complete to the last piece of wire at rock bottom prices that can be paid off monthly!

TR-1 transmitter kit. A conservative 300-Watt phone and c.w. rig 6V6-6V6-6L6-813, Class B 811 modulators. All bands, 80, 40, 20, 15, 11, and 10. Exciter broad band, single control PA tuning. Three power supplies delivering 1500 v.d.c. at 350 ma, 500 v.d.c. at 200 ma, and bias supply. Aluminum chassis, tubes, transformers, capacitors, resistors, antenna changeover relay, meter, wire, hardware and coils included. Electro-Voice 915A high level crystal microphone part of the package. Plug in the crystal and line cord and you're on the air.
Only **$179.50** cash or $89.50 down payment plus six monthly payments of $15.75.

TR-75 transmitter kit. Loafing along at 75 watts this is the c.w. man's buy of the year. Simple enough for the beginner to assemble. Uses the time proven 6L6 oscillator-807 amplifier combination. Pi-network output. Husky power supply delivers 600 volts to the 807. Complete . . . not another bolt or wire to buy, including a smartly styled shielded cabinet to minimize television interference. Unbelievably low priced at **$34.95**.

Md-100 medium power modulator. 100 watts of audio, this AM modulator is designed to be assembled once and put into action . . . with no maintenance problems. Lineup consists of a 6SJ7, 6J5 audio amplifier driving a pair of 6J5s which drive two 807s. It is an ideal modulator for the quarter kw c.w. rig and is another Eldico complete package. There isn't another thing to buy, it even includes an Electro-Voice 915 crystal microphone. At the low price of $44.95 this is the kind of post-war price the hams have been waiting for.

MD-40 low power modulator. 40 watts of audio, the MD-40 is a kit of the same superior parts that go into its bigger counterpart, the MD-100. In place of the 807s, two 6L6s are used. Complete, including the same standard communications Electro-Voice 915 high-level crystal microphone, only **$29.95**.

HV-1500 High voltage power supply kit. Here is a power supply that is designed to take it. Ultra-conservatively rated, will deliver under continuous service load 1500 v.d.c. at 350 ma. Kit includes plate and filament transformers, two filter capacitors and filter chokes, bleeder, safety plate caps, and all additional hardware, less 866 rectifier and chassis. The total cost is what you would expect to pay for the transformer alone. Complete kit price **$29.50**.

GDA Grid dip Oscillator. The most valuable piece of test and measuring equipment in the hams shack should be the grid dip oscillaoor. The "Grid-Dipper" has taken the country by storm. Amateurs using it have saved countless hours in building, improving and de-bugging rigs. The GDA kit builds an exact duplicate of the Grid Dipper and includes everything from the special handy case permitting one-hand operation, down to a complete application and instruction book. Complete with tube and internal power supply, range 3 mc to 250 mc covered in six steps, size 5½" x 2⅜" x 3" **$21.50**

Kits or parts costing over $100 total price can be purchased for a reasonable down payment and small monthly installments. For full details on other kits ranging from 1 kw block-busters to low power ether ticklers send in a QSL or postcard to W2UOL. You can buy from a list of thousands of parts, including select government surplus. Every order receives the personal attention of Don Merten, W2UOL. Satisfaction is guaranteed on a money back basis.

ELDICO OF N. Y. INC. — Owner of
SURPLUS RADIO

W2UOL's ELDICO OF N.Y.
44-31 Douglaston Pkwy.
Douglaston, L. Is.

CQ!

The Perfect Christmas Gift—

- For amateurs, SWLs, engineers, experimenters
- Scoop articles by foremost authors
- Incomparable editorial content
- Most widely read columns
- Surplus conversion series

Since its creation CQ has never been able to meet the demand for copies of the publication. Eliminate that last minute buying spree and order your Christmas subscriptions now!

Use the handy reply envelope ➧ ➧ ➧

CQ, The Radio Amateurs' Journal

Published by Radio Magazines, Inc.
342 Madison Ave
New York 17, N. Y.



THE RADIO HANDBOOK

NEW TWELFTH EDITION — READY IN NOVEMBER

THE LONG-AWAITED NEW EDITION of radio's outstanding practical constructional text. Larger, more detailed photographs; expanded descriptions; ALL BRAND NEW EQUIPMENT; none repeated from prior editions. Newly designed, built and tested, on the bench and in actual use. THE EASIEST HOW-TO-BUILD-IT BOOK YOU EVER OWNED.

11TH EDITION FOR SCHOOLS

The 12th edition DOES NOT supersede the current 11th edition, which contains all different material. STUDENTS, SCHOOLS and others requiring an extensive simplified theoretical and reference text should also secure the 11th edition, available at the same prices.

Chapters in this nearly all constructional edition include:

- Antennas
- Power Supply Construction
- Exciters and Low Power Transmitters
- Test and Measurement Equipment
- Receiving Equipment
- Operating Conveniences
- High Frequency Power Amplifiers
- Mobile Equipment and Installation
- Single Sideband and FM Exciter Transmitters
- Speech and Amplitude Modulation Equipment
- Transmitter Construction
- Television and Broadcast Interference

$3.00 per copy clothbound AT YOUR FAVORITE DEALER IN U. S. A. Please add 25c to U. S. A. mail orders (plus tax in Calif.); foreign, 50c. (12th edition will be sent on all orders unless 11th is specified).

Editors and Engineers LIMITED 1313 KENWOOD ROAD Santa Barbara CALIFORNIA



CONDENSER BANK SPECIAL

Just the thing you wanted to clean up that sweep circuit for your scope, electronic timer, tone control, bridge, etc. All these are separate. Can be hooked up in series or parallel. Contains the following values: .0015, .003, .006, .012, .025, .05, .1 mfd. All contained in 1.8 x 1.6 x 2.7 in. metal can. WE. Brand New. Each.....49c
3 for $1.25

G.E. 3 IN. METERS

Brand new. 0-25 ma., 0-50 ma., 100-0-100 ma., 0-150 ma., 0-250 ma., 0-500 ma., 0-1.5 amp DC, 0-3 amp DC, 0-5 VDC, 0-150 VDC, 0-10 VAC, 0-15 VAC, 0-300 VAC, 0-2 amp RF, 0-5 amp RF. Each....$2.99

WESTINGHOUSE 3 IN. METERS

0-10, 0-15, 0-30, 0-50, 0-100, 0-300 ma DC, and 0-15 VAC. Brand new. Each.....$2.99

WESTON 3 IN. METERS

50-0-50, 0-100, 0-300, 0-800 ma DC, and 0-8 VAC. Each $2.99

CONDENSERS—BRAND NEW

10 mfd at 1500 V. Ea.....$2.95
15 mfd at 1000 V. Ea..... 2.95
4 mfd at 2000 V. Ea..... 2.00
10 mfd at 600 V. Ea..... .89
8 mfd at 600 V. Ea..... .89

PEERLESS Z-MATCHING XFORMER

Will match from line to line or mike to line etc. as follows: 50, 125, 200, 250, 333, 500 ohms on the primary; 500, 333, 250, 200, 125, 50 ohms on the secondary. New. Boxed. Each.....$1.39

COLLINS IRON CORE AUDIO CHOKE

6 taps at plus or minus 5%. 66.5, 55.5, 47.5, 41.5, 37, 33 mh. New. Each.....$1.95

ANTENNA RELAY RE-2ARC-5

0 to 10 amp. RF thermocoupled meter. Also 50 uuf 5000 V. Vacuum Cond. Used, excel. cond. Ea. $1.75

BC-923 RECEIVER

4-channel automatic or manual tuning, self-contained speaker, xtal, calibrated heterodyne frequency meter, check point every 100 and 1000 kcs. The best for 10 meters mobile. A range of 27-39 mcs. FM or (by blocking out lim. and disc.) can be used for AM. Excel. cond. w/dynamotor. Each.....$23.95

SCR 515/BC 645 TRANSCEIVER

Ready for citizens' band with slight modification. Comes complete with: transceiver unit, control box, dynamotor, rack, all plugs and antennas. Brand new. Each.....$19.95

BC-950 VHF TRANSMITTER

Covers a frequency of 100 to 156 Mcsc. 2-832-A, 2-1625, and one 815 tubes and modulator-transformer. Used but in good condition 1/cover.....$12.95

RECEIVER-TRANSMITTER SPECIAL

3-6 mcs. Receiver and a 4-5.3 mcs. or 5.3-7 mcs. Transmitter, less top cover. Used, good cond. With all tubes and crystal. Per Set:.....$6.50

BRAND NEW TUBES!

Limited Supply 10CP4 10 in. TV TUBE		$ 9.95			
12GP7	Ea.	10.95	5CP1	Ea.	1.50
5BP4	Ea.	1.85	12DP7	Ea.	10.95
803	Ea.	3.50	211	Fa.	.29
813	Ea.	5.75	304TL	Ea.	.75
6SN7	Ea.	.65	8012	Ea.	.99
117Z6GT	Fa.	.95	5BP1	Ea.	1.50

COLUMBIA ELECTRONIC SALES
Department L-S
522 So. San Pedro St., Los Angeles 13, Calif.

COMMAND SET SPECIAL

(from page 21)

"self-completing" circuit—so called since a dot or dash once started completes itself automatically. This assures freedom from clipping and makes for easier, more uniform sending.

Electrically, the circuit consists of two stages. The first, or pulse stage, develops the basic timing voltage for the automatic dots or dashes. The second stage shapes the operating cycle of the keying relay to conform with correct telegraph mark-to-space characteristics.

Tubes used are 50L6s. These, together with their associated plate circuit relays, are housed in the BC-456 shield enclosure.

A half-wave selenium rectifier furnishes d.c. for the keyer and supplies the blocking bias for the transmitter oscillator keying. The polarity of the selenium stack should be strictly observed in connecting the circuit in the manner shown.

Speed and shaping controls are mounted on the chassis front to the left and right respectively of the key lever. The a.c. line switch is mounted on the speed control potentiometer. The shaping control adjusts keying from light to heavy to suit the operator's particular style. As a general rule, sending with an automatic key sounds better when adjusted on the "heavy" side since a natural tendency to exaggerate letter spacing is less noticeable.

Fixed adjustment, wiping contact relays of identical characteristics are a must for the keyer circuit shown. Either short or long telephone type 2000 to 4000-ohm relays are satisfactory.[1] High quality capacitors, preferably of the new plastic-moulded type, should be used at C_1, C_2, and C_3.

R_1 in the timing circuit sets dot-to-dash ratio. Adjustment should be made starting from minimum resistance to a value which gives correct ratio. Should difficulty with dot distortion be encountered, the rule to follow is: if first dots of a series are foreshortened, add capacity to C_1 and readjust R_1; if the opposite condition prevails, increase capacity of C_2 and readjust R_1. Note that this rule applies only when distortion is present at a setting of R_1 where the correct dot-dash ratio otherwise prevails.

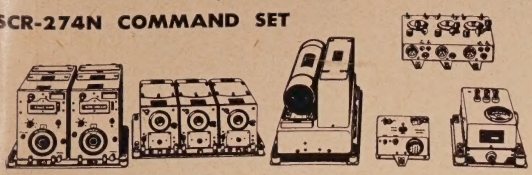
Operating Controls

Transmitter high voltage off or on is controlled by a switch (SW_2) in the transformer center tap. This switch is next to the keyer shaping control. When thrown to the "on" position, a low-current relay (Ry_3) mounted in the rear deck of the transmitter/receiver rack is energized, removing the volume control ground return as described earlier. A second switch (SW_3)—a three-position one removed from the FT-220 receiver rack—is mounted adjacent to the high voltage control. In its "up" position, a second low-current relay (Ry_4) in the power unit is energized. Contacts are connected to short the oscillator key line and

1 Both the key lever assembly and keyer relays can be obtained in limited quantity from Electronic Signal Devices, Box 283, San Carlos, Calif.

RADIOMEN'S HEADQUARTERS • WORLD WIDE MAIL ORDER SERVICE!

SCR-274N COMMAND SET



THE GREATEST RADIO VALUE IN HISTORY!!

