MAY
1955
35c

CQ

RADIO AMATEURS' JOURNAL



JAGUAR MOBILE

14-KARAT MOBILE



MOBILE Issue

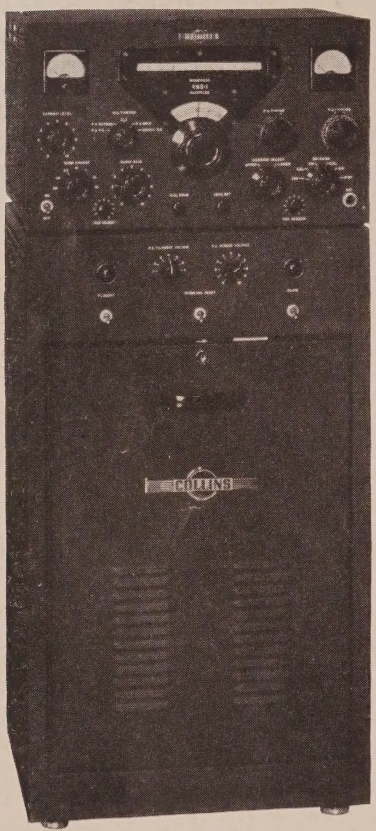
see page 89



NOW... Optional Equipment Combinations

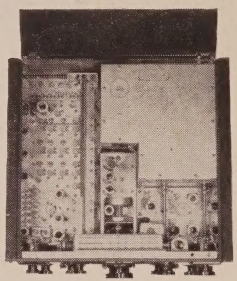
for COLLINS KWS-1 AMATEUR TRANSMITTER

Collins KWS-1 incorporates the most advanced design features ever offered in an Amateur transmitter — new compactness, new ease of operation, and optimum performance on SSB, AM and CW.

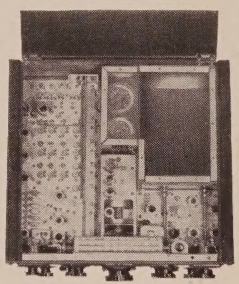


KWS-1 Transmitter

This new Collins transmitter will soon be available as a complete ready-to-operate kilowatt or as individual sub-units as listed below.



KWS-1K



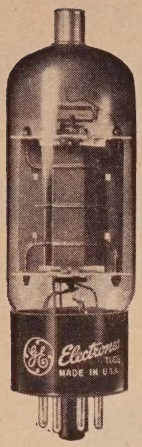
32W-1

- **KWS-1** Transmitter complete $1,995.00
- **KWS-1K** Transmitter similar to KWS-1, less high-voltage power supply and PA tubes____ 1,225.00
- **32W-1** Exciter and low-voltage power supply. Also included are sockets for two 4X150A tubes in shield box to be used if 32W-1 is later converted to a KWS-1_____ 895.00
- **367A-2** Power Amplifier Kit includes all components, except two 4X150A tubes, to convert the 32W-1 to a KWS-1__ 215.00
- **428A-1** High-voltage power supply for KWS-1, completely assembled and wired_____ 700.00
- **428A-2** high-voltage power supply similar to 428A-1, except supplied in kit form_____ 545.00

See your nearest Collins Distributor for additional information.

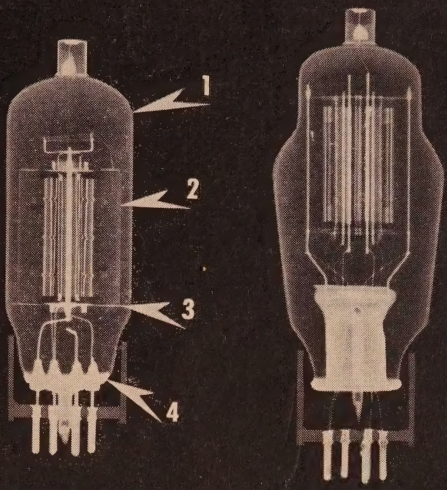
COLLINS RADIO COMPANY • Cedar Rapids, Iowa

COLLINS



NEW SERVICE-DESIGNED 6BG6-GA

Diameter 24% less than prototype! Seated height 13% less! See X-ray pictures at right for standout design improvements in General Electric's new tube—priced same as the 6BG6-G it replaces!



NEW 6BG6-GA **OLD 6BG6-G**

1. New bulb is straight-side, much smaller and sturdier.
2. Redesigned, more shock-resistant tube structure.
3. Bottom mica, as well as top, now contacts the glass envelope, for greater rigidity.
4. Button-stem base gives shorter, better-separated leads, for improved heat conduction and superior tube r-f characteristics.

For mobile work, choose G.E.'s all-new 6BG6-GA... compact, sturdy, high-voltage tested!

ONE tube or push-pull, the 6BG6-GA is ideal for your new mobile or portable rig—final-amplifier or modulator service.

General Electric's new beam power pentode is streamlined in size, and as rugged as they come. The tube takes tough mobile operating conditions in stride. A high peak plate voltage rating means you'll have little or no tube arc-over from voltage fluctuations. To further assure this, *every* G-E 6BG6-GA is factory pulse-tested at absolute maximum voltage.

20-watt plate dissipation per tube helps you get the power you need out of a small rig . . . and at a budget receiving-tube price. Also, here is a tube specially designed and built to perform, to last—one of General Electric's famous Service-Designed types, which TV technicians coast-to-coast are installing in critical sockets.

Your local G-E tube distributor has the new Service-Designed 6BG6-GA. See him today! *Tube Department, General Electric Company, Schenectady 5, New York.*

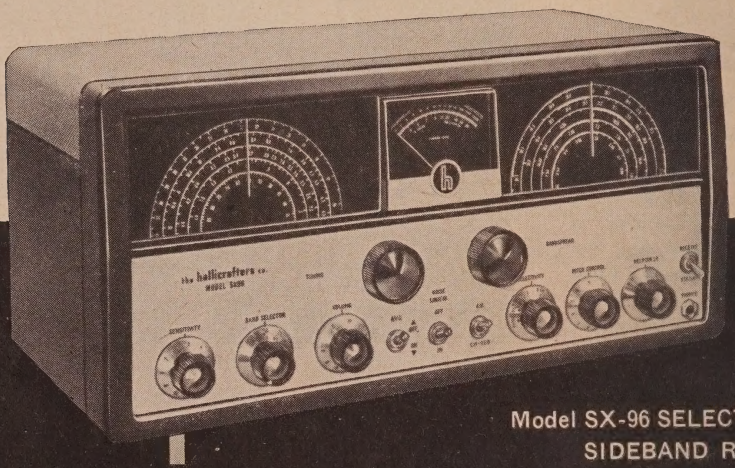
GENERAL ELECTRIC

166-1B3

PRAISED by amateurs

PRIZED by experts

PREFERRED by specialists



See us at the
May Parts Show
Conrad Hilton Hote
Room No. 700-701,
Booth No. 575

Model SX-96 SELECTABLE
SIDEBAND RECEIVER

hallicrafters

Chicago 24, Illinois

In Canada:
THE HALLICRAFTERS COMPANY · Don Mills Road · Box 27, Station R · Toronto 17, Ontario, Canada

HALLICRAFTERS

- Covers Broadcast 538-1580 kc plus three S/W 1720 kc—34 Mc.
- Precision gear drive dial system.
- Double conversion with selectable crystal controlled second oscillators
- Selectable side band reception of both suppressed carrier and full carrier transmissions.
- Highly selective 50 kc I. F. system.
- CW operation with AVC on.
- Delayed AVC.
- Calibrated bandspread—"S" meter—double superhet.
- 10 tubes, 1 rectifier and voltage regulator.

CQ

Cover: Lenore Conn, W6NAZ, in her mobile Jaguar; Myron Zobel, W6NMC and his "14 Karat Trailer"; with embellishments by Paul Lippman.

May, 1955
Vol. 11, No. 5

Editor

Wayne Green, W2NSD

Jim Morrissett, W8BAJ/2
Assistant Editor

John Williams, W2BFD
Technical Editor

Associate Editors

R. C. Spenceley, KV4AA
Herbert S. Brier, W9EGQ
George Jacobs, W2PAJ/W3ASK
Louisa B. Sando, W5RZJ

Editorial Staff

E. Miles Brown, W2PAU
William I. Orr, W6SAI
Jack N. Brown, W3SHY
G. Franklin Montgomery, W3FQB
Wilfred M. Scherer, W2AEF
Thomas Smith, W2MCJ
Draftsman

Robert W. Campbell
Editorial Production

Harriet Klein
Editorial Assistant

Business Staff

S. R. Cowan, Publisher
H. N. Reizes, Advertising Manager
L. Steiner, Advertising Representative
J. Stillman, Advertising Representative
D. Saltman, Production Manager
H. Weisner, Circulation Manager

Branch Advertising Offices

CALIFORNIA

Ted E. Schell, 2700 West 3rd Street, Los Angeles 5, Calif., DUnkirk 2-4889.

Foreign Subscriptions

England: **RSGB, New Ruskin House, Little Russel St., London, WC1.**

Australia: **Technical Book Co., 297 Swanston St., Melbourne C1, Victoria, Australia.**

* 335 Johnson St., Gary 3, Indiana
** 555 Crestline Drive, Los Angeles 49, Cal.

Feature Articles

16 INSIDE LEECE-NEVILLE — *David Potter, W2GZD*
19 6 BANDS ON THE TRI-BAND — *William J. Vette, W4SWI*
22 MORE GAIN FROM TRI-BAND — *William J. Vette, W4SWI*
24 12 VOLT MOBILE SYSTEM — *Al J. Spatola, W6DAE*
26 TRAILER HITCH MOUNT — *Richard Van Wickle, W6TKA*
27 MOBILE ANTENNAS — *Elbert Robberson, W2FRQ*
31 CONVERTING THE PE-101-C — *Leslie A. Venne, WØCBW*
34 MORE ON THE PE-101-C — *Howard A. Bowman, W6QIR*
36 MOTOR-DRIVEN LOADING COILS — *Charles T. Miser, W9MDC*
38 THE PROFESSIONAL LOOK — *Harrison Morgan, W1SSK*
46 CHOO CHOO MOBILE — *Ed Luckey, W6MJ*
48 NET CONTROL—MOBILE — *Paul Kersten, WØWIT*
50 SURPLUS POLICE RIGS FOR CD — *Bill Bailey, W9JJD*
54 S-METER AND CRYSTAL MARKER — *M. G. Bullock, WØAJU*

Departments

41 PROPAGATION CONDITIONS
42 DX AND OVERSEAS NEWS
56 THE NOVICE SHACK
60 THE YL'S FREQUENCY

Miscellaneous

6 SCRATCHI
10 LETTERS TO THE EDITOR
13 EDITORIAL
30 THE 14 KARAT TRAILER *by Myron Zobel, W6NMC*
44 QSL CONTEST WINNER
45 WAZ HONOR ROLL
52 SSB MOBILE *by W2NSD*
64 WHAT'S NEW IN HAM RADIO
73 RTTY MEETING
76 OUT DAMNED NOISE
79 MASTER MOBILE REMOTE TUNED COIL
96 ADVERTISING INDEX

CQ—(title Reg. U.S. Post Office)—is published monthly by Cowan Publishing Corp. Executive and Editorial offices, 67 West 44th Street, New York 36, N. Y. Phone MUrray Hill 7-2080.
2nd Class Mail privileges authorized at New York, N. Y. Subscription rates in U.S.A. Possessions, APO & FPO, 1 year $3.00; 2 years $5.00; 3 years $7.00. Elsewhere add $1.00 per year for postage.
Single copies 35 cents. Printed in U.S.A.

Entire contents copyright 1955 by Cowan Publishing Corp. CQ does not assume responsibility for unsolicited manuscripts.

POSTMASTER: SEND FORM 3579 to CQ, 67 WEST 44th ST., NEW YORK 36, N.Y.

New HEATHKIT DX-100 PHONE AND CW TRANSMITTER KIT



MODEL DX-100

Shpg. Wt. 120 lbs.

$189.50

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

- R.F. output 100 watts Phone, 125 watts CW.
- Built-in VFO, modulator, power supplies. Kit includes all components, tubes, cabinet and detailed construction manual.
- Crystal or VFO operation (crystals not included with kit).
- Pi network output, matches 50-600 ohms non-reactive load. Reduces harmonic output.
- Treated for TVI suppression by extensive shielding and filtering.
- Single knob bandswitching, 160 meters through 10 meters.
- Pre-punched chassis, well illustrated construction manual, high quality components used throughout—sturdy mechanical assembly.