A mountain of valuable equipment that includes not 1 but 3 of the hottest superhet Communication Receivers, each of which has a tuned R.F. stage, 3 gang condenser, crystal, and 6 working tubes not counting rectifiers. Also included are 2 Tuning Control Boxes; 1 Antenna Coupling Box with R.F. meter to measure power fed into antenna; four 28V Dynamotors (alteration of set to 110V operation is quick and simple); two 40 Watt Transmitters including crystals; and Pre-Amplifier and Modulator so that transmitters can be used for voice as well as for code. 29 Tubes supplied in all. In guaranteed electrical condition. Transmitters and Receivers instantly removable from mounting racks which hold them in position in aircraft use, so that they can be split up and used separately at different locations just like any other sets. Only a limited quantity available, so get your order in fast. A super value at **$59.95.**

Brand New General Electric BC-375 or BC-191 transmitters, export packed, absolutely complete and including additional complete set of spare tubes as well as 10 and 20 meter conversion instructions **$100.00.** BC-312, BC-348 or BC-224 receivers sold with the above transmitters, (unit for unit) **$125.00**

SCR610 portable 6, 12 and 24 V crystal controlled transmitter receiver with built-in loudspeaker on receiver, Complete **$59.95**

SCR-522 Transmitter-receiver in guaranteed condition complete with remote controls, antenna and mike. No conversion necessary to license for taxicab use. A natural for any 2 meter use. **$100.**

T-32 Microphone with desk or table stand **$2.95**

CO-AXIAL CONNECTORS

Army No. PL 259 or Amphenol 83-15P
Army No. SO-239 or 83-1R
Army No. PL 258 or 83-1J
Army No. M 359 or 83-1AP
49c each — in lots of 10 assorted 39c each

SUPER SPECIAL



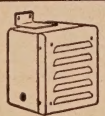
New 1950 model 500 Signal Generator Kit. Modulation On-Off switch. Internal modulation and external modulation jack provided. Internal 400 cycle sawtooth audio available for external testing and fidelity checks on receivers. Precision coils for greater accuracy and maximum stability on all 5 bands. Dial calibrations from 150 K.C. to 104 M.C. The signal generator is 115 V.A.C. 60 cycle operated and comes with everything, including complete detailed instructions. Assembling is an easy job, even for the least experienced. The lowest price and the best signal generator on the market for only **$18.75** Factory assembled **28.75**

POWER RHEOSTAT



Exceptionally Rugged Trouble-free design. Withstands severe overload.ng to many tims the nominal 25 watt rating without burning or smoking. Perfect for motor speed controlor line voltage adjustment. 3 sizes available: 50, 60 and 200 ohms. Regular price $5.20. **Special** **$1.00**

"PM SPEAKERS"



Latest type PM Speaker in a fully-enclosed finished metal cabinet. This speaker and case match communication receivers, and in addition make perfect intercom remote stations. Our price **$4.50.** Including output transformer **$4.95**

SUPER SPECIAL ON: ISOLATION TRANSFORMERS AT $1.95

Many adjustments on radio and TV sets, especially the AC-DC types, require that the chassis be grounded for stability and successful results. Using an isolation transformer this can be done as a routine procedure on every set on the test bench ending the hazard of shock and the usual but unwelcome fireworks.

Connected as auto transformers these isolation transformers can also be used to change 110v to 220v or the reverse. We do not believe that 100 watt 110v isolation transformers have ever before been offered at less than double our price of **$1.95**

Brand new APN1 Altimeters. Both 24 volt and 12 volt models available. Not just chassis, but complete with everything. Original factory packing. Descriptive literature on request. **$45.00.**

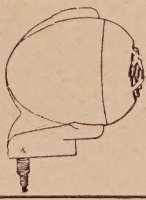
AUDIO AMPLIFIER—Brand new, Push-Pull stage triode amplifiers having 2 of the valuable and scarce ouncer type audio transformers that sell for over $10.00 each. Neat aluminum case, fully enclosed (largest dimension 6 inches). Perfect for intercom system, phono amplifier, mike amplifier or signal tracer amplifier for testing radio sets. A sensational bargain at only **$3.40** each

HEAT GUN



Streamlined pistol grip heat gun. Vivid red housing. 20 cubic feet per minute blast of hot air at 160 Fahrenheit. Ordinary blowers have small fan motors, but this has a lifetime-lubricated AC-DC motor of the rugged vacuum cleaner type, that produces a hurricane of either hot or cold air. Blow out dirt or dust from radio chassis. Dry out ignition systems. Heat carburetors. Quick-dry paint. Thaw out radiators or water pipes, etc. Warning:- Keep this away from your wife. She will use it to dry her hair because it will do it in half the time of her ordinary hair dryer, to say nothing of her using it to dry stockings or clothing, or defrost the refrigerator instantly. Only $12.95. Satisfaction guaranteed or money refunded if returned prepaid within 5 days.

MICROPHONES

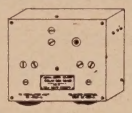


Super Special-Highest quality all chrome bullet shaped CRYSTAL MIKE of top-fight nationally known brand—**$5.95.** Bullet DYNAMIC MIKE —**$7.95.** PUSH-TO-TALK MIKE with switch on handle—**98c.** LAPEL MIKES (Specify whether carbon or magnetic) **93c**

LINE FILTERS

Each unit contains two 4 Mfd oil filled condensers and a high inductance 50 Amp. choke in fully shielded case. Suitable heavy current connectors are provided to attach to your input & output cables for insertion into the connectors at the ends of the filter box. A filter with innumerable uses on oil burners, refrigerators, boats, automobiles and wherever noise is to be suppressed or interference abolished A **$17.00** VALUE FOR **$1.98**

SIGNAL CORPS INTERCONNECTOR RELAY BOX 730A



This valuable unit, made by Bell, and more familiarly known by the U. S. Army designation BC-616, is encased in a highly polished aluminum case 6½" x 5½" x 2½", and contains 150 mfd. of condenser capacity, sensitive relays, resistors, nd terminal strips. Order several at the give-away price of only. . . . **$1.95**

REMOTE CONTROL UNIT



Aluminum case 4 x 3 x 2 containing 2 potentiometers, triple pole switch, 4 knops, phone jack, gear mechanism and revolution counter **99c**

With 8 prong JAN connector to fit box. . . . **$1.39**

STROMBERG CARLSON

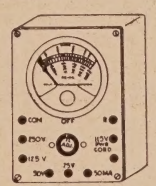
Power Switching Relay Box. Neat 3½" x 4 x 5½" Steel case with tight fitting cover finished in Stromberg's usual beautiful chocolate color crackle finish. . **98c**

1000 CYCLE AUDIO FILTERS

Navy PD52010-1 low pass audio filters as mentioned in the "Peaked Audio" article in June CQ, and designated by the above number, are the exact electrical and physical equivalent of commercial audio filter units selling for $35.00 wholesale. They are infinitely better than the surplus FL-8. "Radio Range Filters" being sold for reducing QRM, and at 2 KC off resonance for example, a 2 section filter using PD52010-1 is capable of twice the selectivity available through the use of the Q5-er, (the BC453 section of the 274N which has provided the amateur's previous highest standard of interference elimination). . . **EXTRA SPECIAL—NAVY PD52010-1 with diagram** **$5.00**

AC-DC POCKET TESTER

This analyzer featuring a sensitive repulsion type meter housed in a bakelite case; represents the culmination of 15 years achievement in the instrument field by a large company specializing in electronic test equipment. Specifications of the AC-DC Model Volt-Ohmmilliameter: AC Volts —0-25, 50, 125, 250. DC Volts— 0-25, 50, 125, 250. Milliamperes AC—0 to 50. DC Milliamperes—0 to 50. Ohms Full Scale—100,000, Ohms Center Scale—2400. Capacity—.05 to 15 Mfd. Total Price, prepaid anywhere in the USA **$7.00**



FCC AUTHORIZES RADIO FOR PRIVATE SERVICE!!!!!

(The FCC announced that effective June 1, any American over 18 years of age is eligible for a 5 year station permit. In the "Citizens" band, neither code test nor technical knowledge is necessary.)

GENERAL ELECTRIC 15 TUBE TRANSMITTER-RECEIVER SET. This brand new 15 tube transmitter-receiver was designed for mobile storage battery powered service. It will oprate in the "Citizens" band where no amateur license to transmit is necessary. It's a cinch for any experimenter to connect this unit for 110 V AC operation by following the instructions and diagrams supplied, which cover numerous applications, including television. For those intending to use on car or boat, a new dynamotor, exactly as originally supplied, costs only $15.00. Don't fail to write for FREE descriptive bulletin. Order our RT-1248 for only **$29.95,** or two for **$53.90.**

BUFFALO RADIO SUPPLY, 219-221 Genesee St., Dept. CQ BUFFALO 3, N. Y.

at the same time reduce final screen voltage to zero. This serves as a QRP position for QRM-less setting frequency. With the switch in center position, the transmitter is set for normal sending with the electronic keyer. In the "down" position, the key line is shorted for tune-up purposes.

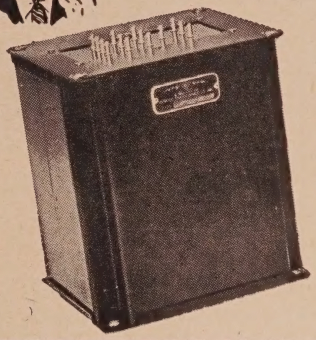
The low-current relays referred to may be any of numerous listings by surplus houses. Coil resistance is usually five to ten thousand ohms and appropriate series resistors must, of course, be chosen.

The plate current meter was taken from antenna relay unit BC-442. This meter has a 10-ma scale. A length of resistance wire shunted across the terminals boosts the range to 100 ma. The exact shunt was found by cut-and-try.

Although available, the original SCR plugs are not used. Standard octal connectors have been substituted for utility. The two small SCR female plugs on the modulator chassis were removed. In one of these an octal socket was mounted and in the other a 117 v. socket for the receiver power cord was placed. Polarity of the latter is clearly marked to match the polarity of receiver line plug. This precaution is necessary because of the sep-



"It's KENYON Transformers For My Rig Because They Always Put Out!"



Hams everywhere specify KENYON "T" Line Transformers! Manufactured under rigid standards, all KENYON transformers are constructed of the finest grades of material plus the skill and long experience of a highly trained competent operating staff.

All KENYON transformers are checked progressively in the course of manufacture and are laboratory-tested upon completion to insure satisfaction. Yes, KENYON "T" Line Transformers meet the most exacting requirements of critical purchasers. For skillful engineering, progressive design and sound construction — *Specify* KENYON for top performance in your rig!

KENYON TRANSFORMER CO., Inc. 840 BARRY STREET NEW YORK, U. S. A.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946.

of CQ, The Radio Amateurs' Journal, published monthly at New York, N. Y., for October 1, 1949.

State of New York } ss.:
County of New York }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Dorothy S. Potts, who, having been duly sworn according to law, deposes and says that she is the publisher of CQ, The Radio Amateurs' Journal, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933 and July 2, 1946 embodied in section 537, Postal Laws and Regulations, to wit:

1. That the names and address of the publisher, editor, managing editor and business manager are: Publisher: Dorothy S. Potts, 1737 York Avenue, New York 28, N. Y.; Editor: Albert E. Hayes, Jr., 8 E. Sampson St., East Rockaway, N. Y.; Managing Editor: None; Business Manager: Sanford L. Cahn, Westmoreland Gardens, Little Neck, N. Y.

2. That the owners are: Radio Magazines, Inc., 342 Madison Ave., New York 17, N. Y.; Dorothy S. Potts, 1737 York Avenue, New York 28, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities, are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders or security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock, and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

(Signed) DOROTHY S. POTTS, Publisher.

Sworn to and subscribed before me, this 7th day of September, 1949.

(Seal). HARRY N. REIZES, Notary Public.

State of New York, No. 24-3249550, Qualified in Kings County, Certs. filed with Kings & N. Y. Co. Clk. Off. & Kings Co. Reg. Off. Commission expires March 30, 1951.

SAVE UP TO 95% OF GOV'T COST on RADIO & ELECTRONICS SENSATIONAL SURPLUS VALUES!

IN MANY ITEMS WE HAVE THE WORLD'S LARGEST SUPPLY!



TBY8 TRANSCEIVER

VHF Transmitter-Receiver 28-80 MC In 4 Bands Voice or MCW XTAL Calibrated on 130 Channels. Uses 2-30 Tubes, 1-1E7, & 1-959.

Comes with Carrying Trunk. Vibropack, Headset and Mic. Ant. Spare Tubes, Instruction Book Canvas Carrying Case. Like New. Orig. $150.00 **$49.50**

COMMAND RECEIVERS

190-550 MC Used. Orig. $40. - Now ... $ 8.95
6-9.1 MC Used. Orig. $35. - Now ... 5.50
6-9.1 MC New. Orig. $40. - Now ... 6.50
3-6 MC Used. Orig. $30. - Now ... 3.95
3-6 MC New. Orig. $35. - Now ... 5.50
520-1500 MC Used. Orig. $85. - Now ... 22.50

COMMAND XMITTERS

7-9.1 Used. Orig. $50. Now $ 6.95
T-22 ARC-5 7-9.1 New. Orig. $50. - Now 10.50
3-4 MC Used. Orig. $50. - Now ... 12.95
5.3-7 MC Used. Orig. $30. - Now ... 3.95
T-21 ARC-5 5.3-7 New. Or. $40. - Now. 5.50
4-5.3 MC Used. Orig. $30. - Now ... 2.95
T-20 ARC-5 New. Orig. $40 - Now ... 5.50
2.1-3 MC Used. Orig. $40 - Now ... 7.50

All Plugs, Racks, Control Boxes, etc. for ARC-5 274N Equipment available at slashed prices.