This modern-design Transmitter has its own VFO and plate-modulator built in to provide CW or phone operation from 160 meters through 10 meters. It is TVI suppressed, with all incoming and out-going circuits filtered, plenty of shielding, and strong metal cabinet with interlocking seams. Uses pi network interstage and output coupling. R.F. output 100 watts phone, ... 125 watts C W. Switch-selection of VFO or 4 crystals (crystals not included).

Incorporates high quality features not expected at this price level. Copper plated chassis—wide-spaced tuning capacitors — excellent quality components throughout—illuminated VFO dial and meter face—remote socket for connection of external switch or control of an external antenna relay. Preformed wiring harness—concentric control shafts. Plenty of step-by-step instructions and pictorial diagrams.

All power supplies built-in. Covers 160, 80, 40, 20, 15, 11 and 10 meters with single-knob bandswitching. Panel meter reads Driver I_P Final I_G, I_P, and E_P, and Modulator I_P. Uses 6AU6 VFO, 12BY7 Xtal osc.-buffer, 5763 driver, and parallel 6146 final. 12AX7 speech amp., 12BY7 driver, push-pull 1625 modulators. Power supplies use 5V4 low voltage rect., 6AL5 bias rect., 0A2 VFO voltage reg., (2) 5R4GY hi voltage rect., and 6AQ5 clamp tube. R.F. output to coax. connector. Overall dimensions 20⅞" W x 13¾" H x 16" D.

Heathkit ANTENNA COUPLER KIT



Poor matching allows valuable communications energy to be lost. The Model AC-1 will properly match your low power transmitter to an end-fed long wire antenna. Also attenuates signals above 36 Mc, reducing TVI. 52 ohm coax. input—power up to 75 watts—10 through 80 meters—tapped inductor and variable condenser—neon RF indicator—copper plated chassis and high quality components.

MODEL AC-1

$14.50 Shpg. Wt. 4 lbs.

Heathkit GRID DIP METER KIT



MODEL GD-1B

$19.50 Ship. Wt. 4 lbs.

The invaluable instrument for all Hams. Numerous applications such as pretuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, design procedures, etc. Receiver applications include measuring C, L and Q of components—determining RF circuit resonant frequencies.

Covers 80, 40, 20, 11, 10, 6, 2, and 1¼ meter Ham bands. Complete frequency coverage from 2—250 Mc, using ready-wound plug-in coils provided with the kit. Accessory coil kit, Part 341-A at $3.00 extends low frequency range to 350 Kc. Dial correlation curves furnished.

Compact construction, one hand operation, AC transformer operated, variable sensitivity control, thumb wheel drive, and direct reading calibrations. Precalibrated dial with additional blank dials for individual calibration. You'll like the ready convenience and smart appearance of this kit with its baked enamel panel and crackle finish cabinet.

Heathkit ANTENNA IMPEDANCE METER KIT



MODEL AM-1

$14.50 Shpg. Wt. 2 lbs.

Use the Model AM-1 in conjunction with a signal source for measuring antenna impedance, line matching purposes, adjustment of beam and mobile antennas, and to insure proper impedance match for optimum overall system operation. Will double, also, as a phone monitor or relative field strength indicator.

100 μa. meter employed. Covers the range from 0 to to 600 ohms. Cabinet is only 7" long, 2½" wide, and 3¼" deep. An instrument of many uses for the amateur.

HEATH COMPANY

A SUBSIDIARY OF DAYSTROM, INC.

BENTON HARBOR 12, MICHIGAN

New Heathkit VFO KIT



MODEL VF-1

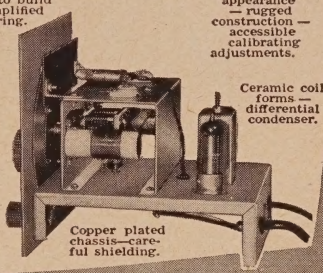
$19.50

Ship. Wt. 7 lbs.

- Smooth acting illuminated and precalibrated dial.
- 6AU6 electron coupled Clapp oscillator and OA2 voltage regulator.
- 10 Volt average output on fundamental frequencies.
- 7 Band calibration, 160 through 10 meters, from 3 basic oscillator frequencies.

Here is the new Heathkit VFO you have been waiting for. The perfect companion to the Heathkit Model AT-1 Transmitter. It has sufficient output to drive any multi-stage transmitter of modern design. A terrific combination of outstanding features at a low kit price. Good mechanical and electrical design insures operating stability. Coils are wound on heavy duty ceramic forms, using Litz or double cellulose wire coated with polystyrene cement. Variable capacitor is of differential type construction, especially designed for maximum bandspread and features ceramic insulation and double bearings.

This kit is furnished with a carefully precalibrated dial which provides well over two feet of calibrated dial scale. Smooth acting vernier reduction drive insures easy tuning and zero beating. Power requirements 6.3 volts AC at .45 amperes and 250 volts DC at 15 mills. Just plug it into the power receptacle provided on the rear of the AT-1 Transmitter Kit. The VFO coaxial output cable terminates in plastic plug to fit standard ½" crystal holder. Construction is simple and wiring is easy.



Heathkit AMATEUR TRANSMITTER KIT



MODEL AT-1

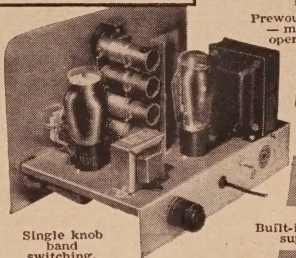
$29.50

Ship. Wt. 16 lbs.

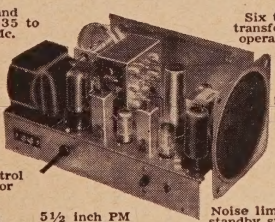
SPECIFICATIONS:

Range 80, 40, 20, 15, 11, 10 meters.
6AG7 .....Oscillator-multiplier.
6L6 .....Amplifier-doubler
5U4G ..... Rectifier.
105-125 Volt A.C. 50-60 cycles 100 watts. Size: 8⅛ inch high x 13⅛ inch wide x 7 inch deep.

Here is a major Heathkit addition to the Ham radio field, the AT-1 Transmitter Kit, incorporaring many desirable design features at the lowest possible dollar-per-watts price. Panel mounted crystal socket, stand-by switch, key click filter, A. C. line filtering, good shielding, etc. VFO or crystal excitation—up to 35 watts input. Built-in power supply provides 425 volts at 100 MA. Amazingly low kit price includes all circuit components, tubes, cabinet, punched chassis, and detailed construction manual.

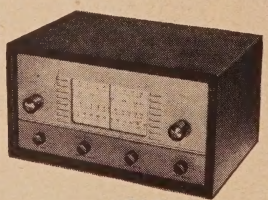


Heathkit COMMUNICATIONS RECEIVER KIT



SPECIFICATIONS:

Range..... 535 Kc to 35 Mc
12BE6 .....Mixer-oscillator
12BA6 .....I. F. Amplifier
12AV6 Detector—AVC—audio
12BA6 ....B. F. O. oscillator
12A6.....Beam power output
5Y3GT .....Rectifier
105-125 volts A.C. 50-60 cycles, 45 watts.



A new Heathkit AR-2 communications receiver. The ideal companion piece for the AT-1 Transmitter. Electrical bandspread scale for tuning and logging convenience. High gain miniature tubes and IF transformers for high sensitivity and good signal to noise ratio. Construct your own Communications Receiver at a very substantial saving. Supplied with all tubes, punched and formed sheet metal parts, speaker, circuit components, and detailed step-by-step construction manual.

MODEL AR-2

$25.50

Ship. Wt. 12 lbs.

CABINET:

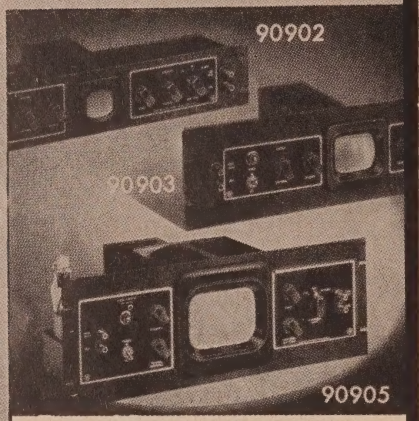
Proxylin impregnated fabric covered plywood cabinet. Shipg. weight 5 lbs. Number 91-10, $4.50.

HEATH COMPANY
BENTON HARBOR 12, MICHIGAN

Designed for



Application

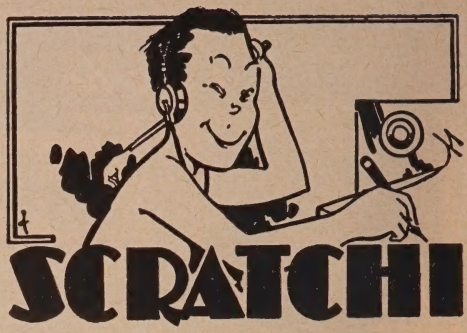


90900 Series
Cathode Ray Oscilloscopes

The No. 90902, No. 90903 and No. 90905 Rack Panel Oscilloscopes, for two, three and five inch tubes, respectively, are inexpensive *basic units* comprising power supply, brilliancy and centering controls, safety features, magnetic shielding, switches, etc. As a transmitter monitor, no additional equipment or accessories are required. The well-known trapezoidal monitoring patterns are secured by feeding modulated carrier voltage from a pickup loop directly to vertical plates of the cathode ray tube and audio modulating voltage to horizontal plates. By the addition of such units as sweeps, pulse generators, amplifiers, servo sweeps, etc., all of which can be conveniently and neatly constructed on companion rack panels, the original basic 'scope unit may be expanded to serve any conceivable industrial or laboratory application.

JAMES MILLEN MFG. CO., INC.

MAIN OFFICE AND FACTORY
MALDEN
MASSACHUSETTS



Deer Hon. Ed:

I hoping you can reeding my riting, Hon. Ed., and not having to call in interpreters. Ackchewally I are bearly able to using hand to riting, as having bum finger, bad cut on hand and scraped nuckles. Also having sholder what hurting like sixties. Howsumever, are just having sad eggspeariance what I feeling like unlowding to sumbuddy, and you are that buddy, buddy.

Last Sattiday I sitting reel peeceful-like in shack, minding my own peas and cues, having reel peechy see-w contact with amchoor friend in Pokipsee, New York. Are working five kilowhat rig, sitting there beeting my little old bug with my rite hand, when Hon. Brother Itchi are coming in shack. I moshunning to him that I on air, and waving him to taking a chair—hah! that's a good one. Scratchi only having one chair, the one near where all my feedlines going through window.

He hedding that way, so I turning back to rig, getting reddy to sine off, when all of sudden meters on rig acting like having Hon. Saints Vitus dance, and I heering Fzzzt. . . . Bzzzt. . . . Fzzzt reel lowd crackling noyses. Looking back at Hon. Brother Itchi, and, can't helping it, I busting out laffing.

Itchi are cawt between five kilowhat feedlines, with arcs from feedlines going to big fancy Arizona copper belt he werring. He standing there with his hands over his eyes, looking like rocket missle getting reddy for takeoff. Arcs from feedline to copper belt. . . . Hon. Ed., I almost splitting.

Now, howsumever, looking back on it, I don't thinking Hon. Brother Itchi being half so mad if Scratchi are not laffing, but boy oh boys, when I pulling big switch, turning off rig, he are starting. I never seeing man so scared talk so long. On and on and on. And, when he finishing, I knowing everything in my shack he not liking. In fackly, I having them all memorized, he repeeting them so many times. Well, to shortening hole thing, Itchi telling me I can't going on air until I getting feedlines fixed so they not dangerus.

He not kidding, ether. Even when I telling him only one way to doing job rite are to drilling holes through wall of shack, he saying okedoke, drilling away. Well, when he saying that, I know he

[*Continued on page 8*]

NOW a BROAD-BAND* LINEAR

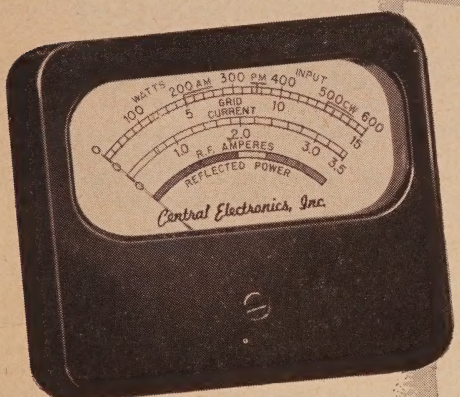


MULTIPHASE
600 L
NO TUNING CONTROLS

SINGLE KNOB
BAND-SWITCHING
10-160

FOR USE ON
SSB, AM, PM & CW

WIRED, WITH TUBES AND BUILT-IN POWER SUPPLY **$349.50**



Another C.E. First!