ARC-5 /HF SET

R-28 RCVR: Superhet operating on 4 xtal channels, 100-156 Mc, remote control to actuate turret-tuning mechanism. 12 tubes—4-717A, 1-12AE, 3-12SH7 & 2-12SL7GT, w/dyn. Originally $85.00 ... **$14.95**

MD-7 MODULATOR: Contains all necessary circuits & components for plate mod of T-23 xmitter, w/dyn. which supplies plate & screen voltages for mod. Used. Originally $36.00 ... **$9.75**

T-23 XMITTER: MCW & phone on 4 channels, 100-156 MC, automatic turret tuning, tank circuits remote controlled. 4 tubes—2-1625, 2-832A. Originally $30.00 ... **$13.95**



APS-13 WARNING RADAR

17 Tubes as follows: 9-6AB5, 5-6J6, 2-2D21, and VR-105. 410 to 420 Mc. and 30 Mc. IF. Brand New
With Instruction Book.
Originally over $100.00 **$17.50**

HEADSET ADAPTER. High to low impedance. New. Boxed ... **89c**

ARC-4 VHF TRANSCEIVER

140 to 144 Mc Crystal Controlled. Xmitter has 832 final Modulated by 6L6's, 10 Watt Output. 13 Tube Receiver, containing 2 individual RF sections and A 10 Mc. IF Amplifier. Both RF sections may be operated simultaneously or either one individually. Comes with Xtal and Tubes. Used, Good. Originally $150.00 ... **$17.50**

BC-1072 XMITTER

157-187 MC. Input 117VAC 60 cy. Has parallel rod OSC using 2-826 PP, contains power supply, general radio variac 1.5A. 3½" 0-5 kilovoltmeter, 10 tubes and loads of other parts too numerous to mention. With tubes. Used ... **$19.75**

BC-1068 RCVR

150-210 MC, input 115VAC 60 cy. Inductance tuning for RF, ant., 'dector & OSC. Has tuning ind. with few conversions. Makes good 2 meter or FM receiver. With 14 Tubes. Used. ... **$22.50**

BOTH BC-1068 and BC-1072 .. **$38.95**

RECEIVER BC-357 MARKER BEACON

Tunes from 70 to 88 Mc. Uses 12C8 and 12SQ7 tubes. Has extremely sensitive relay which closes at .4 ma. and opens at .2 ma. Excellent for conversion to capacity alarm
2 for $3.95

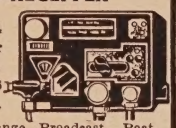
BC-1073 WAVEMETER

Tunes 150-210 Mc, uses cavity Tuner w/precision Millen gear drive tuning. Complete w/110 V AC 60 cy power supply and 19 tubes, like new ... **$24.50**

SOCKET for 872. New .. $ .79
SOCKET. Isolantite.
Octal. New ... 10 for .95
COAX PLUG PL259 10 for 1.49
2 V STORAGE BATT. Wet 1.95
110 V VAC RELAY SPST .49
EE-8 FIELD TELEPHONE.
Used. Good cond. . .Pr. 14.50
CHOKE 5 HY 450 MA.
Black crackle case. New 4.95

ARB-RECEIVER

6 Tube. 4 Band Super Het. Freq. Range. 190 Kc to 9 Mc.



Covering Range Broadcast, Boat and Amateur Frequencies. The Unit also has facilities for Loop Input., with Tubes, Dynamotor. Used Excellent. Originally $150. **$19.95**

APN-4 LORAN INDICATOR

This desirable unit has a 100 Kc xtal oscillator and enables you to view 100 Kc, 20 Kc, and 2 Kc marker pips on the 5CP1, 14-6SN7, 3-6SL7, 1-6H6 & 1-6SJ7, this unit comes with tubes, 100 Kc xtal in used condition. Originally $125.00.
NOW ONLY ... **$27.50**

ASB-7 INDICATOR

Makes a beautiful scope foundation kit. Has 5BP1, 4-6AC7, 3-6H6. Can also be used for remote television indicator with conversion. In good cond. Orig. $30. ... **$10.95**

BC-923 FM RECEIVER

COVERS 27-39 MC in 4 Channels. Each channel tunable on front panel throughout the full range. Has double conversion with built in freq. std. using 1000 KC XTAL. Complete with tubes and xtals. ... **$19.95**

BC-924 FM XMITTER

Freq. range 27-39 Mc, 35 watts output 4 channels, tunable throughout entire range, band width 20 Kc, ECO controlled, 2-6SJ7, 2-6J5, 1-6AG7, 1-6V6, 1-VR-150/30, 1-6SL7, and 2-815, has 12 V. dynamotor. Output 440 V. at 400 ma., complete with tubes & dynamotor. ... **$19.95**

BOTH BC-923 & BC-924 ... **$37.50**

TUBE SPECIALS

5BP1	$1.95	6AC7	Bulk Packed 69c each	872-A	$1.95
3EP1	$1.75	6J6		814	$3.75
12DP7	$9.95	6SN7		VT127A	$2.95
836	2 for 98c	6AG5		838	$3.75
815	$2.95	VR-105/30		805	$5.00
	3 for $7.50	6SA7		810	$5.95

BC-223 AX XMITTER—Xtal controlled, w/2-3 Mc Tuning Unit, 15 Watts, w/Tubes. Brand New ... $39.50
BC-433 G COMPASS RCVR—Used with tubes ... 14.95
R5/ARN-7 COMPASS RCVR—Used with tubes ... 18.50
BC-348 RCVR—Used, excellent, with tubes. Checked .. 69.50
SCR-522—VHF Transceiver, 100-156 Megs, Used, Good 34.95

CONDENSERS

Mica Type G-4 .0025 Mfd 25 KV Eff. ... $14.95
5-5 Mfd 400 WV Tub. ... .89
8-8-8-8 Mfd 600 WV. ... 1.79
10 Mfd 600 V Oil Filled .. .89
1 Mfd 10,000 V DC ... 9.95
2 Mfd 4000 WV DC ... 4.00

FL-5C 1000 cy. audio filter. High impedance ... .95

Leach Relay #1154 DPST 110 V. 60 cy 10A. New ... .95

VARIACS

2 KVA 0-130 V AC Gen R .. $32.50
5 KVA 0-130 V AC Gen R .. $60.00
500W 0-130 V AC Gen R .. $14.95

XFORMERS

AUTO 1KVA 110-220 AC .. $12.50
11 V 200A ... 18.95
5 V 60 A NEW ... 8.00
CHOKE 20 HY 300 MA 20 KV INSUL ... 9.00
AUDIO CHOKE OUNCER TYPE, 30 HY ... .49

TBY ANTENNA. 10 sections. Used .. $1.95
NATIONAL SPLIT-STATOR COND. 5-30 mmfd. 4000 V ... $3.95

SPECIAL!

APN-1 ALTIMETER TRANSCEIVER—418-462 MC FM. With dyn. & 14 tubes. Excellent condition. ... $5.95
APN-1 INDICATOR—Basic movement 0-1 MA., 5 MA. shunt, 270° dial. ... $1.95

SCR 522 PARTS

Complete front end less tubes ... $5.95
Xmitter Butterfly cond. 11-88 mmfd ... .95
IF Xformers, 2nd & 4th ... .79
Rcvr. Ouput Xformer ... .69
Xmitter Driver Xformer ... .95

COMMAND SET PARTS

IF Xformers 2830 Kc, 1415 Kc, 705 Kc ... $ .69
Rcvr. Tuning Knob ... .69
Modulator Shock Mounting ... .75
3 Rcvr. Shock Mounting ... 1.00
3 Rcvr. Remote Control ... 1.50
2 Rcvr. Dial Control ... 2.50
1 Rcvr. Dial Control ... 2.95
3 Rcvr. Rack ... 1.95
2 Rcvr. Rack ... 1.95
1 Rcvr. Rack ... 2.95
2 Xmitter Rack for ARC-5 ... 2.95
Plugs ... .45
Xmitter Control Box ... 1.00

TA-12C XMITTER—Comes with MP-28 Modulator & Tubes. New ... $45.00. Used ... $32.50
T9 APQ-2 JAMMER—200-550 Meg. For conversion to citizens band freq. New ... $15.95
SCR-274N ANT. RELAY UNIT, contains 50 mmfd 5 KV Vacuum Condenser and 0-10 AMP. RF METER. Used, excellent ... 1.95
MC-299—Used for Replacing Dynamic mike with Carbon ... 1.95
ARR-2 RCVR., 234-258 MC ... 8.95

GO-9 XMITTER—Brand New with tubes for Hi Freq. & Mod. Unit only. Consists of 3 Units. **HI FREQ. XMITTER** 3000-18000 Kc Band Switching. 837 ECO, 837 BUFFER, and 803 FINAL AMP. **LOW FREQ. SECTION** uses 801 OSC., 807 Buffer, 803 Final Amp. Freq. Range 300-600 Kc. **RECTIFIER UNIT** 5Z3 Low Voltage Rect., 2 Type 1616 HI V. Rect. Refer to surplus radio conversion manual for complete write up and conversion to 10 meters
$69.50

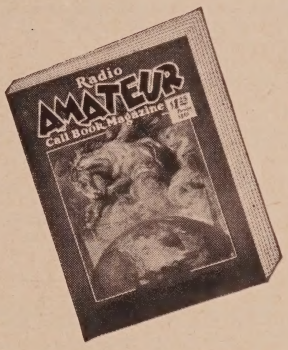
NO ORDER LESS THAN $5.00
IMPORTANT! Send 30% with order or full price and save C.O.D. charge. All shipments will be made via Railway Express unless other instructions given. All prices subject to change without notice. All merchandise subject to prior sale. Quantity prices on Request.
WRITE FOR NEW CATALOG

THE LARGEST FIRM OF ITS TYPE IN THE WORLD

V&H RADIO & ELECTRONICS SUPPLY

Dept. C-10
2033-2037 W. Venice Blvd.
Los Angeles 6, Calif.





RADIO AMATEUR CALL BOOK

Contains a complete and up to date list of all licensed radio amateurs throughout the world. Also each issue lists radio amateur prefixes, Great Circle Maps, Great Circle Bearing Tables, Prefix Map of the World, Distance Table and other valuable information.

Published quarterly, Spring, Summer, Fall and Winter. Single copies in the U. S. and Possessions $2.00. Elsewhere $2.25. Annual subscription, U. S. and Possessions $6.50. Elsewhere $7.50.

ORDER YOUR COPY TODAY

RADIO AMATEUR CALL BOOK, Inc.

612 SOUTH DEARBORN STREET
CHICAGO 5, ILLINOIS, U.S.A.

arate half-wave rectifiers working off the a.c. line. Using a common ground and only running a hot leg to the a.c. is a desirable safety precaution.

A second octal socket is mounted on the back plate of the transmitter/receiver rack and wired to the appropriate transmitter plug terminals as shown in the diagram. All wiring to the original sockets on the rack is removed. The plug for the smaller of these is fittted with a banana jack and rewired to provide the antenna connection for the receiver. The lead from the socket to the front of the receiver runs in the channel between the two compartments. A six-wire power cable was made up for interconnecting the two units.

For all normal portable operation, a 4-foot whip of #14 steel wire, fitted with a banana plug to mount in the jack, provided above serves as the receiving antenna. This has proved entirely adequate. And it has the advantage of evening up the ratio of transmitted power to received signal. In other words, if you hear 'em, you can work 'em.

For transmitting, a short antenna worked against ground was the system for which the Command transmitters were designed. In the writer's case, a 12-foot whip with a universal-type mounting bracket is used. The whip plus a nominal span of lead-in usually gives a length which can be satisfactorily loaded. Except where a direct external ground to the antenna coupling coil is needed for loading, a wire connects the low side of this coil to chassis, which should be well grounded, and the antenna is tuned up.

Where the total length of antenna, lead-in and ground connection exceeds thirty feet, a 50-$\mu\mu$f series variable condenser is required in the antenna circuit.

The writer has operated the rig described from a score of QTHs in a half dozen western states. The dozens of enjoyable QSOs attest to its good performance. It beats anything of a comparable nature used in 19 years of hamming.

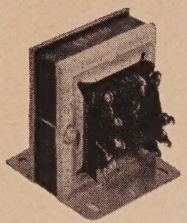
V.H.F.-U.H.F.

(from page 62)

Southern New Jersey his signals were a solid S8. Jerry pleaded with us to get hold of someone in the Philadelphia area who could get on 220 mc and make a try at the record mark. But our files showed no stations active in this area on 220, and another grand opportunity was missed . . . . Most of the gang around here have decided that the jump from 144 mc to 220 mc just isn't big enough to arouse much enthusiasm, and they are setting their sights on the 420 mc assignment . . . . Fortunately not all of the UHF gang share this opinion. When the results of W1HDQ's experiments with a high-powered rig and efficient antenna are publicized, some of the two-meter boys may be tempted to spread the turns of their coils a bit to try their luck on this band. It is pretty well agreed that the field strength falls off slightly slower with increasing distance as the frequency is raised, and it appears that atmospheric refractions will occur more readily at the higher frequency. So, if we keep our antennas the same size, and if the noise figure of our receivers does not rise too high, we should be able to do at least as good work on 220 as we are now doing on 144 mc. The same reasoning applies to the 420-mc band, but here we are up against the problem of circuit and tube performance dropping pretty low. It won't be long before the boys lick this problem by designing better circuits for the tubes we now have, and better tubes are coming out every day, so we may in the next year or so see the 420 mc record stepping out

Outstanding POWER CONVERSION UNITS

for any Voltage and Amperage Rating



THERMADOR TRANSFORMER

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

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

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

All prices are F.O.B. Los Angeles (California purchasers add 2½% sales tax). Include 25% with orders—balance on delivery. Foreign orders cash. Address correspondence Dept. C7.