METER FEATURES NEVER BEFORE FOUND IN A TRANSMITTER

- Reads power input directly in watts
- Reads grid current
- Instantly reads output in RF amperes — no lagging thermocouple
- Indicates reflected power caused by mismatched load
- Calibrated input levels for AM, PM and CW.
  . . . and switch the meter to any position while transmitting!

*PATENT PENDING

WRITE FOR LITERATURE

a new concept in linears

CENTRAL ELECTRONICS takes pride in presenting a product of intensive research — the new Multiphase 600L Broadband* Linear. "It is destined to change the entire concept of RF amplifier design in the military, commercial and amateur fields." There are no tuning controls, servos or moving parts other than bandswitch.

- Single 813 in Class AB_2.
- New band-pass couplers provide high linear efficiency: 60 to 65%.
- Designed for 50 — 70 ohm co-axial input and output.
- Easy to drive — Approx. 2 watts effective or 4 watts peak envelope drive power required for 500 watts DC input.
- Built-in power supply — bias and screen regulation, 45 mfd. oil filled paper output capacitor. Excellent static and dynamic regulation.
- Extremely low intermodulation distortion.
- Automatic relay protects 813 and RF couplers.
- Excellent stability — complete freedom from parasitics.
- Effectively TVI suppressed — RF compartments thoroughly shielded and Hypassed.
- Choice of grey table model, grey or black wrinkle finish rack model.
- Table model cabinet size — 17⅝" W, 8¾"H, 13"D.

MULTIPHASE EQUIPMENT

Central Electronics, Inc.

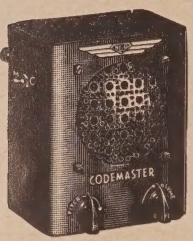
1247 W. Belmont Ave. Chicago 13, Illinois

Watch for early announcement of other new CENTRAL ELECTRONICS equipment.

BEST CHOICE

BUD PRODUCTS
with EXCLUSIVE FEATURES

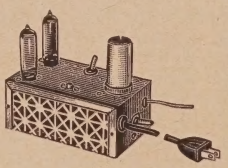
When you're selecting equipment or components to give your rig extra utility or flexibility always choose Bud products. Only Bud products have the extra features that insure satisfactory operation and yet they are priced no higher than ordinary products.



CODE PRACTICE
OSCILLATOR
AND MONITOR
CPO—128-A
Amateur Net
$15.75

THE ONLY OSCILLATOR WITH BUILT-IN MONITOR WHERE NO MODIFICATION IS NEEDED TO CHANGE FROM OSCILLATOR TO MONITOR AND BACK AGAIN. It has 2 tubes and a built-in 4" dynamic speaker. A volume and pitch control are included. Operates on 110 V AC or DC. Also available in earphone model CPO 130-A.

FREQUENCY
CALIBRATOR
FCC 90-A
Amateur Net
$17.25



THE ONLY SELF-POWERED MODEL. Permits accurate checking of transmitter frequency on all bands to 30 mg. Has 100 kc crystal. Uses 2 tubes and plugs into 110 V receptacle. Provided with on-off and standby switch.

See these and other Bud Products at your Distributors

BUD RADIO, Inc.
Dept. C
2118 East 55th St. Cleveland 3, Ohio

seeryus, on acct. he normally not like anything happening to house. No indeedy, I knowing when I are licked.

So, that afternoon I going out and bying big porselin feedthru insulators, coming home, and getting out old handy bit and brace. Having nice adjustable bit, so setting it for to inches and starting to drill. Round and round and round. First little way, drill are going thru plaster, and having no trubbles. Round and round and CRACK!! my drill are braking. Knowing what, Hon. Ed? Steel lath. Knowing why drill are braking? On acct. steel lath are nice and tite against two by for. Hah, what a place to starting hole.

After getting steel-cutting bit, and putting medisin on nuckles where scraping skin off on wall when braking drill, reddy to start again in new spot. Round and round and round, thru plaster, then rite thru steel lath, everything coming peechy. I expecting drill to going in fast after getting thru steel lath, but it still biting on something, so round and round and round. Then around and around and around. By this time Scratchi are getting bit suspischus. Stuff coming out of wall, but drill not going in. Looking at stuff coming out, and it looking like paper.

Just then kinda biggish piece coming out. It are green paper, with number on it. It looking like . . . Hokendoke!!—money. You know, I heering of peeple putting money in wall. I wunder if maybe . . . and just then in are walking Hon. Brother Itchi. He asking how I coming. I telling him I thinking maybe there are money in the wall. He just laffing.

Well, maybe he not eggsactly laffing, it are more like snorting. He telling me I crazy in hed, then he walking out. By gollies, that, Hon. Ed., are making me mad. Why can't there being money in the wall. I showing him! But how? If going on drilling, I ruining money, so having to get it some other way. Yes indeedy, only one way to getting at that money. I having to tearing off plaster.

That nite, I fixing coffee for Hon. Brother Itchi, and when he going to bed he having reel date with Hon. Sandman, on acct. of two sleeping pills in coffee. You having to getting up early to getting ahed of old geenyus Scratchi!!

Abouts midnite I sneeking into shack with trusty crowbar. Rapping it with old swetter, and going to work in ernest. Putting point in hole and carefooly prying. Nothing happen. I press harder . . . nothing happen. Steel lath are tough. Put crowbar in reel far, put foots against wall, and pull reel, reel hard. SCREECH . . . CRASH . . . Sacremento!! the hole wall are coming down. Plaster dust all over place. Oh, my akeing sholder. I must be pulling it out of place. Boy oh boys, though, thinking of all that money. Now when dust cleering away. . . .

Boy, there are green stuff. Hey, it looking bigger than money. I quicklike grabbing piece of it. Oh . . . my Sacred Ant Fuji. . . . Oh, Hon. Ed.,

[*Continued on page 75*]



NOW BEING SHIPPED

SEE YOUR SUPPLY HOUSE!



90 Watts CW
75 Watts Phone

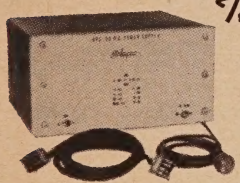
ONLY
12 3/8" x 10 1/2" x 6 3/4"

$179.50*

Factory built and Tested complete with tubes less power supply (Not a kit)

T-90 BANDMASTER TRANSMITTER

The Midget with a Mighty Punch!



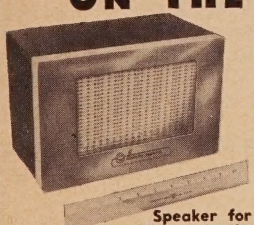
APS-90 Power Supply
(115 V AC) **$79.50***

It has been worth waiting for — this power packed dream transmitter with every feature for efficient operating under today's conditions. TVI suppressed — complete bandswitching — unmatched flexibility and versatility for either fixed or mobile operation.



VPS-T90
Mobile Power Supply
$89.50*

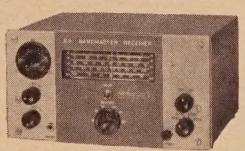
ON THE WAY!!!



Speaker for Fixed Station Operation



Speaker for Mobile Operation



R-9 Bandmaster Receiver

Physically an identical twin to the T-90 — Double Conversion — wide bandspread — complete with tubes and built-in AC power supply. 6/12 volt mobile supply available. **$149.50***

STILL BEST IN ITS CLASS — TBS-50 with VFO



Finest 40-50 watt rig you can buy.

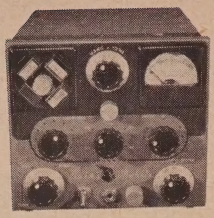
Sr. Model	$111.50*
DeLuxe	$137.50*
VFO	$ 47.50*

Power Supply APS-50 $39.50*

SEND FOR DESCRIPTIVE LITERATURE

*Prices subject to change without notice

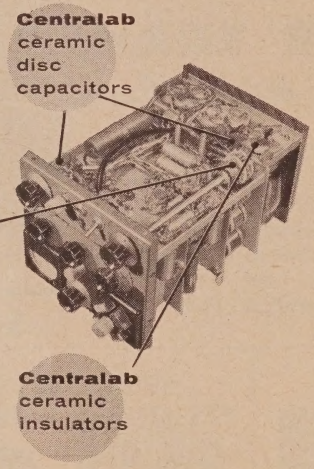
Harvey-WELLS ELECTRONICS, INC., SOUTHBRIDGE, MASS.



Another
Centralab user
proves you can have

stability
with mobility

For trouble-free operation under severe conditions of vibration, moisture, and temperature, the Johnson Viking Mobile Transmitter is Centralab-equipped.



Do as leading manufacturers do — insist on Centralab and get guaranteed dependability in the components you use in mobile, fixed, miniature, and experimental rigs. Send coupon for Centralab Catalog No. 29.

Centralab
G-1755

A Division of Globe-Union Inc.
954E E. Keefe Ave., Milwaukee 1, Wisconsin

Send me Centralab Catalog No. 29.

Name.....

Address.....

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

Letters . . . to the editor

Ithaca, N. Y.

Dear Wayne & OM's,

Here's another plug for continuation of Paul Lippman's touches throughout CQ. Also like the "cool" editorials since you took over. And whoever's behind this printing of main articles (titles) on the edge of the cover is on the ball—it's a handy aid.

Being a novice, I got a kick out of WØWET's ABSEM's in April issue. I guess the enjoyment wouldn't be confined to novices, tho! 73,

Dick Vaughan, KN2JVN

MOBILE "LONG WIRE"

Chatham, Ontario

Dear Sir,

. . . I have received confirmation of my contact with HR1BG, and I have also worked VE1 thru VE7 with confirmation on most. This has all been worked on 75 fone from the mobile in motion in and around London to Windsor, Ontario. The rig runs around 35 watts . . . ant. is a home-brew center loaded air-wound Hi-Q coil, top section 7′, overall length 13′ 5″ . . . I am anxious to hear if anyone has topped that DX running similar power??

Chuck Knapp, VE3ACY

Don't know, Chuck. Have you checked W6IWJ's picture in this issue?

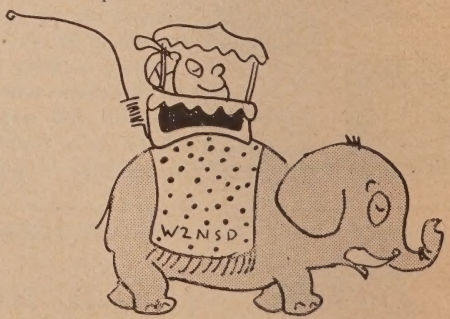
Victoria, Australia

Dear OM,

. . . I get hopping mad when I read a juicy technical article only to find that the L in the circuit is a Minimouse 0410. To those of us outside the U. S. we haven't the faintest idea what a Minimouse 0410 is. You would serve a much more useful purpose if you gave winding details or, if that's too much to ask, at least the inductance . . . 73,

R. H. Cunningham, VK3ML

Hear that, Minimouse? What's wrong with your Overseas Reps?



Not just a transmitter...but a

COMPLETE MOBILE TRANSMITTING SYSTEM!

Power Packed Mobile Transmitter

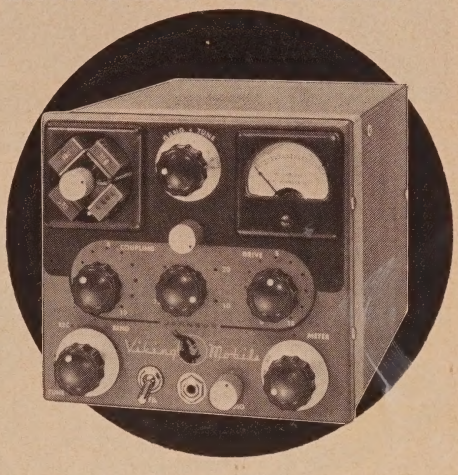
Exclusive Single Knob Tuning—The only commercial amateur transmitter, gang-tuned exciter through final.

Exclusive Antenna Loading System—The only system designed for efficient coupling and transmission of power into the impedances encountered in mobile antennas! (Pi-network systems simply will not cover mobile antenna impedance ranges.) The Viking Mobile uses special, series tuned link circuits for each band ganged to a single front panel control. No annoying plug-in coils or coil tapping necessary.

Exclusive RF Fixed Bias Supply—A feature exclusive to the Viking Mobile—Saves up to 7 amperes car battery drain while transmitter is operating!

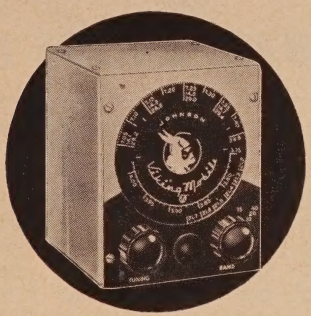
Most Powerful Audio—PP807's modulating a single 807! Terrific audio punch for cutting through QRM.

Bandswitching—75, 40, 20, 15, 11 and 10 meters. Compact—measures only 6" high by 7" wide by 10" deep. Flexible—operates with 300 volt supply as well as with 600! Available for 6 or 12 volt operation. Dynamotor base kits for use with your dynamotor or complete dynamotor power supplies are available.



Viking Mobile Transmitter Kit, less tubes.....**$99.50 Amateur Net**

Viking Mobile Transmitter wired and tested, less tubes.....**$144.50 Amateur Net**

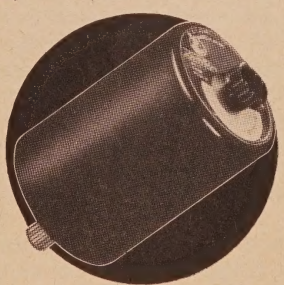


Viking Mobile VFO Kit less tubes..**$29.45 Amateur Net**

Viking Mobile VFO kit wired and tested, less tubes..**$44.95 Amateur Net**

Built-in VFO? Absolutely not... not for mobile where confined space would compromise performance. Designed for separate, steering post mounting, the Johnson Mobile VFO is today's most stable mobile VFO. It's extra safe for tuning while in motion, since your eyes need not stray far from the road! Wide range temperature compensation, voltage regulation and rugged ceramic insulated tank components provide exceptional freedom from drift and FM effects. Its bright, edge lighted dial calibrated for all bands permits fast, accurate tuning by day or night. 75 and 40 meter and 10.5 mc. output. Plugs into Viking Mobile or may be used with any mobile transmitter.

Exclusive Bandswitching Mobile Antenna Loading Coil—The ultimate in whip-loading systems. Covers 75, 40, 20, 15, 11 and 10 meters! Continuous tuning on 75 meters—quick, easy QSY with exact antenna resonance! Airwound, large diameter high Q coil. Rugged fibreglass housing—attractive in appearance. Fittings furnished for standard mobile whips.



Whipload-6 Antenna Loading Coil, assembled and tested.....**$19.50 Amateur Net**

Write for your free copy of the 8 page Mobile brochure giving complete information on the Johnson Mobile System.

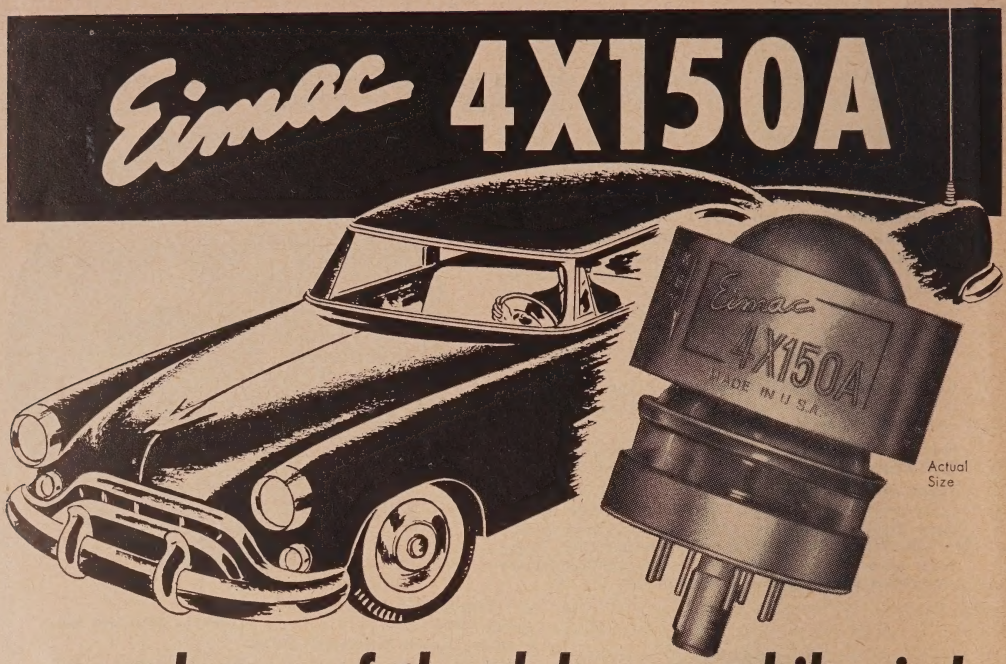
Sold only through electronics parts distributors.

The Best in mobile is built by JOHNSON

E. F. JOHNSON COMPANY

2916 SECOND AVENUE S.W. • WASECA, MINNESOTA

Eimac 4X150A



Actual Size

...heart of the deluxe mobile rig!

POWERFUL all-band operation through 420mc, top performance in double or single sideband service and more watt-hours per dollar make the Eimac 4X150A radial-beam power tetrode a tube for the deluxe mobile rig. The advantages offered by the versatility, power and reliability of the Eimac 4X150A make the necessary simple forced-air cooling well worth while—with an Eimac Air-System Socket an automobile defroster type blower is all that's needed to do the trick. With 1000 volts on the plate in typical plate modulated service, the Eimac 4X150A delivers 150 watts of useful plate power output with 200 watts of power input and only 2 watts driving power. The high power gain Eimac 4X150A is also ideal for increasingly popular Single Sideband mobile application. In typical AB_1 operation at 1000 plate volts, it delivers 150 watts of peak envelope power output with virtually no driving power requirement. Maximum ratings show a peak envelope power output of 350 watts with 2000 plate volts. This outstanding performance can be yours by taking incomparable Eimac quality on the road with you in the heart of a deluxe mobile transmitter.

TYPICAL OPERATION

	Class AB_1	Class C Phone
D-C Plate Voltage	1000 volts	1000 volts
D-C Screen Voltage	400 volts	250 volts
D-C Plate Current	250 ma	200 ma
D-C Screen Current	30 ma	20 ma
D-C Grid Current	0 ma	15 ma
Driving Power	0 watts	2 watts
Plate Power Input	250 watts	200 watts
Plate Power Output	150 watts	150 watts

The plate power output shown does not allow for circuit losses. The 4X150A may be operated at maximum ratings up to 500mc.

For further information about Eimac tubes and applications write our Amateur Service Bureau.

Eimac

EITEL-McCULLOUGH, INC. SAN BRUNO CALIFORNIA

The World's Largest Manufacturer of Transmitting Tubes

de W2NSD...

Sure, I admit that I am susceptible to enthusiasms, but just the same things are happening that have aroused my interest. In reading through the March *Electronics Digest* I ran across a reference to a midget FM set that picks up signals in tunnels and even in a steel box under water! This job is claimed to overcome drift and fade by means of picking up a "ground wave" which can be picked up from the body, steam pipe or even telephone receiver. Wonder if that is any good for two meter DX'ing?

The next item of interest is a report that some West German Engineers have been fiddling around with infra-red light beams and have been picking up some voice frequency sounds when they aim them upward. They have also been getting some bell-like sounds which, when slowed down to one-fiftieth speed, have a similarity to Morse code. U.S. Army cryptographers have not been able to break down the code into any recognizable language pattern. Naturally saucers are suspected of being the source. One of the greatest lacks of evidence to support the saucer stories has been the lack of any intercepted radio communications between them. They would have to have an intricate system of communications to accomplish the feats attributed to them. If they are using the infra-red spectrum for communications this explains things somewhat. Seems to me there are a lot of those snooperscopes around which might be hooked to an amplifier and a detector to . . . etc.

Had enough? If you are still game, here is one more earthshaker. The Radar Research Establishment at Malvern, England has succeeded in tracking down the source of the "whistlers" which travel along tubes of magnetic force in the earth's atmosphere. These radio waves can be detected easily by means of an amplifier connected to an antenna. They are picked up at a point exactly opposite on the earth from where they were emanated. Scientists feel that this discovery is a major one and will revolutionize present communication techniques. How come we haven't been using this propagation medium? It might be that no DX station is located at exactly the opposite point on the earth from another, but I should think that sometime, somewhere this should have happened.

At any rate there are three things for you to ponder and maybe play around with. Might even be that you could take a few minutes off from recitation of your rig, antenna, signal report, etc., to see what some of the other fellows think.

Tradition must be maintained, thus you will again find as you carelessly thumb through this issue of CQ that we are up to our usual May tricks and have tried to bring you as much up to date as possible on everything that has happened in the Mobile world since our last special Mobile issue. If you like this sort of thing you might encourage us to make further efforts along this line, maybe aiming them at SSB, Surplus Conversion, Antennas, or some such.

Coming Up

We have quite a few interesting projects coming up which will have everyone all agog when we break loose with things. We are trying to get together some information on transistor and printed circuits that will give you the bug to build. These new aspects of radio haven't been satisfactorily pursued by the amateur and a little promotion is in order on them. Consider the transistor situation for a moment. In England they are way ahead of us. They have set up networks of stations using transistor transmitters operating on the 160 meter band, with over 400 stations reported in some publications. The cost of transistors has been only a little hinderance to them since quite a few of them merely make their own tranistors.

Many of you know John W. Campbell, Jr., the editor of Astounding Science Fiction, who has had articles printed in just about every imaginable type of magazine. John, W2ZGU, has a style of writing that has made him famous. In the next issue of CQ we start a series of articles by W2ZGU which will not only give you a lot to talk about on the air, but will have you right at the work bench with soldering iron in hand.

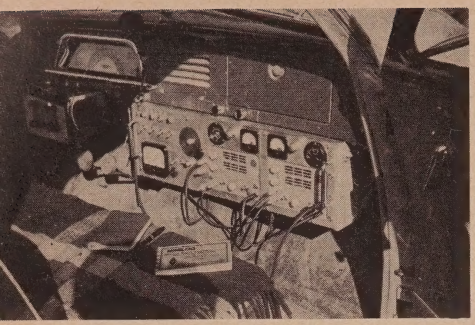
We have another SSB article in the works for the June issue and several more coming along for later issues. If you have any hot SSB stuff up your sleeve rush me a letter about it, might be we could get you in print.

Indexing

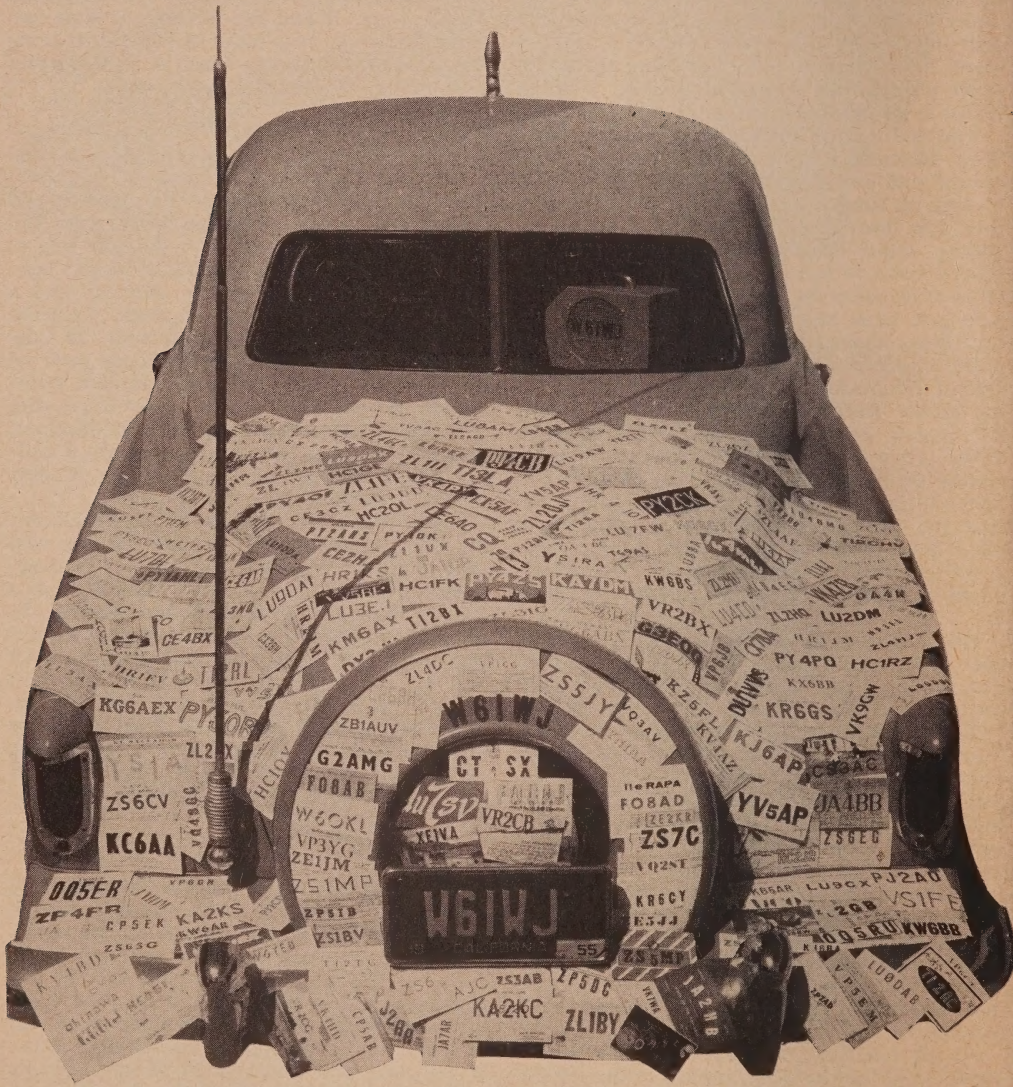
Several of the more perspicacious readers of CQ have noticed the brief indexing that is printed in red along the spine of the magazine. I have been doing this stunt to my own magazines for several years with pen and ink and have found it to be a great help when I am looking through the back issues for some sort of reference. Hope you will find it helpful too. If you have any notions such as this why not send them in? You never can tell, you know.