VICKERS SELENIUM RECTIFIER

ALL NEW—FULL WAVE VICKERS SELENIUM RECTIFIERS

Code No. Rectifier	d-c Output Volts	Amps.	Ship. Wt. Lbs.	Amateurs Net Pr.
S-295A	14	2	1.25	$ 6.95
S-458A	14	4.5	1.75	7.25
S-167A	14	10	3.75	10.95
S-292A	14	40	12	29.95
S-296A	28	1.8	1.25	5.75
S-344A	28	5	5.75	11.50
S-172A	28	10	6	16.50
S-291A	28	20	12	29.95
S-297A	28	40	23	52.25

ALL NEW—THERMADOR TRANSFORMERS 50/60 Cyc—117 Volt Primary Rating (For Taps, see Note A)

Code No. Transformer	Secondary Volts	Amps.	Ship. Wt. Lbs.	Amateurs Net Pr.
RPS-8883	18	3	3 5	$ 3.75
RPS-8884	18	5.2	5.5	4.25
RPS-8885	18	12	12	6.15
RPS-8886	18	46	35	19.65
RPS-8888	36	2	5	4.15
RPS-8889	36	6	12	6.75
RPS-8892	36	12	25	11.65
RPS-8890	36	23	32	19.25
RPS-8891	36	46	78	51.25

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

Distributed Nationally by

RADIO PRODUCTS SALES, INC.

1501 SOUTH HILL STREET • LOS ANGELES 15, CALIFORNIA • PHONE PROSPECT 7471

ARC 5 XMTR CONTROL PUSH BUTTON SWITCH

Includes 7 push button switches, 1 control switch and two multi-contact switches. Price . . **75c**

SCOOP TRANSFORMER FOR 7" & 9" SCOPE

115 v. 60 cy. Sec. 3000 v/5 MA, 720 VCT/202 MA, 6.4v/8.7A, 6.4v/.6A, 5v/3A, 1.25v/.3A **$4.95**

FREQ. MULT. UNIT ART-13 — Xmtr Assy 2 to 18 Mc Doubling Package set up, for Two 1625 Tubes. No Coils. Complete Assy Less Tubes w/ckt diagram. Price **$8.75**

Universal Output Xfmr Amer.

Silcor, Pri; 20,000/16,000/5,000/4,000 ohms. Sec; 500/15/7.5/5/3.75/1.25 ohms. 30 db Flat to 17,000 cy. Price **$3.75**

INTER. CONT. BOX

BC-606F Metal (4x4x 2"D) Contains: Recep. Jk-34A (Phone) Jk-33A (Mike) 2000r ½w Resis. 50K ohms Pot, SPST Lum. Tip Sw Term Strip **45c**

932 PHOTO TUBE

This Tube is a Gas Phototube having S-1 Response, particularly sensitive to Red and Near Infra-red Radiation. Can be used with incandescent light source. Send for Data. Price **75c**

TUBES

2 x 2	
$ .69	
3BP1	
2.25	
3CP1	
3.50	
3DP1	
2.25	
3EP1	
2.95	
3FP7	
1.20	
5BP1	
1.95	
5CP1	
3.75	
5FP7	
3.50	
6SC7	
.70	
10Y	
.60	
1629	
.35	
1619	
.21	
9002	
.65	

ELECTROLYTICS

Tubular, Prong Mtg.

Lug	Term	DY or FP	Mfd. Volt	Price
30			250	$ .18
			10—	1.70
40			400	.18
			10—	1.70
10-10			150	.18
			10—	1.70
20-20			25	.18
			10—	1.70
20-10			150	.18
			10—	1.70
30-30			25	.18
			10—	1.70
40-40			150	.18
			10—	1.70
40-20			150	.18
			10—	1.70
40/20			150/25	.18
			10—	1.70
40/30			150	.18
			10—	1.70
10/50/100			350/100/50	.18
10-10/10			150/25	.18
16			450	.18
20			350	.18
15			250	.18
20			450	.18
10			300	.18
8			450	.18
225			15	.29
20/20			350-25	.29
20-30			250	.25
30/20			350/25	.29
10/50/100			450/100/50	.29
10-15/20			350/25	.49
15			450	.29
10			450	.29
20			525	.29
50			450	.49
.00			15	.75
10-10			475	.49

FRESH STOCK NOT SURPLUS

Many 2-3-4 Sections Send for List Minicaps Pigtail

30	450	$ .49
30	300	.45
30	350	.48
40	450	.50
40	525	.70
16	350	.35
16	525	.45
16	450	.40
16	100	.24
20	25	.20
20	80	.25
20	450	.40
24	350	.30
8	400	.30
8	150	.15
10	150	.20
10	50	.15
12	450	.30
4	50	.10
4	150	.14
4	250	.20
8	350	.25
10-10-	150	.25
25-25-	50	.30
20-20-	450	.60
50-30-	150	.50
50-50-	150	.55

Tubular Wire Leads	Screw D	Mtg. Type	
4	600	$	.35
8	250		.25
8-8	450		.50
16	450		.40
20	450		.45
30	450		.50
24	250		.45
12	250		.30
8	600		.60
8	450		.30
16	600		.69
30	450		.50

ROTARY BEAM COUPLER

RF Coupler 360 degree rotation 1 turn coupling link. Plastic case mount on side. Price **$2.95**

RHEOSTATS

5 ohms	250w	$1.95
50 ohms	25w	.49
250 ohms	25w	.69
1000 ohms	50w	.89
15000 ohms	4w	.39

XMTR COILS AIR WOUND

80 MTR Bar Prong 100 w. **$1.19**

40 MTR 5 Prong 50w. plug in socket **$1.19**

160 MTR 5 Prong 50w. plug in socket **$1.19**

40 MTR 3 Prong Bar 100 w. **$1.19**

#154R 14.8-18MC. 500 w. **$1.19**

#154R 8.3-10MC. 500 w. **$1.19**

#C538 2-3.5MC 300 w. Fix. Link . . **$1.19**

#1735 2-3.5MC. 300 w. Var. Link **$1.49**

#C390 5-7MC. 300 w. Fix. Link . . **$1.19**

160 MTR Bar Type 100 w. **$1.19**

ARC 3 COMPLETE AUDIO MODULATION XFMR PKG. T103 Carbon Mike to Grid. Price **95c**

T102 6J5 to PP 6L6 GRIDS (Modulation) **$1.15**

T104 MOD. XFMR PP 6L6 to 832 or 8298 Plates **$1.49**

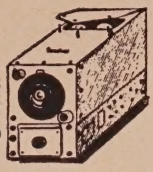
COMPLETE KIT W/DIAG OF THREE **$2.98**

COMMUNICATIONS EQUIPMENT COMPANY
CABLE ADDRESS: COMSURPO PHONE DIGBY 9-4124
131 LIBERTY ST., DEPT. C-7, NEW YORK 7, N.Y.
C.O.D. MONEY BACK GUARANTEE, 13 MIN. ORDER. F.O.B. N.Y.C. ZERO MONEY ORDER OR CHECK, ONLY SHIPPING CHARGES SMTCO.
RADIO TELEVISION ELECTRONICS
MICROWAVE RADIO SONAR

RADIO Surplus Buys

COMMAND RECEIVER

Used, Good



BC 453-1.9-550 KC.....$12.95
BC 454-3-6 MC..... 5.85
BC 455-6.9.1 MC..... 6.95
6½' CONTROL CABLE
for above command sets.. 1.00

Like New

R-5/ARN-7 COMPASS RECEIVER.....$14.95
BC-433G COMPASS RECEIVER..... 14.95
BC-603 FM RECEIVER..... 12.95
BC-604 FM TRANSMITTER..... 15.95
DY-9/ARC-1 DYNAMOTOR..... 9.95

ARC-4 VHF TRANSMITTING RECEIVER

140 to 144 Mc Crystal Controlled. 10 Watt Output. 13 Tube Receiver, containing 2 individual RF sections and A 10 Mc. IF Amplifier. Both RF sections may be operated simultaneously or either one individually. Less Crystal, Dynamotor and Tubes. Used, Good.....$5.95
ARC-4 SCHEMATIC..... 1.00
12 & 24 V Dynamotor for ARC-4..... 4.95

Pole and Tree Climbers (without straps) Used....Pr. 1.50
Lineman's Tool & Safety Belt (Web type) New..... 3.95

SEND 10c TODAY for complete Surplus catalog!
Enclose money with order. All Equipment FOB.

C & H SALES CO.

2176 Q-11 East Colorado St. • Pasadena 8, Calif.



THIS FREE BOOK IS YOUR BARGAIN GUIDE

No ham or experimenter can afford to be without this great catalog a single day. Everything in famous brands at your fingertips: Hallicrafters, National, Hammarlund, Meissner; dozens of other great makes! Rock bottom prices and immediate delivery on every part you need. Plus TV, Hi-Fi, AM & FM Radios, P.A., Test Equipment, Tools, etc. Your brand new 1950 Lafayette Catalog is waiting for you now. It's free. Rush coupon today!

164 PAGES
•
ALL FAMOUS BRANDS

LAFAYETTE RADIO
world's largest radio supply organization

100 SIXTH AVENUE NEW YORK 13
901 W. Jacks'n Bd. Chicago 7
110 FEDERAL ST. BOSTON 10
24 CENTRAL AVE. NEWARK 2
542 E. FORDHAM RD. BRONX 58

LAFAYETTE, DEPT. CK-9
100 SIXTH AVE., New York 13
901 W. JACKSON BLVD., Chicago 7

☐ Check here for free catalog.
(Please don't check if already on our mail list).

NAME.....

ADDRESS.....

CITY.....ZONE....STATE.....

to equal or exceed the two-meter record. But, at the present time, it may well be that the 220 mc assignment represents the ideal compromise between better propagation and available circuit performance. This is starting to read like one of W1CTW's pleas for greater 220-mc activity!

Activity on the 420 mc band has been carried out around most of our major cities by the gang who purchased BC 645s and similar types of surplus equipment. We know that a great deal of rag-chewing activity has been going on practically un-noticed by the regular VHF gang. In Trenton, N. J., quite a group of citizens have taken advantage of the Citizen's Radio assignment and are beating the hams to the punch. Most of their work is being done with the 645 type of equipment. We are curious as to how much of this type of activity has been going on—it is perfectly legitimate, non-ham work, but maybe we can learn a lot from the experience of these "quasi-ham" radio operators. The Riverton, New Jersey, 420-mc net includes W2WUP, W2OQS, W2JRO and several others. These boys have been quietly improving their equipment and working each other on the air for over a year now. They have stretched out their range to over 15 miles, on a consistent basis. This may not seem like much, but it is a start, and any consistent activity on the band is a basis for further occupation. These boys have listened in vain for the stations active in the North Jersey and New York areas throughout this summer. W2NPJ is one of the ring leaders of the North Jersey 420-mc gang, and these boys have really made a fine start on the band. By lending complete stations to some of the more fortunately situated hams in their neighborhood they have obtained an idea of what can be done on this band with a good location. Having once tried the band, a fellow hates to give it up. This is the type of activity-stimulation which could well be employed by UHF hams and organizations whenever interest lags. W1PBB of Stratford, Connecticut, is another 420-mc pioneer who would like to hear a lot more activity on the band. Hang on, Barney, the fellows are getting interested, and I'm sure that by next summer you will be able to get real 1/c cooperation from some well-equipped stations to the south. The 420-mc band, at this time, is the nearest thing we have heard yet to the old five-meter band in its hey-day of the early thirties. We have a lot of pleasant memories of that band. Maybe we'll bury our scientific pride and rig up a modulated rock-crusher and a rush box for 420 just to get in there and see what the gang is doing. The superhet we used for our first attempts was too durn sharp anyway! By getting in there and pitching, we'll help attract more guys to the band, then sooner or later someone will discover how crystal control and narrow-band receivers can work out, and we'll be able to do what we now only wish we could do—find out just what can be done with one of our most promising assignments.

SCRATCHI

(from page 8)

zillion pieces. Brother Itchi are heering big noise and rushing in. He picking something off floor, looking at it, and rushing over to thanking me for finding insurance policy he are hiding in vase several years ago and forgetting where it are. This are too much, Hon. Ed., this are the ending.

I are going to shack, and slamming door hard behind me. Hokendoke Hackensaki!! Door slamming so hard it jarring little wooden wedge I using under short side of relay rack. Wedge coming out, and relay rack tilting sideways then falling with tremendous crash on floor. Oh Boy, toobs are breaking like mad, scattering glass all over shack. Big modulation transformer are coming loose and crunching into operating table, landing smack dabby on top of receiver and going right on through till only terminals showing above receiver case.

Wire on modulation transformer are catching on microphone and Hot Diggedity ! ! mike are knocked on floor and insides are strewing all over. When relay rack falling it pulling ac wires out of wall box, and causing big short circuit, which are putting whole room in darkness until

fire which short circuit are starting are getting big enough to see by. Brother Itchi are rushing in with fire extinguisher and fixing things up.

Hon. Shack are quite a mess at this point, but Scratchi are feeling fine, back to normal. Be seeing you in DX contest, Hon. Ed., if managing to getting transmitter on air.

Respectfully yours,
Hashafisti Scratchi

MAN-SIZE EXCITER

(from page 32)

short wire connects the contact band to the hub of the knob. A circular flat brass plate was fastened to the rear of the knob and insulated from the knob hub. Pressure on the band causes it to change its shape and to make contact with the brass plate. A chromium-plated finger protruding through, and insulated from, the panel acts as a wiping contact point. An electrical circuit between the finger and ground is completed when the knob is squeezed. One turn of black vinyl tape around the bronze band provides a convenient finger grip for the knob. Squeezing the band actuates a relay, as shown in *Fig. 2*. The relay applies plate voltage to the oscillator and multipliers, giving a hefty signal in your own receiver without radiating anything for the "boys" to gripe about.

The Circuit Itself

We are now ready to run through the circuit diagram. Let's start with the Collins PTO on the left and try to find our way to the National MB-150 at the extreme right. The PTO feeds the grid of the 6AG7 buffer, which has an untuned plate circuit, the output voltage being developed across the choke, RFC_2. Provision is incorporated for the addition of a tuned output circuit in the plate of the 6AG7 if desired. This is accomplished by completing the circuit illustrated in dotted lines between C_7, 101_A, and Section 101 of the gang condenser. The four 6L6 multiplier stages are conventional in every respect with the possible exception of the relays, RY_1 through RY_5, which perform the actual exciter band switching. Recalling the fact that the relays are energized by the contacts associated with the push button switch, reference should be made to *Fig. 3* for a better understanding of the relay operation. Condensers 101 through 106 comprise the multiplier gang tuning condenser. Condensers 101_A through 106_A are the trimming units.

The 4E27 in the final is provided with meters, M_1, to read grid current, and M_2 which gives a constant check on suppressor voltage. Previous experience indicated that the suppressor voltage indication is a more accurate index of the final tank tuning than the convential plate milliammeter. Hang a milliammeter in the plate circuit and observe the correlation between plate current and suppressor voltage. You'll see what we discovered.

Ceramic bypass condensers are used when possible because of size and good r.f. characteristics.

SAM'S SURPLUS SELLS FOR LESS!

REC. & XMTR.



NEW BC-454 (3-6 mc) Rcvr, & your choice of either a 274N or ARC-5: 4-5.3 mc or 5.3-7 mc Xmtr. (slightly used) with Schematic.

BOTH FOR **$9.95**

BC-459	:7 to 9.1 mc....	(new).....	$14.95
ARC-5	:7 to 9.1 mc....	(new).....	12.95
ARC-5	:7 to 9.1 mc....	(used).....	9.95
T-20/ARC-5	:4 to 5.3 mc....	(used).....	4.95
BC-453	:190 to 550 kc..	(used).....	9.95
BC-454	:3 to 6 mc.....	(new).....	6.95
		(used).....	3.95
ARB RCVR	:.190 to 9.5 Mc.	(used).....	19.95
274N Type Rcvr	:1.5 to 3 mc....	(used).....	14.95



SELSYN XMITTER AND INDICATOR

Ideal as Antenna Direction Indicator for Ham, Television, or Commercial Use. 6 V @ 60 cy. operates it.

New **$5.95**

FILAMENT TRANSFORMERS

110 volts at 60 cycle Primary
12-24 volts at 2 amps ..... $ 2.95
5, 24, and 30 volts at 20 amps 4.95

IDEAL MOBILE DYNAMOTORS

1 { 12 v input Winco puts out 400 v @ 200 ma or 200 v @ 200 ma @ 6 v dc.....$4.95

2 { 9 v input 450 v @ 100 ma output
6 v input 225 v @ 100 ma output....$3.95

ESEGE SALES COMPANY LTD.
Distributors Electronic Parts
1306 Bond Street at Pico — Los Angeles 15, Cal.
Terms: Cash With Order — Prices Subject to Change

EASY TO LEARN CODE



It is easy and pleasant to learn or increase speed the modern way—with an **Instructograph Code Teacher.** Excellent for the beginner or advanced student. A quick, practical and dependable method. Available tapes from beginner's alphabet to typical messages on all subjects. Speed range 5 to 40 WPM. Always ready, no QRM, beats having someone send to you.

ENDORSED BY THOUSANDS!
The Instructograph Code Teacher literally takes the place of an operator-instructor and enables anyone to learn and master code without further assistance. Thousands of successful operators have "acquired the code" with the **Instructograph System.** Write today for full particulars and convenient rental plans.

INSTRUCTOGRAPH COMPANY
Dept. C, 4701 SHERIDAN ROAD, CHICAGO 40, ILL.

ROTARY BEAM CONTROL CABLE No. 8C

8 CONDUCTORS: 2 No. 16, 6 No. 20 tinned, stranded copper; rubber insulated; color coded. WATERPROOF RUBBER JACKET. Overall braided tinned copper ARMOR SHIELD ½" O.D. Continuous lengths up to 400 ft. Formerly 10c/ft. NEW LOW PRICE 5¢ ft. F.O.B. Warehouse. Minimum order 100 ft.

TRANS-WORLD RADIO-TELEVISION CORP.
6639 S. Aberdeen St. — Chicago 21, Illinois

SURPLUS EQUIPMENT
Trouble Shooting Manuals
(Includes Schematics)

BC-348 RECEIVER
BC-779 (SUPER-PRO) RECEIVER
SCR-522 TRANSMITTER-RECEIVER
BC-610 TRANSMITTER

ANY BOOK $1.00 EACH

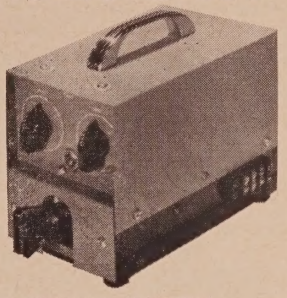
Quantity Discounts (Add 10c for postage)

FL-8A FILTER—$1.37
Write for catalog

LECTRONIC RESEARCH LABS.
1021-C Callowhill St. • Philadelphia 23, Pa.

DUOMATIC AUTO-KEY

Model
AKS-7
$34.95
Complete



Automatic dots and dashes, PLUS exclusive self-completing action. Practical styling. A quality instrument for quality sending. Data free on request.

ELECTRONIC SIGNAL DEVICES
Box 283, Dept. LC, San Carlos, Calif.

Octal Base VIBRATOR — New!
Hermetically sealed. Self Rectifying. Synchronous. Originally designed for **AVT—15 & 15A** Radio Sets. Add 15c ea. for mailing charge.
12V MODEL.....99 **6V MODEL.....$1.29**

SHOCK MOUNT BASE for BC-348
Brand new! Fits all models. Add 45c ea. for mailing charge.
$1.65

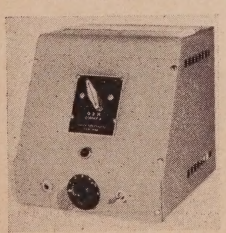
DY-9 or DY-10/ARC-1 DYNAMOTORS
12 or 24 V. Slightly used. Add $1.35 ea. for mailing charge. **$3.95**

OIL CAPACITORS! New!
8x8x8x8 mfd—600V. Add 50c for mailing charge. **$2.95**
1 mfd—1000 V. Pyranol. Add 15c for mailing charge. **59c**

ORDER DIRECT FROM THIS AD. Send check or M.O. Add mailing charges as shown. Mailing charge includes postage, handling, insurance and tax. Satisfaction guaranteed or money refunded.

ELECTRONIC SALES CO., Dept. C-1
542½ N. La Cienega Blvd., Los Angeles 48, Calif.

QRM ELIMINATOR
As described in CQ June 1949
FOR USE WITH ANY RECEIVER



1. Eliminates unwanted CW signals.
2. Peaks desired signal.
3. Diode noise suppressor.
4. Increases selectivity on phone. Eliminates interfering beat notes.

Plugs into receiver phone jack. Tubes: 6SN7, 6X5, 6H6. Built-in power supply 110 vac. Gray sloping front cabinet 8"x8"x8"

$32.50

ARROW APPLIANCE CO.
525 Union St., Lynn, Mass

It will be noted that resistor R_{15} provides cathode bias for all the 6L6 stages. The provision of protective cathode bias makes it unnecessary to remove the supply voltages from the 6L6s, which are not used when operating on the lower-frequency bands. Each cathode is bypassed to ground at the tube socket so that no interaction between tubes results from the use of a common bias resistor.

The r.f. output of the 4E27 is fed through a conventional coaxial connector. All other connections are made on the rear of the chassis with Jones plugs.

Modulation

The system of modulation is unusual in itself. The audio input (only a few volts are needed) is fed into the jack J_1. This voltage is applied directly to the grid of the 6AG7 buffer stage through the resistor R_2 and the choke RFC_1. The audio voltage so applied to the grid causes it to present an audio-varying load to the output of the Collins PTO, giving excellent frequency modulation. This may come as a shock to those of you who believe that frequency modulation cannot be attained unless one operates directly on an oscillator circuit. The capacitor C_3 is the little devil that's responsible. In the absence of C_3, phase modulation would be the result of this scheme. However, C_3 causes the amplitude of the audio signal to decrease as the frequency of the audio signal increases. Thus, a wave having a modulation wherein the phase excursion is inversely proportional to the modulating frequency results. This is, by definition, frequency modulation.

We built the rig and it works like a charm. You don't believe it? Just copy it and find out for yourself. It looks like a big project, but the simple procedure of starting at the beginning and finishing at the end is bound to produce the same excellent results for you as it has for us.

V.H.F. CONVERTER

(from page 17)

Now go to the low frequency end of the unit and adjust the slug in L_3 to set this frequency, in this case 60.7 Mc. That completes the oscillator adjustment, although the high end should be checked again for any slight change in frequency.

After the oscillator frequency limits have been set, connect the converter to the receiver, put an antenna on the converter, and tune the mixer circuit by outside noise. Turn the tuner one full revolution back from the high end, which will be in the vicinity of 200 Mc., and adjust C_4 for maximum background noise. Tune to one turn from the low frequency end and adjust the slug in L_2 for maximum output. Repeat these adjustments at least twice as there is some interaction.

Since the r.f. circuit is so heavily loaded, the low frequency end was adjusted by use of the grid dipper with the antenna disconnected. C_{in} is then adjusted after the antenna is replaced. The Q of

this circuit is very low and exact tracking was not considered necessary, so no high frequency trimmer condenser is used.

The i.f. transformer is adjusted merely by setting the main receiver at 10.7 Mc. and tuning the slug for maximum signal. A word about the parallel inductances is probably in order. Inspection of the inductuner will show that when it is set at its highest frequency the coil is completely removed and the output terminals are effectively shorted. Consequently, any inductance connected across these terminals is also shorted and will have no effect at the highest frequency. This frequency is completely controlled by the capacity of the small condenser, the distributed capacity of the leads, and the inductance of the leads. Tests were made on the oscillator circuit alone, and the upper frequency without the parallel tuning condenser was found to be over 300 Mc. The parallel tuning condensers were placed right at the tube socket in the case of the oscillator and at the junction of C_2 and C_3 in the band-pass circuit. At the low frequency end, of course, the parallel inductances affect the circuit and must be set to permit tracking at these frequencies.

DX PREDICTIONS

(from page 36)

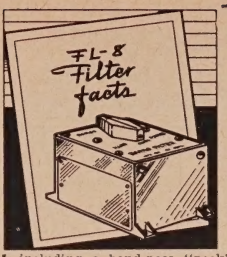
after 0700 PST. **20 meters:** Band will open rather suddenly between 0730 and 0800 PST. Signals will be very strong with phones of excellent quality. Conditions will hold with only a slight decrease through 1000 PST. Then conditions start to drop off rapidly with phones out after 1130 PST and c.w. after 1215 PST. **10 meters:** Possibility of a short, but erratic opening between 0845 and 1000 PST. Signals should be quite strong whenever this opening appears. A considerably more reliable opening will start after 1445 PST with signals of fair to good strengths. Opening should last on the average day through 1830 PST, but on very good days the band may not close until after 1930 PST.

West Coast to South Africa

40 meters: The atmospheric noise level at the far end will increase throughout this month. However, conditions may permit some signals to break through especially between 1730 and 1945 PST. The band may also be open from 1545 to 2015 PST,but signals should be weak if not heard during the peak hours. **20 meters:** First c.w. should break through rather suddenly shortly after 1330 PST. The strengths will build up about 12 db within an hour and phones should be readable in both directions after 1500 PST. The peak period is from 1645 PST through 1945 PST. Phones particularly good from 1730 to 1900 PST. Band closes abruptly after 2200 PST. **10 meters:** Very weak signals audible after 0600 PST. Signals will then slowly build up throughout the entire morning. Phones may be readable with ease after 1000 PST, but the peak is expected to be from 1300 to 1545 PST. Band closes suddenly, although preceded by very strong signals around 1600 PST.