33333333333333333333333333333333
33333333333333333333333333333333.

de de W2NSD W2NSD W2NSD KKK



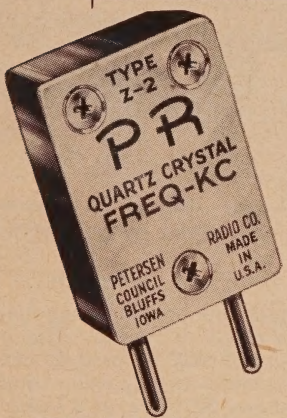
DX



Exclusively mobile since 1949, Herb Allen, W6IWJ, has worked all the DX shown above (and quite a few more) on 10 and 15 meters, never with more than 30 watts input. In case you don't intend to count them, his grand total is 75 countries on 10 & 15 mobile/phone. Herb is also active in CD work.

MR. NOVICE

THE BEST AT NO EXTRA COST!



3700 - 3750 Kcs.
7175 - 7200 Kcs.

$2.95

QRM on Novice frequencies rivals the notorious weekend congestion on 75 and 20 meter fone! You'll have better luck, more completed QSOs if you pick an ODD KILOCYCLE FREQUENCY. Landing on multiples of 5 kcs. is pure murder. That's where PRs come in. You can pick any odd kilocycle frequency you want . . . at no extra cost. Order from your dealer's complete stock. If he doesn't have the particular frequency you want, he can get it pronto. So enjoy the BEST as a Novice . . . reliable, stable, highly active PR Crystals . . . the amateur and commercial frequency standard since 1934. You can't miss on a PR.

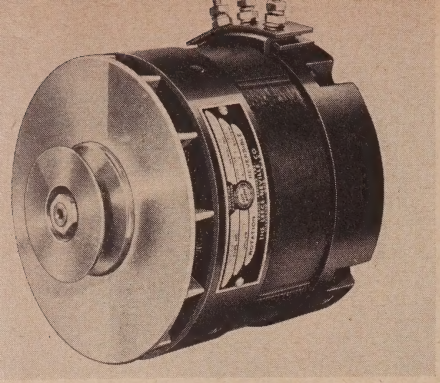
PR Crystals

Since 1934

USE PR AND KNOW WHERE YOU ARE

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

EXPORT SALES: Royal National Company, Inc., 75 West Street, New York 6, N. Y., U. S. A.



INSIDE LEECE-NEVILLE

Photos courtesy Leece-Neville Co.

The regular car generator will seldom supply the power required by a modern mobile installation. A solution to this problem is the installation of an alternator system. Here is how they work.

Mobile operation has been gaining exceptional popularity in the last few years. War surplus items, an increasing number of emergency nets, and better commercial equipment have seemed to stimulate a greater interest in mobile activity. Due to this trend, it is not surprising that amateur mobileers seek better performance with the aid of higher power and improved techniques. However, problems arise with higher power operation, resulting from the inadequate electrical system of the average automobile.

To overcome this obstacle many amateurs have tried fan-belt-drive dynamotors or installed over-sized generators. In the case of the generator, the high current output must be commutated which results in reduced brush and commutator life, and produces prolific hash. Variations of engine rpm tend to make voltage regulation of fan belt driven dynamotors rather difficult. Furthermore, in both instances, relatively high engine speed must be maintained.

Mobile alternators have provided a convenient way to increase power and eliminate the above problems through good engineering design and alternator theory.



W2GZD joined the ranks in May, 1951, with a General Class license. Dave operates exclusively on 80 and 75, and lists emergency-net operation as his favorite activity, with designing, building and rag-chewing next. A second-year physics major at Rensselaer Polytechnic Institute, Dave spend his available Ham-club time at the Albany A.R.A., the Passaic Valley A.R.A. or with the local local emergency net. He'll soon be heard as W2GZD/mobile with 150 watts on all bands. P. O. address: 2150 13th St., Troy, N. Y.

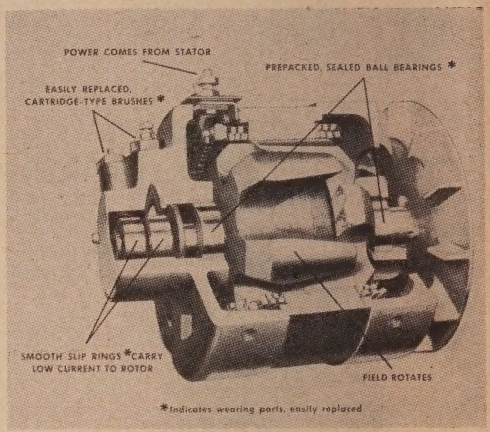


Fig. 1. Cutaway view of the Leece-Neville alternator, showing important parts.

Theory of Operation

Mobile alternators produce low voltage, high current three phase AC power. This power is then rectified and may be used to charge the battery, run accessories, and radio equipment.

Figure 1 shows the inside of a Leece Neville alternator. In this unit, excitation is applied to the brushes, which in turn excites the rotor. The low excitation current, which is collected by *smooth* sliprings, eliminates hash generation. The rotating field then generates the AC in the *stator* windings. Hence the output is not commutated, but rectified by a metallic rectifier.

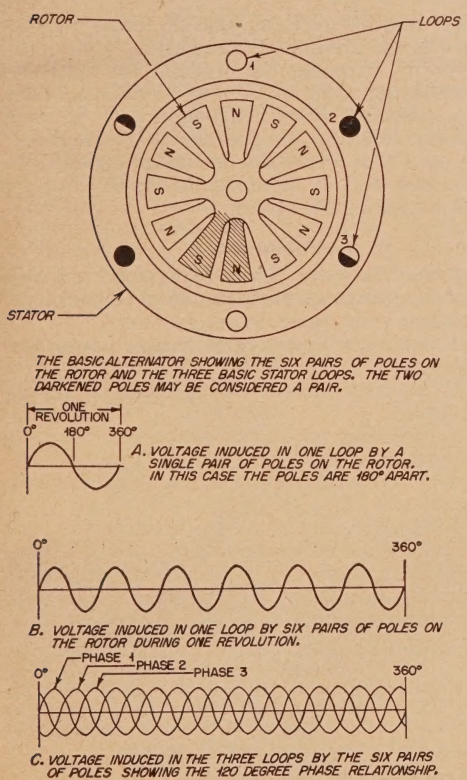
Figure 2 illustrates the theory of the AC alternator. If the rotor contained a single pair of poles (indicated in black) only one cycle would be generated during one revolution in any one loop. In the Leece Neville alternator there are six pairs of loops on the rotor. Therefore during one revolution six cycles will be generated in any one loop. Now if loops 1, 2, and 3 are 120 degrees apart the voltages induced in these loops will be 120 degrees out of phase with each other. This unit is called a three phase alternator because it produces three separate AC voltages.

Units are available which produce 7 volts at 95 amps, or 14 volts at 50 amps. See table 1 for ratings.

Rectification

The AC generated is rectified by a magnesium copper sulfide dry-disk metallic rectifier. This rectifier operates well at high temperatures, whereas the more expensive seleniums used in the higher-voltage units, and optionally in the 7-volt unit, are more efficient. As these rectifiers are not affected by under-hood temperatures,* they are mounted on the engine near the alternator. Since the AC is fed into the rectifier, the rotor of the alternator may be turned in any direction. Therefore the polarity of the rectified output is independent of the direction of rotation. Also, the positive or negative side of the rectifier output may be grounded to provide a positive or negative car ground. It should be noted that in connecting a rectifier to a battery, the polarities of each must correspond. A reversed connection will result in damage to the rectifier as excessive current may be discharged through it by the battery. With positive to positive, and negative to negative, the rectifier will block any discharge current when the engine is not running. For ratings of various rectifiers used with alternators refer to

* So long as the rectifier has sufficient air flow for good cooling. Temp. should not exceed 265°F.



THE BASIC ALTERNATOR SHOWING THE SIX PAIRS OF POLES ON THE ROTOR AND THE THREE BASIC STATOR LOOPS. THE TWO DARKENED POLES MAY BE CONSIDERED A PAIR.

Fig. 2

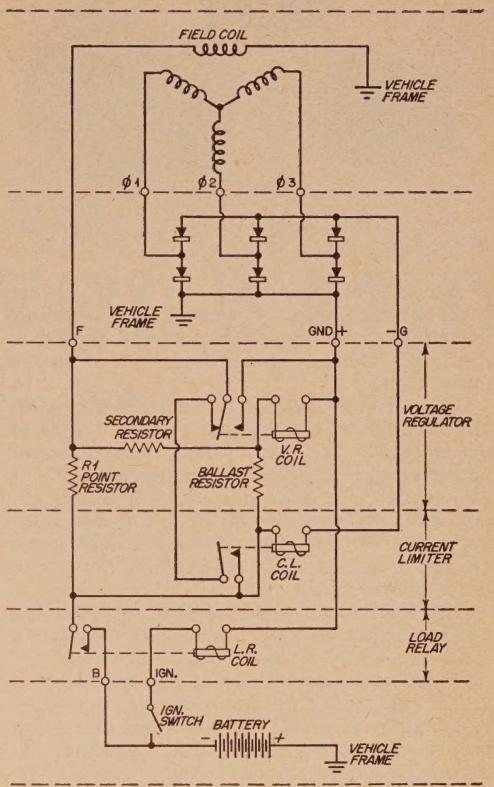


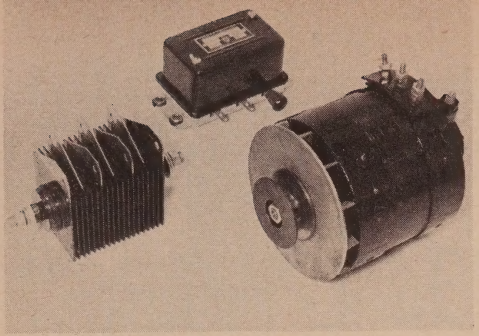
Fig. 3. Complete circuit for Leece-Neville system. Special attention should be paid to polarity of components.

Regulation

Voltage and current regulation are easily achieved with the Leece Neville alternator. The excitation voltage applied to the rotor determines the output of the alternator. Hence it is necessary to regulate the excitation voltage.

Voltage regulation is obtained by double contact regulators. Figure 3. These double contact regulators, patented by the Leece Neville Co., operate within a narrow voltage range. This decreases the danger of burned out filaments in mobile gear. Arcing is reduced at the regulator as smoother regulation can be obtained.

When the moving arm of the voltage regulator (fig. 3) is on the upper contact, full voltage is applied to the exciter winding. As the voltage increases slightly the voltage regulator coil, which is connected across the output, is just strong enough to pull the arm off the top contact, but not to the bottom position. The voltage applied to the exciter winding is then reduced, due to resistor R1. Should the voltage tend to further increase at high speeds the coil



is able to pull the moving arm to the bottom contact which shorts out the exciter winding. Therefore at slow speeds the arm will vibrate on the upper contact, and at high speeds on the lower contact.

The current regulator protects the alternator and rectifier by limiting the current output of the alternator. The coil of the current regulator is connected in series of the ungrounded side of the output. When the current exceeds the rating of the unit the coil will be strong enough to cause the moving arm to vibrate and insert enough resistance in the field to limit the output to the proper level.

The load relay, which is energized by the ignition switch, simply disconnects the system from the battery when the car is not in use.

It should be mentioned at this point that a distinct advantage of these alternators is their high output at idling speeds. Forty-five amps may be generated while idling which is extremely nice during active communication.

Maintenance

A minimum of maintenance is necessary as the units are ruggedly constructed. The bearings are of the sealed ball bearing type which require no lubrication, and which may be replaced if necessary. Likewise, the rotor field coil, the rotor shaft, the slip rings, and the brushes may be easily replaced if damaged. The brush life of an alternator, however, is much longer than a generator as a result of the low current commutation. Since all moving parts may be replaced the alternator may be used in the lifetime of many cars.