Midwest to India, Burma and Tibet

40 meters: Conditions will be extremely erratic because of the variability of the auroral zone absorption. On quiet days3 there may be an opening between the hours of 0530 and 0635 CST. On extremely good days signals may be heard as early as 0445 CST and as late as 0730 CST. Path may also be difficult to work due to the high atmospheric noise at the far end. **20 meters:** Weak c.w. signals may be audible over the direct route shortly after midnight, but these should fade out before 0200 CST. Band will then remain closed until a sudden opening between 0730 and 0800 CST. Signals should be strong during the first hour of this opening. Phones may drop out before 1000 CST, but c.w. may remain workable until noon on better than average days. Some possibility of a direct route opening between 1630 and 1800 CST.



Just off the presses!!

"FL-8 FILTER FACTS"

Prepared exclusively for us by CLAYTON F. BANE, W6WB well-known for his articles on filters for amateur applications.

Filter Facts is a red-hot, 8 page booklet that gives the complete story on the FL-8 filter including circuit diagrams, selectivity curves and impedance-matching information. Completely new, original material on utilization of the internal FL-8 components to make up four different kinds of filters including a band-pass "peak" filter, — 3 kc cut-off low-pass, — 400 cycle cut-off high-pass and a filter combining these two. The entire presentation is practical, — no math, — amateur style. Get that copy **now!** Combo offer . . . A free booklet with each purchase of an FL-8 FILTER for **$2.98**
"FL-8 FILTER FACTS" booklet only, prepaid. **50c**

W-E 388A "DOOR-KNOB"



Fil. 1.5 V @ 9 amps. Plate V., 500. Plate cur., 125 ma. max. Grid. cur. 20 ma max. Plate diss. 50 watts. Look at these UHF ratings, — 12W at 400 mc. 10 W. at 500 mc. 8 W at 600 mc. 6 W. at 700 mc. 2 W. at 800 mc.
A steal at **$3.95** each or **4** for **$13.95**

W-E 708A GROUNDED-GRID TRIODE



Here's the little beauty for providing high-hop on UHF receivers! Grid, (shell) bolts direct to chassis with ring. Use for RF and mixer. Also being widely used for noise generator use. Hard to obtain— limited quantity.
Only $1.95 each or 4 for $6.00

CATHODE-RAY TUBE SPECIALS

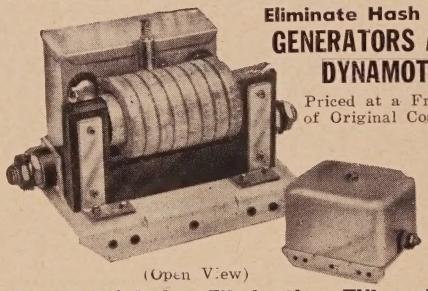
3CP1. 3" C-R tube. Green, med. persist. screen . . **$2.95** ea.
3DP1A. 3" C-R tube. Green, med. persist. screen, 14 pin base for oscilloscope use . . . a very fine buy at . . . . . **$2.50** ea.
3FP1. 3" C-R tube. Green, med. persist. screen . . **$2.95** ea.
5MP1. 5" C-R tube. Green, med. persist. screen . . **$2.50** ea.
5NP1. 5" C-R tube. Green, med. persist. screen . . **$2.50** ea.

4 HOUR MAIL-ORDER SERVICE. WE SHIP ANYWHERE.
20% Deposit must accompany all orders, balance C.O.D.

OFFENBACH & REIMUS CO.
372 Ellis St., San Francisco, Calif. Phone ORdway 3-8551

MOBILE FILTERS

Eliminate Hash from GENERATORS AND DYNAMOTORS
Priced at a Fraction of Original Cost



(Open View) (Closed View)

Also Helpful for Eliminating TVI and BCI

Connect a filter in each side of your AC supply to keep RF out of light circuits.

MOBILE and LINE FILTERS
(Units Contain RF Chokes and Condensers)

447-50 50 AMP. **$1.50** each or 2 for **$2.50**
447-100 100 AMP. **$1.95** each or 2 for **$3.25**

NOISE FILTERS

447-5 SOLAR ELIM-O-STAT 20 AMPS. 115 V.A.C. or 600 V.D.C. **$1.50** each
447-4 SPRAGUE 10 AMP. 115 V.A.C. **$1.05** each
447-3 SPRAGUE 10 AMP. 100 V.D.C. or 8-30 V.A.C. **$1.10** each
447-2 SOLAR ELIM-O-STAT 3 AMP. 115 V.A.C. **$1.55** each
447-1 SOLAR ELIM-O-STAT 1 AMP. 115 V.A.C. **$1.35** each

All filters are brand new and guaranteed.
Order Directly From This Ad or Through Your Local Parts Jobber

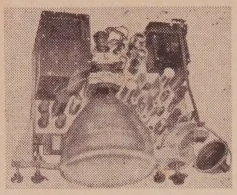
WELLS SALES. INC.
320 N. LA SALLE ST. Dept C. Chicago 10, Ill.

FAMOUS RCA TYPE CIRCUIT 630 TS

TV RECEIVER

Ready To Play

$169.50



Completely wired and assembled ready to play. 31 tubes for fine 15 inch custom installation. This famous RCA type TV receiver has a high gain tuner and video stages designed for excellent reception in distant locations. Vertical sweep compensated to give definite lock in. Frequency controlled to eliminate and minimize interference patterns in picture. Complete, with all tubes, less picture tube, $169.50. Picture tube, 15 inch 15AP4, $49.50. Write for yours now.

Write for FREE Almo Broadcaster

10% CASH WITH ORDERS

ALMO Covers the Globe

PHONE LOmbard 3-9225

509 Arch St., Phila. 6, Pa. 6th & Orange, Wilmington, Del.
6205 Market St., W. Phila., Pa.

SPECIAL

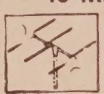
TRANSMITTING KEY

Brand New — Army Type J37. Postpaid 25c

Atronic Corp.

1253 Loyola Ave., Chicago 26, Ill.

10 METER BEAM ANTENNA



$15.95

3 ELEMENTS

SPECIAL

Volt-Ohm-Milliameter 0-1 MA. 4" Fan Type. Diagram Incl. Makes 1000 ohm per volt unit. Meter Only $2.95

METERS — 3" PANEL TYPE

0-10MA. $2.00 0-1MA. .$2.50

Aluminum CALL LETTER PLATES

$1.00

WØZKI

Raised letters on black background. 6½" X 2⅜".

HAWKINS RADIO COMPANY

621 E. 31st Street Kansas City 3, Mo.

In Northern California it's
SAN FRANCISCO RADIO & SUPPLY CO.
Public Address Equipment
Short-Wave Receivers • Transmitters • Television
Headquarters For Amateur Radio Supplies
20 Years Dependable Service.
280-1284 Market St., San Francisco 2, Calif.

RADIO

OPERATING • SERVICING • CODE
TYPING • VIBROPLEX
FM • TELEVISION
APPROVED FOR VETERANS

YMCA

Send for Catalog T.C.

TRADE & TECH. SCHOOL 229 W. 66 St., N. Y. 23 ENdicott 2-8117

This opening should be weak with c.w. only a couple S-units above the noise level. **10 meters:** On good days there will be a short opening with surprisingly strong signals between 1730 and 1845 CST. Look for this, as it will be good when it happens!

Midwest to the Balkans

40 meters: This path is another erratic one to predict with any great degree of accuracy. However, on average days that are fairly quiet the band may open for weak signals from 1745 through to 2300 CST. Peak conditions centered around 2100 CST. Atmospheric noise may be troublesome on the far end of the path. **20 meters:** The band will open for c.w. rather suddenly around 0600 CST. Phones may be readable on quiet days.3 Conditions drop off slightly between 0730 and 1030 CST, but will probably build up again under the noise to a fair peak between 1200 and 1315 CST. **10 meters:** On the average quiet day this will be the best month for working this path. The band opens between 0730 and 0800 CST with very strong signals. Conditions hold steady through 1000 CST. Closing is expected to be variable, but generally it will be around 1130 CST.

YL's FREQUENCY

(from page 33)

sked with W8WUT, Avis, in Michigan.

Heading north, Tucson was the next stop. Although W7LIZ, Edith Caldwell, usually spends her weekends out at Antelope Ranch in Wilcox where she and her OM, W7TCQ, live with their son and daughter, she did happen to be in town on the Sunday we called, so we dropped by for a personal QSO. Edith does much of her operating from her Tucson QTH (where the jr. ops attend school), most of her contacts being twice-daily skeds with her OM back at the ranch—he on 75 phone, she on 80 c.w. Says W7LIZ, "I just couldn't live without ham radio with our two-home arrangement!" Edith started studying for her ticket before the war, but with the close-down there was little incentive. In 1946 she came up with W7LIZ—quite appropriate, by the way, for her middle name is Elizabeth. She operates low power, v.f.o., into a long-wire antenna, receiving on an NC 173.

At Phoenix we spent a night with W7KOY, Gert Pond, and her OM, W7MAE, Ken, who is assistant director for the Southwest Division. Another 1946 licensee, before then Gert was much too busy raising four jr. ops to do more than share the mike during QSOs. She finally decided that she wanted a rig of her own to operate on ten while the OM rag-chewed on 75. Now they each have separate stations in separate rooms. W7KOY runs 40 watts, v.f.o. into a 3-element beam, receiving on an S40. The beam, by the way, is one Gert made all by herself out of aluminum tubing held in place on ¾" x 2" strips of wood by pieces of lucite she drilled and bent into angle sections. She ran her own field strength tests on it, too.

The evening we were in Phoenix W7KOY and W7MAE took us to their radio club meeting where we had a chance to visit not only with the OMs but also with W7RIJ, Eva Allen, and W7TBR, Jessie Olson. W7TBR was active on 10 meters before the war, but hasn't been on since. W7RIJ is also a "before the shut-down" operator, only her favorite bands were 40 and 80 c.w., while her OM, W7OIF, operated on 75 phone—see, it does happen!

Finally at our destination, we must tell you a little about our new QTH. In northern Arizona,

about 35 miles south of Flagstaff, where the Alpine country of the north and the desert country of the south overlap, we are right in the heart of beautiful Oak Creek Canyon with its red rock formations, evergreens and cacti and burbling creek. Our new work is with the Verde Valley School, a coed college prep school, whose aims are fostering interracial culture and world citizenship—thus amateur radio is ideal for the school, as well as the school being ideal for ham radio.

Tucson Hamfest

Though we were just too late for the Tucson Hamfest, held September 4th, according to the YLs it was an FB affair, with seven of them attending. All got in the picture but one (it never fails!)—Nancy, W7TZW, of Clifton.

San Diego Club Station

Way back in April the San Diego Young Ladies' Radio League received the call W6FXD for their club station, with Eleanor, W6AWW, acting as trustee. Their first major project with FXD was Field Day operation, and as Eleanor expressed it: "This year we weren't bait for the OMs but worked for our own club—hi!" They did all right, too, making in excess of 2300 points with their two transmitters and five YL operators. One rig was

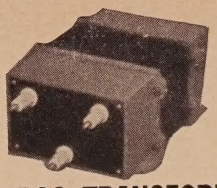


Time out for coffee during Field Day at all-YL operated W6FXD. L. to r.: W6ZXD, W6AWW, W6YXI, and W6BLF.

set up for 20 and 75 in the trailer belonging to W6YXI and her OM, and the other, set up in the back of the truck belonging to W6AAW's OM, was used on 10 meters and 40 and 80 c.w. Congrats to the San Diego YLs. This is the first YL club station we've heard about, and certainly the first all-YL operated Field Day station. The club station was also put to good use Aug. 25-28 when it was set up at Balboa Park in San Diego for the Hobby and Craft Show, operating all bands and handling traffic for visitors to the show.

Personal

We hear that W1RNT, Eleanor, at ARRL Hq. is engaged to W1QVF, op at W1AW. That should be another congenial household!



Performance! Dependability! Economy!

PCC TRANSFORMERS & CHOKES

TRANSFORMERS

Input	Output	Amateur Net
115/230 V.A.C. 50 or 60 cycles	3700-0-3700 V.A.C. (3000 V.D.C. after choke input filter at 500 ma.)	$59.25
115/230 V.A.C. 50 or 60 cycles	3700-0-3700 V.A.C. (3000 V.D.C. after choke input filter at 300 ma.)	$44.70
115/230 V.A.C. 50 or 60 cycles	2500-0-2500 V.A.C. (2000 V.D.C after choke input filter at 500 ma.)	$39.75
115/230 V.A.C. 50 or 60 cycles	1875-0-1875 V.A.C. (1500 V.D.C. after choke input filter at 500 ma.)	$34.35
115 V.A.C. 60 cycles	1500-0-1500 V.A.C. (1250 V.D.C. after choke input filter at 400 ma.)	$18.90
115 V.A.C. 60 cycles	1250-0-1250 V.A.C. (1000 V.D.C. after choke input filter at 300 ma.)	$14.70
	5 amp line voltage adjuster for panel mounting 20 volt range.	$ 8.95

Mail Your Order Today or Write for Free Descriptive Literature

POWER CONVERSION CORPORATION

364 South Meridian Street Indianapolis, 4, Indiana

Manufacturers of Heavy-Duty Industrial Transformers

—ATTENTION—

MOBILE HAMS

COMPLETE MOBILE PACKAGE — NOTHING ELSE TO BUY. OUTSTANDING MOBILE SIGNALS USE MOTOROLA EQUIPMENT — BACKED BY YEARS OF COMMUNICATION EQUIPMENT EXPERIENCE — WORLD'S LARGEST PRODUCER OF 2-WAY MOBILE EQUIPMENT.

A mobile transmitter with a double feature FM or AM at flip of the switch, the MOTOROLA FMT-30-DMS 27-30 MC.) **$130.00**

P-7253 spring base rear—mount antenna **$22.50**

MOTOROLA P-69-13-ARS receiver with special noise limiter for use with any converter having 1500-3000 KC.... **$60.00**

3-30 famous Gon-set converter complete to connect to the P-69-13-ARS receiver **$39.95**

P-327-E Fire wall loud speaker **$5.00**

The above comes complete with all necessary accessories and mounting hardware. Order direct or through the Motorola National Service Organization member in your area.

For further information write to:

MOTOROLA INC.

Amateur Sales Dept. CQ-NOV.

1327 W. Washington Blvd., Chicago 7, Ill.

Attention: Harry Harrison W9LLX

Telephone—Taylor 9-2200 Ext. 161

Classified Ads

Advertising in this section must pertain to amateur radio activities. Rates: 25c per word per insertion for commercial advertisements. 5c per word for non-commercial advertisements by bona fide amateurs. Remittance in full must accompany copy. No agency or term or cash discounts allowed. No display or special typographical ad setups allowed. "CQ" does not guarantee any product or service advertised in the Classified Section. Closing date for ads is the 25th of the 2nd month preceding publication date.

SELL PE-103A DYNAMOTORS. Five new, complete in original overseas moistureproof crates—$15.50 each. Millen 90501 secondary frequency standard $39.00. Sell miscellaneous quartz crystal processing equipment, finishing positions, saw, lap, etc. HRO receiver, power supply, speaker, 1.7 to 30 mc. general coverage and ham band spread coils $95.00. Howard 437-A communications receiver .55 to 43 mc. $35.00. RCA ACR-175 communications receiver .5 to 60 mc. $45.00. W6KEG, 1124 Parkway Dr., El Monte, Calif.

GET INTERESTED IN ULTRASONICS! Informative highly interesting 36 page book with 40 illustrations. Applications already extended to many industries with unlimited possibilities. Prepare for a future in this new art by reading "Ultrasonic Fundamentals," written by the noted inventor, S. Young White. Price $1.75 postpaid. Book Division, Dept. CC, Radio Magazines, Inc., 342 Madison Avenue, New York 17, N. Y.

BARGAINS—NEW AND USED TRANSMITTERS-RECEIVERS PARTS: Globe King $299.00; New 150 watt phone $199.00; 60 watt phone $99.00; Globe Trotter $57.50; HT-17 $39.50; New Meissner Signal Calibrators $29.95; TR-4 $19.95; MB. 611 $39.00; Pierson KP-81 $219.00; HRO 5TA1 $199.00; SX43, NC173, HQ129X $139.00; RME45, SX25 $99.00; Howard 430 $29.50; S38 $29.95; S41 $22.50, latest signal shifter $59.00; DB22A $49; BC610's, AF100, and many others. Large stock, trade-ins. Free trial. Terms financed by Leo, WØGFQ. Write for catalog and best deal to World Radio Labs., Council Bluffs, Iowa.

TECHNICIANS! ENGINEERS!! Interested in a top-paying electronic position? Send post card for information on How, Why and Where. Mid Continent Research Bureau, P. O. Box 121, Wichita, Kansas.

SELL—New tubes, not surplus, 803's at $6.49, 813's at $4.95, HY30Z's at $3.50, 810 at $5.95, 450TH at $19.95. 274N 6-9.1 receiver new $6.95, 274N 7-9.1 transmitter new $7.95. MN26 receiver 100 to 1600 kc converted to AC, new "dress job," $34.95, 522 new (case scratched, etc.) $29.95. Complete transmitter 811 final, best parts throughout, UTC, GE, National, etc., less than cost of parts, $59.95 with power supply. QST back to 1922, pre-war Radio—make offer. W6EUM, Box 306, Camarillo, Calif.

BARGAINS: New and reconditioned Collins, Hallicrafters, National, Hammarlund, RME, Millen, Meissner, Sonar, Meck, receivers, transmitters, etc. Reconditioned S38 $25.00, S40A $59.00, NC57 $59.00, NC173 $139.00, NC24OD $149.00, HQ129X $129.00, RME45 $99.00, RME-84, HF-10-20, VHF152A, RME69, HFS, NC183, HRO, NC10X, SX43, SX28A, SX25, SP400X, HT9, BC610, Supreme AF100, Collins 75A1, Collins 32V1, etc. Shipped on trial. Terms financed by us. List free. Henry Radio, Butler, Missouri.

BARGAINS: Hallicrafters SX-62 new at $225.00; Meissner 18 tubes FM-AM tuner, model 9-1091 new $245.00 at $120.00; Scott amplifier latest model, list $250.00 at $180.00; American amplifier new $225.00 at $180.00; Presto recorder model K, list $450.00 at $250.00; Webster record changer $18.00. Hans Unfried, 33 Westfield Road, Buffalo 21, N. Y.

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

AMATEUR RADIO LICENSES. Complete theory preparation for passing amateur radio examinations. Home study and resident courses. American Radio Institute, 101 West 63rd Street, New York City.

QSL's. Samples for stamp. Henry L. Carter, Jr., W2RSW, 747 S. Plymouth, Rochester 8, N. Y.

HOTTEST SURPLUS LIST in the country. Electronics-hydaulics-aircraft gadgets. Dick Rose, Everett, Wash.

QSL's, SWL's. Made the way you want them. Samples? W9BHV QSL Factory, 857 Burlington, Frankfort, Ind.

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

WILL SWAP new BC-348 or pay cash for new or good used Bendix RA-1 receiver. W3DL, 1628 Naturo Rd., Towson, Maryland.

NATIONAL AMATEUR RADIO COUNCIL deserves your active support because NARC represents the welfare and best interests of all amateurs. NARC is still the best two dollar investment ever made for the good of the amateur. Send two bucks, include your name, QTH, handle, and class of license to National Amateur Radio Council, 610 South State Street, Champaign, Illinois.

QSL SWL CARDS. W5FAY Press, 6118 Goliad, Dallas, Texas.

FOR SALE: One BC-683-B 27 mc to 39 mc receiver with dynamotor and 1 BC-684-A FM transmitter. 30 watt output, with dynamotor and 90 xtals. Best offer over $75.00. Robert G. Wagner, WØAGL, 410 Peak St., Lead, South Dakota.

BEST OFFER: RC 184 IFF set consisting of receiver, transmitter, power supplies, control and indicator units, 75 tubes, 115 volts a.c., new. Inquire R. Graham, 246 Queen Anne Road, Bogota, N. J.

QSLs? SWLs? "America's finest!" Samples 3 cents. Sackers, W8DED, Holland, Mich.

FOR SALE: Sonar radio transmitter, 75 watt, 80 to 10 meters, consisting of VFX680 exciter, c.w.-N.B.F.M., amplifier 50 PS50, power supply, all tubes, coils, model HT18 Hallicrafters VFO, model 90881 Millen RF 500 watt power amplifier, pair 8005 tubes. All practically new—A1 condition. Power supplies, tubes, meters, miscellaneous parts. Write for list. Selling out cheap. Richard M. Krauss, 206 Wheatsheap Lane, Abington, Pa.

FOR SALE: Hallicrafters SX28A, less speaker, $125.00. Meck T-60 transmitter w/coils for 10-20-40 & 80 meters —$100.00. VHF152 $50.00. Lester Lafayette V.H.F. converter $25.00. Hallicrafters Model T-54 television receiver—$90.00. Echophone commercial receiver, Model EC3—$20.00. Edson L. Hart, Jr., W8AZP, Salineville, Ohio.

FOR SALE: Transceiver BC-654-A, dynamotor PE-103A, converter PE-104-A, cables, complete diagrams, manual. $40.00. Jack Udseth, Summit, South Dakota.

FOR SALE: RME45 and Hunter cycle master. First $225.00. E. J. Hoover, WØUUC, 223½ E. 2nd St., Muscatine, Iowa.

FOR SALE: BC223 transmitter with two tuning units—$25.00. Write for particulars. C. Noble, W5PFG, Box 22, Mesilla Park, New Mexico.

SUPER GLOSS QSLs-SWLs! Samples. W1HJI, Box 32B, Manchester, N. H.

"TAB" sensational 6 v. Carter dynamotors, 400 v. 150 ma., $8.98, 250 v. 100 ma., $4.98, both $12.49. Guaranteed tube bargains! 6J6, 6AK5, 6AG5, ea. 37c. 6C4 24c. 388A 40c. 954 14c. 955 16c. IN34 crystal 84c. GE 2J1GI selsyns, used, tested, pair $1.49. Tuning meter 5 ma., 98c. 30CM 12" UHF mobile ham band antenna AT5/ARR1 39c, 4/$1, Hi-gain dynamic mike transformer plus excellent fidelity dynamic mike, both $1.49. Write for bargain "Tabogram." "TAB," Dept. 11C, 6 Church St., N. Y. C.

SPECIALIZED QSLs. The best for less. Samples 10c. Ace Print, WØQFZ, 2705 So. 7th, Council Bluffs, Iowa.

SELLING OUT. 250 watt phone, c.w., all band transmitter. BC459-458-457, etc. Will sacrifice. Len Foard, WØNYO.

ALUMINUM TUBING, etc. Beams for amateurs, TV, FM. Lists free. Willard Radcliff, Fostoria, Ohio.

ART-13 WANTED. Pay up to $100.00. For sale: New Brush tape recorder, complete, $150.00. W8ZT, 229 Navajo, Pontiac, Mich.

BEST OFFER TAKES: New Elincor 400EA three element ten meter beam; Silver 701 transmitter like new; new WRL 300 v. 100 ma. power supply. Waller, 54 Lovett, Little Silver, N. J.

SELL: Rare technical manual on SCR 211 (BC221) freq. meter. Profusely illustrated. $1.25 each. W3NB, 1717 Lang Place, N. E., Washington 2, D. C.

FOR SALE: HR07, like new, VHF152A new, S27 AM & FM, numerous high power tubes new, Echophone, Mark II tank set. Send for details. Need 4-250A or equivalent or kw. modulation transformer. W2CP1, Clayton, N. J.

SELL: Rare technical manual "Repair Instructions for Receivers BC312 and BC342." Illustrated including schematics. $1.00. W3NB, 1717 Lang Place, N. E., Washington 2, D. C.

SELLING OUT: Model EX Meissner signal shifter with phase modulator $60.00; SP44 Panadaptor $45.00; VHF-152A $50.00; SX25, very good, $75.00; McMurdo Silver #800, $18.00; new BC645 $8.00; new Turner BX crystal mike $5.00; new Electro-Voice speech clipper $9.00. Philip Schwebler, W2ZHE, 6131 Madison St., Brooklyn 27, N. Y.

SELL OR SWAP Model SLRM 10 tube Scott marine radio, 0.54—18.6 mc. continuous coverage. Purchased brand new—75.00. Tracy Parker, 106 Kingwood Drive, Chattanooga 4, Tenn.

MEISSNER signal shifters in kit form are regular stock items at northern New England's foremost amateur radio supply house. Write W1BFT, Evans Radio, Concord, N.H.

HAMMARLUND SUPER PRO BC1004 for sale. Includes receiver, power supply, 12" Jensen. Five Bands, 540 kc to 20 mc. Splendid condition. Write E. Harvey, 2386 Morris Ave., Bronx, New York.

COLORTONE QSLs! Snappy! Bright! Different! Beautiful samples! Prompt, reliable service! The Colortone Press, Tupelo, Miss.

BRING YOUR NINTH EDITION of Nilson & Hornung up-to-date with "Key and Answers to New Radiotelegraph Examination Questions." $1 postpaid. McKenzie, 245 Poplar, Hackensack, N. J.

FOR SALE: ART-13 transmitter. Very good condition. Never been converted. $100 or best offer. Neill L. Key, W4NSB, 1304 Rayon St., Burlington, N. C.

FOR SALE: Reason—health. One of the most complete amateur stations in the country. . . Send for list—you will be amazed. Transmiter Exchange, Wakefield, R. I.

SELLING OUT STATION. Hammarlund HQ129X receiver and speaker (new), Vomax v.t.v.m. (slightly used), Heathkit signal tracer (new), 457-A 80 meter vfo and three stage exciter with coax, TZ20 final, with power supplies and rack panel. All for $285.00 f.o.b. Rawlins, Wyoming. W7FCX, Box 309, Rawlins, Wyo.