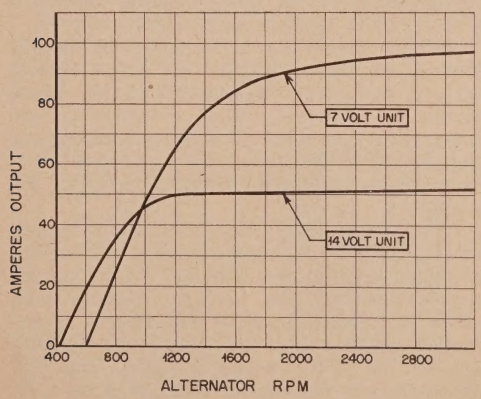


Fig. 4. Current output vs. rpm for the two popular voltages in Leece-Neville units.

Alternator	Voltage	Current
5058-GA3	7	95
*5058-GA3	7	80
5334-G3	7	95
5308-G6	14	50
5306-G6	14	50

Table 1, above. **Below, Table 2.**

Rectifier	Voltage	Current
23560	7	100
1016-C	7	50
30605	14	60
30600	14	100
30621	14	100
30624	14	60
1019-C	14	100
30601	14	150

Wiring harnesses are available for the Leece Neville alternator which may be obtained from the company. If an installation is to be made without a harness, good automotive cable should be used that will stand up under engine temperatures and be of sufficient size to carry the full output of the system.

Summary

It may be more clearly understood now that mobile alternators have certain outstanding advantages with respect to other systems.

1. Smaller physical size, greater power output.
2. No high current commutation, no arcing, no hash.
3. Rotation reversible; positive or negative car ground.
4. Smooth voltage regulation, reduced arcing at contacts.
5. Good output at idling speeds.
6. Exceptionally long life.

With the increasing availability of these units they are becoming very popular in amateur mobile installations.

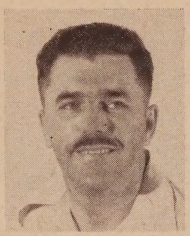
Ed. note: It should be pointed out that the a.c. of the alternator may be stepped up to 110 volts by means of a suitable transformer as the Leece-Neville 1000-TA, and the conventional equipment run directly from this system. Thereby the initial high cost of the alternator system may be partially offset by eliminating the need for dynamotors or vibrapacks. Good quality 60-cycle transformers will work very well when connected to the alternator in this manner, in spite of the higher frequency output of the alternator.

6 BANDS on the TRI-BAND

William J. Vette, W4SWI

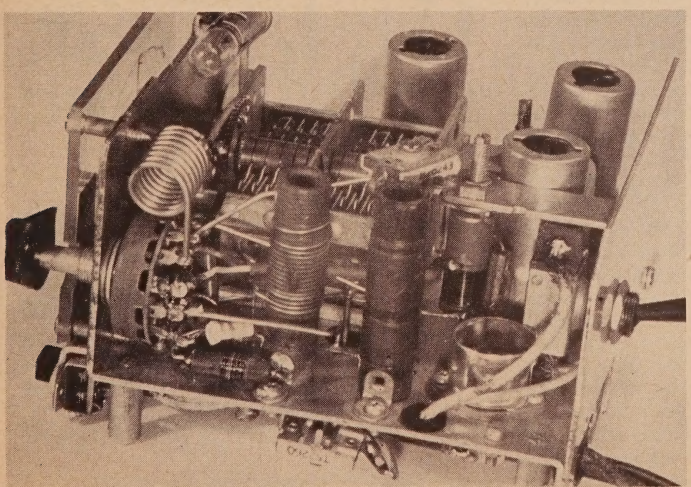
Did the opening of the 40-meter band to phone find you looking at your old Gon-Set Tri-Band converter, wondering how to go mobile on 40 without borrowing on the Jr. op's insurance for a new converter? That is what happened to the writer, and he couldn't get at the Jr. op's insurance! If you have a Tri-Band, put the kid's insurance policy back in the drawer—you won't even have to break into his piggy bank to get 40 meters in the family chariot. All you'll need is a coil, a couple of trimmer capacitors and a toggle switch, and with about half a day's work, you'll have a converter for all the bands from 10 thru 80. No new band switch is required, no major rewiring is necessary, no tracking problem is encountered,—and, if you haven't already done so, you can find the 15-meter band while you're at it!

In the Tri-Band converter, the oscillator coil is not switched in changing from band to band —only the antenna coils are changed. The basic frequency range of the oscillator is approximately 7450 to 9600 kilocycles, and the second and third harmonics of the oscillator are used for 10- and 20-meter operation.



Holder of a First Class 'phone license since 1942, W4SWI has been in the licensed Ham ranks since October, 1947, when he ended a long period as an interested bystander and was issued the call W5NPA. Bill's present call was issued June '51. When not operating his all-band mobile rig, he likes working DX and contests with low power, holds WAC, 10-'phone WAS, Stateside and Pearl Harbor RCC, KZ5, and WACC (Corpus Christi, Texas), and has 89 confirmed toward DXCC—all on 10 or 20 'phone with only 20 watts. IRE Member and past President and vice-President of the Key West Radio Amateur Club. Bill is Technical Field Representative of Stavid Engineering, Inc. Mail address: Box 572, Key West, Florida.

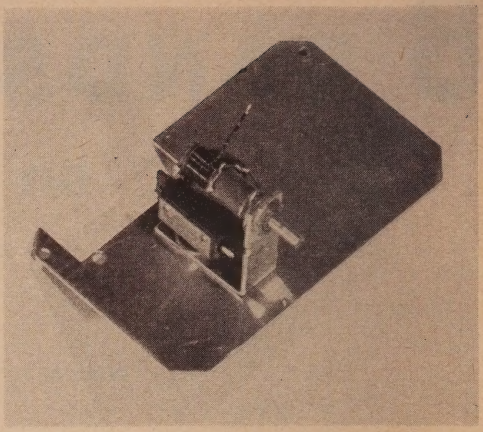
A consideration of the mechanics of tuning the bands already available on the Tri-Band would indicate that to receive 40 meters it would be necessary merely to add an antenna coil which would tune the 40-meter band, and juggle the oscillator frequency to get a range



Top chassis view of the modified Tri-Band viewed from right edge of chassis. The 40 meter antenna coil may be seen directly in front of the filament switch. The 6BH6 has been removed to allow a better view of the coil.

1440 Kc. removed from the desired range of 7 to 7.3 Mc.—and, actually, that *is* all that is necessary. Experiment showed that by switching in enough capacity in the oscillator circuit to allow low-beat operation (oscillator tuning 5560 to 5860 to cover 40 meters) the 40-meter band could be set in the center of the tuning range of the converter, and the band is spread over a full rotation of the dial, with nearly perfect tracking.

While initially considering the modification, it was felt that a new band change switch would be required, with one more position, but once the technical details of oscillator frequency, etc., were out of the way, and the circuit diagram and layout of the converter was looked into more closely, it was found that the installation of a new band-switch was unnecessary.



Coil, bracket and filament switch assembly, mounted on the back panel.

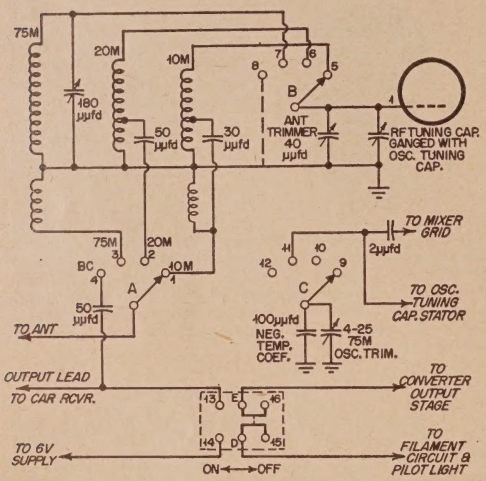


Figure 1. Tri-Band before modification.

Two switches will be found on the front of the converter: One, the rotary band switch, the other, a two-pole two-position slide switch. The fourth position of the band switch is marked "BC", and in this position, the antenna, which in the other three positions is switched to one of the converter antenna coils, is switched to the slide switch for transfer into the car receiver. So, as originally wired, it is necessary to put the band switch in the "BC" position and the slide switch to "Off" before regular broadcast signals can be received. By changing this arrangement, it is possible to make use of the "BC" position of the band switch to connect our 40-meter antenna coil and oscillator trimmer. To do this, it is necessary to rewire the slide switch, removing the filament control from it to give us another section to do the antenna switching previously done by the band switch, and to add a toggle switch on the rear panel to switch the filaments on and off. Following this modification, the filaments may be left on or switched off, and the band switch can be on any of its four positions while you receive regular broadcast signals—only the slide switch need be used to switch from broadcast to amateur reception. *Figs. 1* and *2* show the connections for both switches before and after modification.

The various problems involved in getting a coil of the proper inductance fitted into the available space were solved as shown in the chassis photos. The coil, wound with 18 turns #26 enam., tapped 4 turns from ground end, on a slug tuned form of ⅜-inch diameter and 1¼-inch length, is mounted from the back panel by means of a bracket held to the panel by the filament switch. Details of the bracket,

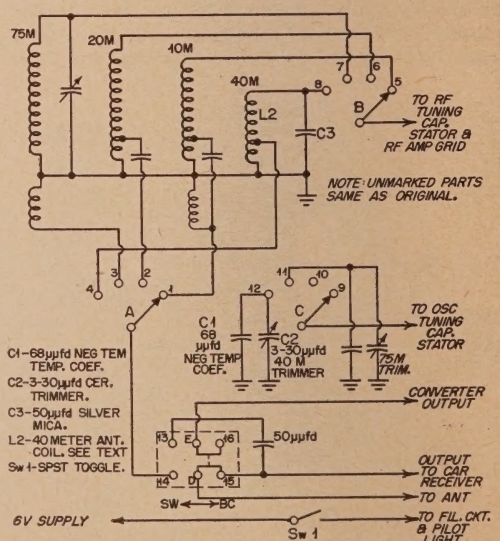


Figure 2. Tri-Band after modification.

and a drilling guide for the back panel, are shown in *Fig. 3*. The method of assembling the switch, coil and bracket, and of mounting the assembly is shown in the photos.

In the actual work of wiring the modification, according to the following step-by-step procedure, reference should be made to *Fig. 4*, which is a sketch of the rear of the switches, viewed from the left side of the chassis with the front of the converter facing away from you. Letters and numerals on this sketch are referred to in the following instructions, and on *Figs. 1* and *2* as well.

Remove the back panel and the 6BH6 and 6C4 tubes from the converter. Drill a ½-inch hole in the back panel, according to the details in *Fig. 3*. Mount the toggle switch and coil bracket temporarily, with the coil in place, to make certain that the switch and coil will clear the two tubes. Position the coil on the bracket so the coil leads come off slightly left of center of the coil toward the front of the converter. When you have made certain that the coil and bracket assembly can be put in place without interfering with the tubes, the back panel should be set aside for the present, until the wiring changes around the switches have been completed.

Access to the switch terminals can be facilitated by first unsoldering the 10-meter antenna coupling capacitor and shunt coil from terminal *1* on the band switch.

From terminal *C*, remove the wire which comes up from below the chassis through the large rubber grommet, and from terminal *11* unsolder the heavy bus-bar; interchange these two wires, bus bar to *C* and wire from below chassis to *11*.

Mount the 40-meter oscillator trimmer *C2* (3-30 $\mu\mu$fd. with 68 $\mu\mu$fd. negative temperature coefficient capacitor in parallel) on the under side of the chassis, behind the dial (see bottom view). Connect top leaf of trimmer to chassis,

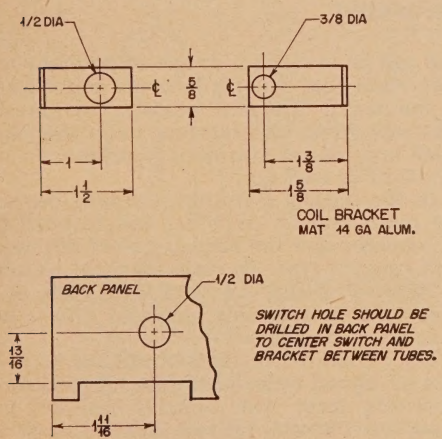
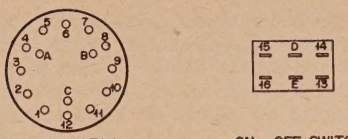


Figure 3. Coil bracket details.



SWITCHES VIEWED FROM REAR. LETTERS AND NUMERALS ARE REFERRED TO IN TEXT AND CIRCUIT DIAGRAMS.

Figure 4. Tri-Band switch details.

and the fixed plate to terminal *12* on the band switch.

Remove wire from terminal *4* of band switch; pull back down thru grommet and clip off at the point where it connects to the 50 $\mu\mu$fd. broadcast antenna coupling capacitor. Also clip capacitor lead at same point, as close to tie point as possible. Terminal *4* of the switch will be used for the tap on the 40-meter antenna coil.

On the slide switch under the chassis, remove the filament and pilot light leads from terminal *14* (These leads may be on *D* rather than *14*—they are so shown on the manufacturer's diagram, but were connected to *14* in the writer's converter). Reroute pilot light lead to other side of chassis and connect to hot filament connection of 6CB6 RF amplifier tube (*Pin 4*).

Unsolder hot 6 volt lead from terminal *D* (or *14*—the opposite terminal from which you removed the filament and pilot light leads). Work this lead, and the filament lead left from the last operation, back to the rear of the chassis, near the end of the power cable entering the chassis. Pull both of these leads off to one side temporarily.

Carefully drill a 5/8 inch hole near the edge of the chassis, about 1⅜ inches from the back lip of the chassis, between the 6BH6 IF tube and the 75-meter antenna coil. Insert a rubber grommet and pull the filament and 6 volt lead up thru the grommet; solder these wires to the switch. The back panel, with coil and switch assembly, may now be mounted permanently.

Unsolder the wire from switch terminal *A*, and pull back down through chassis; reconnect to *D* of slide switch. Connect the free end of the 50 $\mu\mu$fd. BC antenna capacitor to *15*. The converter output lead on *13* is left untouched.

Connect terminal *14* to *A* on the band switch. This completes the wiring changes involved in the modification.

Connect the tap on the newly installed 40-meter antenna coil to *4* on the band switch, and connect the grid end of the coil to *8*. A connection from the ground end of the coil to the ground lug on which the 75-meter antenna trimmer is mounted (at the rear of the tuning capacitor) completes the modification. Re-install the 10-meter coupling capacitor and shunt coil, and the convertor should be ready for alignment and calibration.

Apply power and check the operation on 10, 20 and 75 meters. Performance on these bands

should not be changed. Assuming the results of this check to be satisfactory, switch to the BC position and set the dial to 0, with the pointer just at the left edge of the 10-meter arc. With some source of signal of known frequency, apply a signal of 7.3 Mc. to the converter antenna jack. Adjust the 40-meter oscillator trimmer which you installed under the chassis to bring in the signal at this dial setting. Set the antenna trimmer on the front panel to about ¾ of its maximum capacity and adjust the slug of the 40-meter antenna coil for maximum response to the test signal. Now set the signal generator to 7 Mc., and rotate the converter dial clockwise (pointer going counter-clockwise, thru 75-meter arc) until you hear the signal again. You should find that the dial reads very near 0 again, and the pointer will be between the 20- and 75-meter arcs. You are now ready to pull in that mad mass of heterodynes known as the 40-meter phone band, and the c-w band as well.

You could calibrate the dial if you desire, or a calibration table might be made up, using the inner dial readings, but in actual mobile operation, at least while in motion, the writer has noted that the average ham doesn't pay much attention to the dial, for he can seldom spare his attention from the road.

To locate the 15-meter band, switch the converter to the 10-meter position of the band switch. Turn the dial all the way clockwise. You should be able to tune 21 to 21.5 Mc. between 15 and 50 of the inner dial, at the extreme clockwise end of the tuning range on this band.

It should be mentioned that the foregoing modifications were made to an early model of the Tri-Band. The manufacturer has since introduced a later model, the Tri-Band "DeLuxe". The writer has been unable to locate one of these later models, to determine whether any changes in the above procedure might be necessary. On the later model, a switch was placed on the rear panel, for selecting high or low impedance input circuits on 75 meters. Once the antenna impedance is established in a given installation, this switch would probably be left in one position. It could be disconnected from the antenna circuit and used for the filament switch, after making a permanent antenna connection to the proper coil terminal. Slight modification to the coil bracket would probably have to be made to allow mounting to the back panel with screws rather than by the filament switch.

MORE GAIN from the Tri-Band

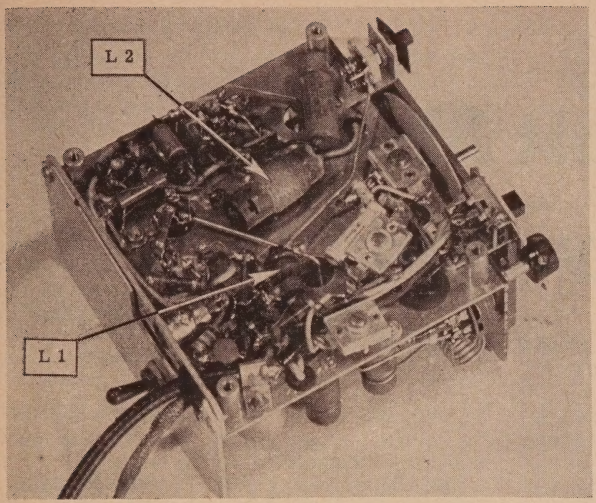
William J. Vette, W4SWI

". . . W4SWI/Mobile right back. Copied you solid, OM, with just a little trouble in the middle of your transmission. Thanks for all the dope on your rig. The receiver here is the usual set-up—a Tri-Band converter ahead of the car receiver . . . etc."

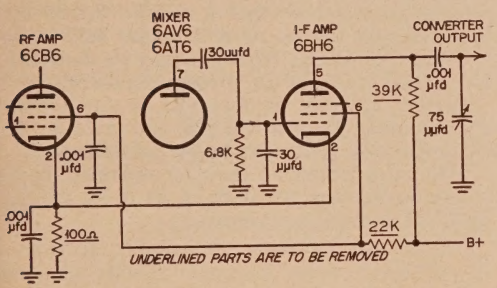
Since it was first brought out several years ago, the Tri-Band converter has become the traveling companion of many mobile hams, and most of us wheeled merrily along our way, quite content with our set-ups until Gon-Set brought out the newer "DeLuxe" model of the Tri-Band. This showed such a marked improvement in sensitivity and performance over the older model, the writer determined to discover by what means the improvement had been achieved. You should be pleased, as he was, to learn that the changes are few and simple—and can be made in a couple of hours by any ham—and you, too, can have the performance of the newer, "DeLuxe" model. Two ceramic disc capacitors, four resistors and a couple of small coils are all you need to bring your old Tri-Band up to date.

In the original converter, coupling between the mixer and i-f amplifier, and between the i-f amplifier and the output, was of the resistance-capacity type. By replacing these resistors, as shown in *Figure 1A*, with small coils, as in *Figure 1B*, considerably increased gain is had from the i-f amplifier.

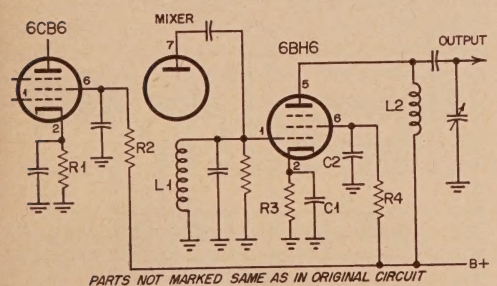
The r-f and i-f amplifiers made use of common screen and cathode resistors and capacitors. Replacing these with separate resistors and capacitors for each cathode and screen circuit results in a further improvement in performance.



Underside of the Tri-Band following modification for higher gain.



A. SCREEN AND CATHODE CIRCUITS, GONSET "TRIBAND" AS ORIGINALLY WIRED.



B. CIRCUIT CHANGES TO ALLOW IMPROVED PERFORMANCE OF TRIBAND CONVERTER, FOLLOWING "DELUXE" CIRCUIT.

C1 - .01µfd DISC CERAMIC
C2 - .001 µfd DISC CERAMIC
L1 - 225 µh } SEE TEXT
L2 - 600 µh }
R1, R3 - 270Ω, 1/2 WATT
R2, R4 - 2700Ω, 1/2 WATT

Fig. 1. Tri-Band screen and cathode circuits, before and after modification. Performance equals that of the new, "Deluxe" circuit.

The exact values of inductance specified in the parts list need not be used, if coils of nearly the same value are available—the writer used 2 pies of a 1 mh. r-f choke for the 225 microhenry input coil, and the secondary of a small broadcast r-f coil for the 600 microhenry output inductance. Since exact resonance at the 1440 kc. intermediate frequency is not being sought, any values reasonably near these should be satisfactory. The main problem is getting coils of approximately the correct inductance small enough to fit in the available space.

In removing pies from r-f chokes, for use as inductances in such cases, an approximation of the resulting inductance is made by assuming that the inductance of a coil varies approximately as the square of the number of turns. Therefore, removing two pies from a four-pie choke will give a coil of approximately ¼ the original inductance. This is not precise, but serves well enough for most applications.

One other change was made in the later converters: The user was given a choice, by means of a switch at the rear, of either high or low input impedance input on 75 meters. This involved switching the antenna to either of two primary windings on the 75 meter antenna coil. In a given installation the antenna impedance should be fixed, either high or low, so the switch should not be necessary once the impedance has been established. Therefore, this improvement could be quite simply had by experimenting with various sizes of primary windings on the 75 meter antenna coil, to determine the optimum impedance ratio in your own installation. In the case of the writer's converter, the coil as originally supplied proved to be just about right as it was.

The changes involved in bringing the converter up-to-date are few, and should be easy to make with the aid of the "before-and-after" diagrams attached; reference to the photo will give the approximate layout of the parts involved.

12-Volt Mobile System

Al J. Spatola, W6DAE

With the ranks of active mobile enthsuiasts swelling each month, the short supply and high prevailing prices of 6-volt dynamotors is becoming more distressing. In spite of the fact that a 12-volt system is more efficient, more versatile, and allows higher input power where desired, many hams are still paying scalper's prices for suitable 6-volt dynamotors.

Why not use 12-volt dynamotors? There is still an abundant supply of excellent 12-volt units at bargain prices. Most hams have ignored this beautiful stockpile, to favor PE-103's, or anything using a 6-volt input. By thus by-passing the moderate expense of installing a 12-volt system, they are not only unable to use the excellent 12- and 24-volt dynamotors, but they are forced to put up with a system of higher current drain and lower efficiency—and one with no safety factor in case of "dead battery" —which happens all too often (once is enough) with the sedentary or long-winded species of mobile hams, or with those who forget to turn off the lights, radio, etc. when parking.

In addition to the many good dynamotors designed for 12-volt systems there are available quite a few 24-volt dynamotors, such as the one for the *BC-375*, which will work quite satisfactorily with 12-volts input, in which case slightly less than half the rated output voltage is obtained, at the rated output current.

The simple 12-volt system described here has been in use in my car for over a year. It has afforded me trouble-free power, which was especially appreciated during emergency work necessitating continuous operation, once for nine hours, and another time for five hours.



W6DAE, first licensed in 1948, has been an experimenter in the field for about 37 years. Al likes to build rigs, and help other Hams get on the air. Favors mobile operation, mostly on 75, 20, and 10. A member of the Santa Clara Amateur Radio Association, Al's occupation-for-gain is as a Plumbing Contractor. Home address: 632 N. 15th St., San Jose, Calif.

I use two 12-volt dynamotors, one for the low-voltage r-f and speech exciters, and one dual-output dynamotor for the finals.

The wiring is shown in *Fig. 1*. The extra generator, regulator, battery and ammeter, standard 6-volt equipment, may be inexpensively obtained from a used auto parts dealer.

The generator may be mounted above the present generator so that it can be driven by the same belt system using a longer belt.

The extra voltage regulator may be mounted on the fire wall near the present regulator.

Battery #2 may be mounted in the motor compartment, between the grill and radiator, or wherever your particular buggy affords space.

The extra ammeter may be mounted anywhere on or near the dash so as to be visible from the operating position.

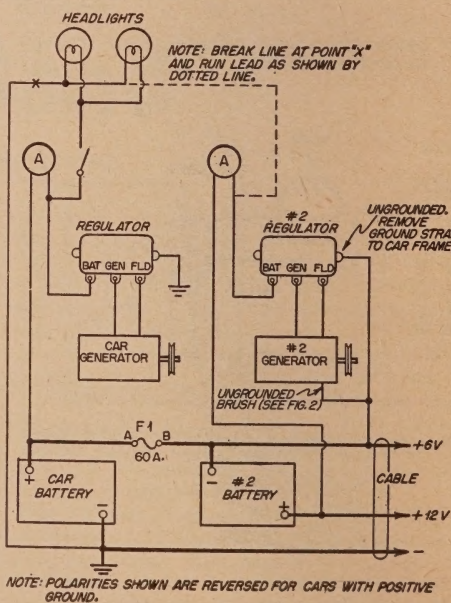


Fig. 1. Wiring of complete 12 volt system.