BC610 for sale. In good condition, complete with tubes and speech amplifier, $475.00. W6GS, C. C. Brown, 2037 Niles Street, Bakersfield, California.

SELLING OUT: Most beautiful station on east coast. Send for list. Box 511, Wakefield, R. I.

NOW AVAILABLE—TVI SECOND EDITION—Order your copy today and keep abreast of the latest developments in eliminating TVI from your rig. Price 50c per copy plus 10c postage and handling. Dept CT, Radio Magazines Inc. 342 Madison Avenue, New York 17, New York.

CQ BACK ISSUES AVAILABLE

35c each postpaid

April 1945
June 1945
July 1945
August 1945
September 1945
November 1945

July 1946
August 1946
September 1946
December 1946

January 1947
March 1947
April 1947
July 1947
September 1947

December 1947

May 1948
June 1948
July 1948
August 1948
September 1948
October 1948
November 1948
December 1948

February 1949
June 1949
July 1949
August 1949
September 1949

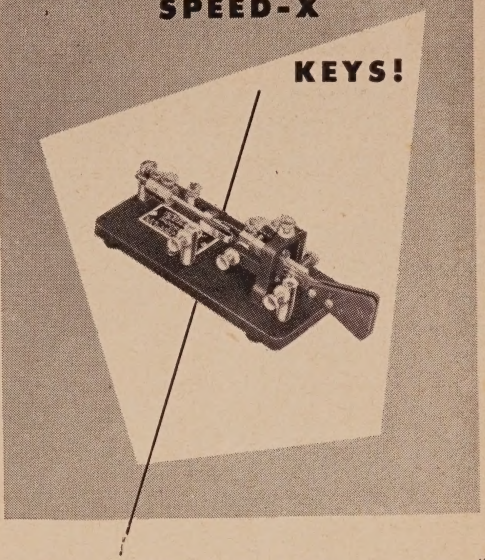
Send all orders with remittance to:

Circulation Department

CQ-Radio Magazines, Inc.

342 Madison Ave., New York 17, N. Y.

JOHNSON SPEED-X KEYS!



● EVERY cw man—beginner or expert—will readily appreciate the smooth, snappy action of Johnson Speed-X keys. It's the kind of action that encourages faster, better sending with less conscious effort. It's the kind of key action that pleasantly surprises, no matter how much—or how often you send.

Popular member of the JOHNSON Speed-X line is the Amateur Model 114-513 illustrated above.

114-513 Features

Carefully tempered clock spring used for main and U-spring in Vibrator.

Heavy brass connector strips.

Adjustable trunion screws.

Heavy steel base, attractively finished with backed black wrinkled enamel.

Adjustable weight and two adjustable black fibre paddles.

Two sets of ⅛" pure silver contacts.

Deadener wheel, post screws, springs and terminals are heavily chrome plated.

Rubber feet to prevent slipping or tilting.

HEAVY DUTY METAL HAND KEY

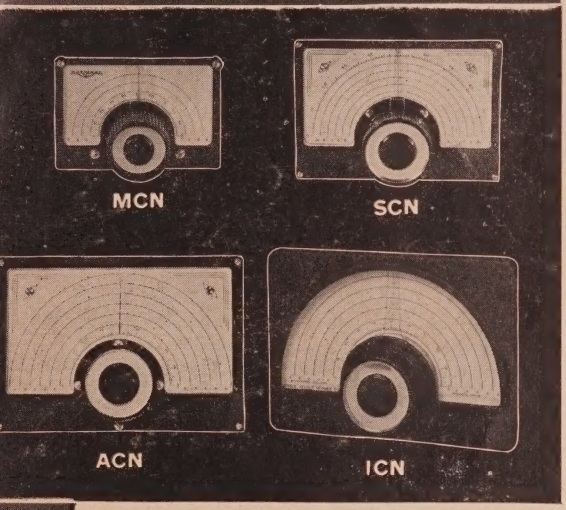


High quality at modest cost! That's a perfect description of the Standard Key 114-310. It has heavy die cast base finished in black wrinkled enamel. Bearings are extra smooth —adjustable. Contacts are ⅛" and of pure silver. There are provisions for plugging in JOHNSON Speed-X semi-automatic keys when desired. Net weight is 9 oz.

E. F. JOHNSON CO.
WASECA, MINNESOTA

NATIONAL

- Proven
- Dependable
- Quality



POPULAR NATIONAL DIALS

ACN — the original design so popular with manufacturers, amateurs and experimenters who "build their own" and desire direct calibration, 5" H. x 7¼" W. $3.30 net. ICN — an illuminated version of the ACN, 5⅛" H. x 7¼" W. $6.00 net. SCN — same dial scales as ACN in reduced size, 4-7/16" H. x 6¼" W. $3.00 net. MCN — scaled down dial ideal for mobile installations and small converters, 2¾" H. x 3⅞" W. $2.70 net.

National
© EST. 1914
NATIONAL COMPANY, Inc.
MALDEN, MASSACHUSETTS

CQ Ad Index

Allied Radio Corp. 59
Almo Radio Company 76
American Radio Institute 70
Arrow Appliance Company 74
Arrow Sales, Inc. 58
Atronic Corp. 76

Barker & Williamson 54
Bliley Electric Co. 56
Bud Radio, Inc. 2
Buffalo Radio Supply 67

C & H Sales Company 72
Collins Radio Company 12
Columbia Electronic Sales 66
Communications Equipment Co. 71

Dow Radio, Inc. 45

Editors & Engineers, Ltd. 65
Eitel-McCullough, Inc. 10
Eldico of N. Y., Inc. 62, 63
Electronic Sales Co. 74
Electronic Signal Devices 74
Electro-Voice, Inc. ..... Cover 2
Esege Sales Co., Ltd. 73
Esse Radio Company 48, 49, 50, 51, 52

Fair Radio Sales 60, 61

General Electric Co. (KenRad Div.) 1

Hallicrafters Company 41
Harrison Radio Corp. 43
Harvey Radio Company, Inc. 47
Hawkins Radio Company 76
Henry Radio Stores 57

Instructograph Company 73
International Resistance Company 6

Johnson, E. F. Co. 53, 79

Kenyon Transformer Co., Inc. 68

Lafayette Radio 72
Lectronic Research Labs 74

Millen, James Mfg. Co., Inc. 4
Motorola, Inc. 77

National Company, Inc. ..... 39, 80, Cover 3
National Radio Institute 7

Offenbach & Reimus Co. 74

Petersen Radio Company, Inc. 5
Power Conversion Corp. 77

Radelco, Inc. 80
Radio Amateur Call Book 70
Radio Corp. of America (Tube Div.) ..... Cover 4
Radio Products Sales, Inc. 71

San Francisco Radio & Supply Co. 76
Shure Brothers, Inc. 8
Sylvania Electric Products, Inc. 9

Timing Devices Company 46
Trans-World Radio-Television Corp. 73

V & H Radio Supply Co. 69

Wells Sales, Inc. 75
World Radio Laboratories, Inc. 55

YMCA 76

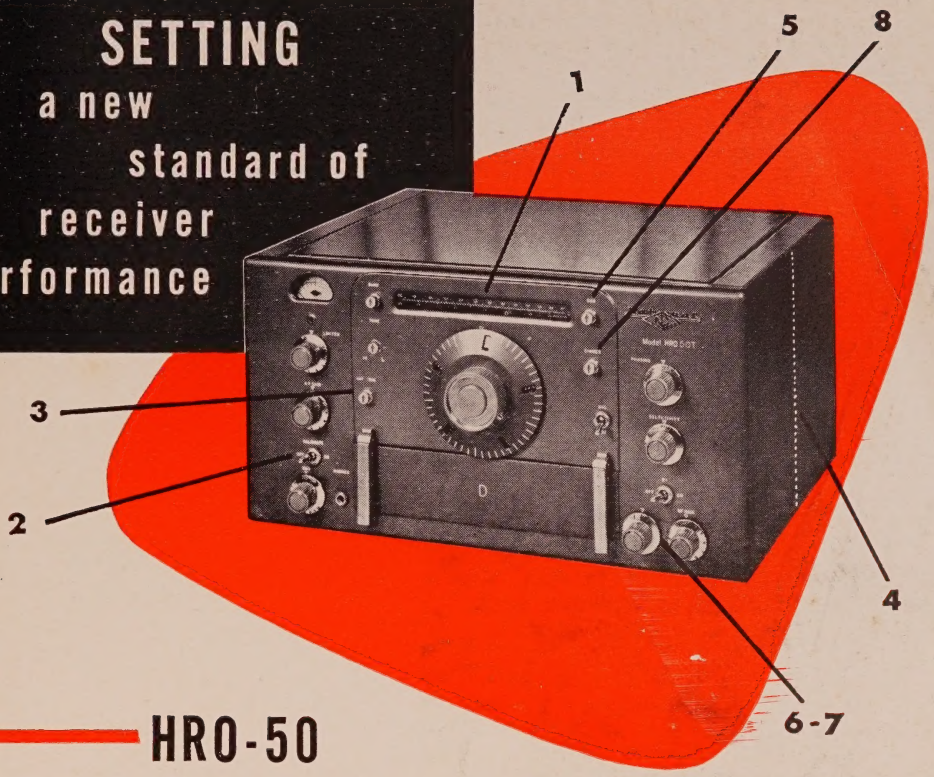
SYLVANIA ELECTRIC

electronic products distributed by

RADELCO, INC.

246 West First St., Mt. Vernon, N.Y., MO Ver 8-6173

SETTING a new standard of receiver performance



HRO-50

Now, National presents a great new HRO receiver. Retaining such time-tested features as a variable-threshold automatic noise limiter, voltage-regulated oscillator, two tuned R.F. stages with excellent signal/image ratio and micrometer dial with gear drive, the new HRO-50 incorporates 12 "asked for" innovations. Performance tests indicate the HRO-50, the finest National has ever made, will set a new standard of performance for communication receivers.

12 ALL NEW FEATURES

1. Direct frequency reading linear scale with a single range in view at a time. **2.** Provisions for using 100 kcs. crystal calibrator unit, switched from panel. **3.** Variable front-of-panel antenna trimmer. **4.** Built-in power supply with heat resistant barrier. **5.** Front-of-panel oscillator compensation control. **6.** B.F.O. switch separated from B.F.O. frequency control. **7.** Provision for incorporation of NFM adapter inside receiver, switched from front panel. **8.** Dimmer control for dial and meter illumination. **9.** Miniature tubes in front end and high frequency oscillator. **10.** Speaker matching transformer built into receiver with 8 and 500/600 ohm output terminals. **11.** High frequency and beat frequency oscillator circuits not disabled when receiver in "send" position. **12.** High-fidelity push-pull audio amplifier, 8 watts undistorted output. Ideal for phono attachment.

Shipments will start shortly after January 15. Place your order with your National dealer today for early delivery.

National

© EST. 1914

NATIONAL COMPANY, Inc.

MALDEN, MASSACHUSETTS

Team Mates...



TYPICAL PUSH-PULL OPERATING CONDITIONS (ICAS)

Two RCA 811-A's as Class B Modulator			Two RCA 812-A's as Class C Amplifiers		
DC Plate Voltage	1250	1500	DC Plate Voltage	CW 1500	Phone 1250
DC Grid Voltage	0	—4.5	DC Grid Voltage	—120	—115
Peak AF Grid-to-Grid Voltage	175	170	DC Plate Current	346	280
Zero-Signal Plate Current	54	32	DC Grid Current	60	70
Max.-Signal Plate Current	350	313	Peak RF Grid-to-Grid Voltage	480	480
Driving Power	6	4.4	Driving Power	13	15.2
AF Power Output	310	340	Power Output	380	260

THE FOUNTAINHEAD OF MODERN TUBE DEVELOPMENT IS RCA

NOW—more power on phone and CW with these improved transmitting triodes

● Here's *more* than your money's worth of power and performance—huskier construction . . . greater high-voltage insulation . . . a plate structure with radiating fins . . . are just a few of the features that make the new RCA 811-A's and 812-A's the sweetest power triodes your money can buy.

You can operate a pair of 811-A's *at zero bias* in class B modulator service and get an output as high as 310 watts with surprisingly low driving power . . . more than enough output to 100% modulate a pair of the new 812-A's . . . or any rf amplifier with an input up to 620 watts.

A single 812-A easily handles an input up to 260 watts (ICAS rating) in class C telegraphy up to 30 Mc. A pair can be operated with an input of 520 watts with only 13 watts driving power.

The RCA 811-A and 812-A supersede the 811 and 812, and can be used respectively in their sockets without circuit changes.

• • •

To get all the tube power, performance and life *you* pay for . . . buy genuine RCA tubes in the familiar black and red cartons. For complete data on the new RCA 811-A and 812-A tubes, see your RCA tube supplier, or write RCA, Commercial Engineering, Section 38KM, Harrison, New Jersey.

RCA

RADIO CORPORATION of AMERICA

ELECTRON TUBES **HARRISON, N. J.**