The Generator

A generator of the same polarity as the one already in the car should be obtained—if a duplicate is easily available, so much the better.

Since the "ground" return of generator #2 is connected to the low side of battery #2, it must be insulated from the chassis of the automobile. This is easily accomplished by removing the brush housing, drilling out the mounting rivets of the uninsulated brush-holder and remounting it with machine bolts and fiber washers, as shown in *Fig. 2*. The bolts should have adequate clearance in the holes to permit the use of insulated bushing or shoulder-type insulating washers. An insulated wire is spliced to the pigtail of the brush for connection to the regulator bracket, or point "B".

The Regulator

The mounting bracket of regulator #2 should be insulated from the car frame by a thin piece of fiber. Most regulators are already shock-mounted with rubber grommets, and grounded to the car frame by metal strips connecting the regulator bracket to the mounting screws. These grounding strips may be removed from the screws, bent aside, and used as terminals for the ungrounded regulator bracket.

The Battery

A used 6-volt battery in good condition will serve well as Battery #2. The long, narrow, Buick-type battery will sometimes fit where the more common rectangular battery will not, and vice versa. The battery should not be mounted near the exhaust manifold, since excessive heat will boil out the battery liquid.

For the heavy-duty conductors, shown by heavy lines in *Fig. 1*, service cable or other suitable heavy cable may be employed. Service cable in short pieces is discarded by the power companies and can often be found in junk yards. Ordinary service cable is 8-strands-#14 wire and can be run the necessary 8 or 10 feet to the rear compartment of the car with negligible loss in voltage and current. This heavy cable is also used for the ground return, since the frame of the car should not be depended upon for conducting the high primary current of the dynamotor.

For optimum battery performance, the 6-volt loads may be distributed between the two batteries. In my car the headlights were changed over as shown in *Fig. 1*. Normally the receiver and converter are connected across battery #1, and draw approximately 10 amps. The headlights draw approximately the same current, so connecting the headlights across battery #2 balances the load for night driving. The incidental lights such as the tail and dash need not be changed.

Since the very heavy load of the starter-motor temporarily depresses the voltage of battery #1 to about 3 or 4 volts just at a time when high

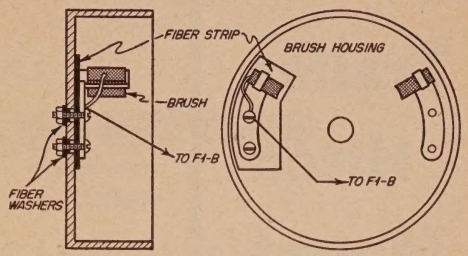


Fig. 2. Method of isolating ground brush in generator #2.

ignition voltage is desirable, it is of considerable advantage to use a separate ("Hot-shot") battery in cases of difficult starting. For this purpose, battery #2 could be connected to the ignition coil as well as to the headlights, were it not for the fact that the negative return of the ignition coil is grounded thru the distributor. If "Hot-shot" starting were particularly desired as a permanent feature, it would not be too difficult to insulate the now-grounded distributor point and connect it to the positive terminal of the 12-volt battery. For emergency "Hot-shot," however, the battery side of the ignition coil may be connected to the battery #2 positive terminal, with fuse *F1* removed and a ground jumper connected to point "B".

Removal of the fuse, *F1*, permits paralleling of the batteries by use of short jumpers. With *F1* removed, grounding point "B" and connecting the "plus" side of battery #2 to point "A" provides a booster battery for the normal starter-and-ignition system. Or, with *F1* removed and "B" grounded, battery-and-generator system #2 may be used as a completely independent 6-volt system for care-free operation of a 6-volt ham rig.

With proper regulator adjustment (see *CQ Mobile Handbook*) and fair batteries, the 12-volt system can easily furnish power for inputs up to 150 watts.

Six Opens for Technicians

Effective April 12, 1955, existing privileges for the Technician Class operator are officially extended to include the 50-54 Mc. band. The original Notice proposed amendment of Section 12.23 (d) to permit operation by Technician Class amateur operators in all amateur frequencies above 50 Mc. which would have the effect of adding the 50-54 Mc. and the 144-148 Mc. bands to the privileges presently available to Technicians.

Comment on the proposed amendment was received from some 18 amateur organizations and over 125 individual amateurs. Regarding the 50 Mc. band, there appeared to be substantial expression of approval of provision for Technician Class privileges. However, there appeared to be considerable controversy as to whether Technicians should be allowed to operate in the 144 Mc. band. Because of the opposition expressed by the American Radio Relay League, and because it did not find the arguments received in the comments otherwise decisive, the FCC dismissed that portion of the amendment having to do with technician privileges in the 144 Mc. band.

Trailer Hitch Mount

Richard Van Wickle W6TKA

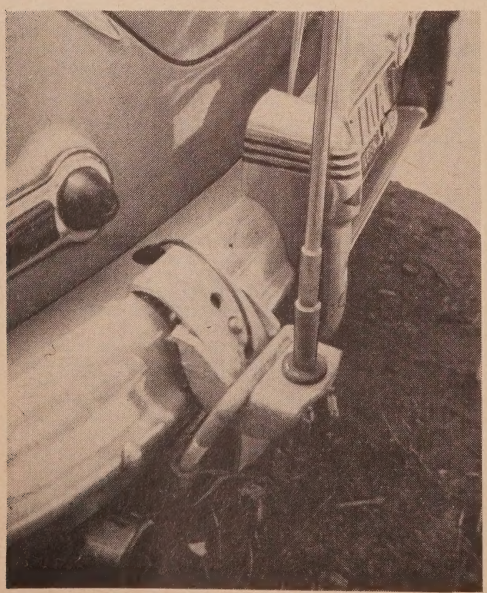


Dick Van Wickle was licensed in Los Angeles in 1952 and holds a General Class ticket. His favorite band is forty meter phone, both fixed and mobile, but twenty, fifteen, ten and two meters also receive attention. Antenna experimenation and research and the design and building of new equipment are his favorite ham activities, in addition to the usual interest in rag-chewing. Dick is employed in the Engineering Department of the Stoddart Aircraft Radio Co., Inc., Hollywood, California. Married. The W6TKA QTH is 1161A Irving Avenue, Glendale 1, California.

The "no-hole-in-the-car" mobile group (of which nearly all XYLs seem to be charter members) will be heartened to learn that antennas *can* be mounted without drilling a single hole in the family bus.

Bumper-mounting trailer hitches are available at reasonable cost from auto supply stores, mail order firms and some hardware stores. The type in use by W6TKA/mobile is manufactured by the Fulton Company of Milwaukee, Wisconsin and is identified as model 25-27. It has the advantage of being completely adjustable to nearly any style or size of automobile bumper.

The round metal ball which acts as the actual connecting portion of the trailer hitch is first removed, if the hitch is so equipped. Some models, such as one sold by Sears-Roebuck for $2.75, are available without the ball. This leaves a hole slightly larger than the ⅜ inch required to clear a ⅜-24 SAE stud or bolt to mount a conventional mobile antenna, either with or without the mounting spring.



Insulators for mounting the antenna may be made from plastic or phenolic sheet, cutting it in approximately two inch circles and drilling or punching the center to about 7/16 inch inside diameter. If only thin sheets are available these may be stacked up and glued together to make up the necessary thickness of about ¼ or ⅜ inch. Make two insulators, one for the top of the trailer hitch and one for the underside. A short length of plastic tubing with an inside diameter of at least ⅜ inch should be slipped over the antenna mounting stud or bolt to insure that this portion is not shorted to ground if the stud or bolt should inadvertently be mounted slightly off center.

Incidentally, we have found that with the heavier "high Q" singleband and all-band center loading coils which are coming into vogue, its a good idea to dispense with the mounting spring at the base of the antenna, providing that the lower section of the antenna is fairly sturdy. Small, heavy-duty springs, such as the *Vaaro model V106,* are now commercially available for mounting on the *top* of the loading coil with the remainder of the whip screwing into the top of the spring. This allows the antenna to remain vertical at almost any speed, preventing, among other more dangerous things, changes in loading caused by variations in distance between the antenna and the car body. This spring acts just as effectively as the base-mounted type to prevent damage to the coil or antenna when low trees or other obstacles are encountered. It also allows the upper section of the antenna to be bent to a horizontal position for putting the car in the garage.

As a final suggestion, you might try paralleling two lengths of 52-ohm co-ax as the mobile antenna feedline. When using a high Q loading coil, the antenna "looks like" a very low impedance, ranging somewhere between 15 and 36 ohms, depending upon the frequency and coil used. The 25-ohm feedline thus obtained provides a much better match than does the usual single 52-ohm line.

Perhaps none of these ideas are really new but we thought that passing them on to others might help them as much as they did us when we recently "went mobile."

Mobile Antennas

Attaining optimum performance from short antennas.

Elbert Robberson, W2FRQ

Hearthside hams consider a quarter-wave antenna short, but the medium-frequency mobileer must get by with one that is practically gone: a fraction from 1/20 wave to 1/100.

Everybody knows that you use a loading coil with such a short antenna. But not everybody realizes that unless great care is taken a heavily "loaded" antenna turns more power into heat than signal.

Here is how to make the best of it.

Mobile short antennas are applications of the quarter-wave grounded-vertical form. Whether the antenna is fed directly, or through a line and coupler, the effective circuit is as shown in *Fig. 1a.*

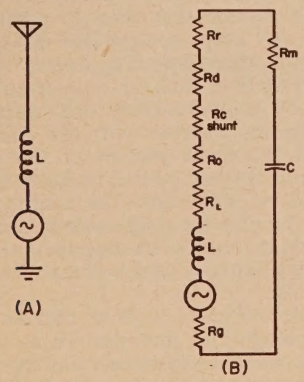


Figure 1.

Short antennas are capacitive, and this value can be measured by a capacitor checker or bridge connected between the antenna and ground. A calculation then gives the loading inductance necessary for resonance.

The equivalent circuit of *Fig. 1b* shows the resistances between which output power is divided. The resistance most desired is the radiation resistance, "Rr." For straight whip antennas this value is governed by height, according to the formula:

$$Rr = \frac{H^2 \text{ (in electrical degrees)}}{312}$$

Figure 2 plots radiation resistance versus height for lower-frequency bands. *Note that short-antenna radiation resistance is very low.*

Now for losses. Starting at the bottom of the diagram, the first encountered is ground resistance, "Rg." On automobiles, the ground circuit looks like a low-grade capacitor in series with the effective resistance of the ground underneath. This capacitance and its resistance is measured just like any other, by bridge or "impedance box." Slight reduction in ground loss may be realized if ground capacitance is made as pure as possible, by keeping tires clean and non-conductive, and possibly by fastening a copper screen to the undercarriage in the style of bottom covers used on racing cars.

Next is the resistance of the loading coil, "RL," which depends upon coil *Q*, or the relation of inductive reactance to resistance:

$$R_L = X_L/Q$$

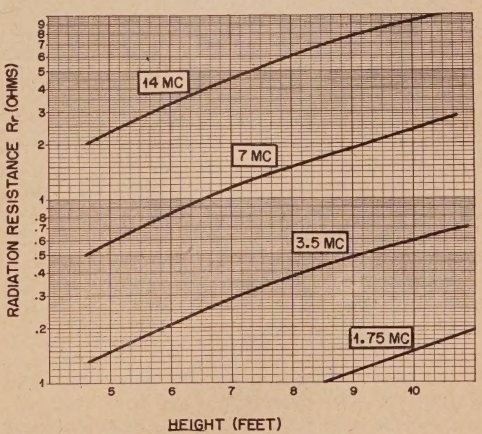


Figure 2.

Even with Q's as high as 400, more power is usually devoted to heating the loading coil than making signal. Obviously our coil should be the most efficient possible. Coil *Q* is measured with a *Q* meter, or a "Q-Box." *

Next on the list of losses is the ohmic resistance of the conductor making up the antenna, "Ro." This consists of d-c resistance multiplied by a skin-effect factor. With thin or poorly-conductive antennas this figure can be quite large, compared to radiation resistance.

Capacitance at the base of the antenna soaks up power. Although this loss is through a shunt circuit, it is evaluated easiest when transformed to a series equivalent "Rc-shunt" as shown. The greatest loss source here is the base or lead-in insulator, and how much loss depends upon whether the insulator is above or below the loading coil in the circuit.

Here is how this works. Reactance of the base capacitance is looked on as resistance of the same ohmic value, through which current flows to ground. Current leaving the circuit by this route never reaches the radiation resistance, which is where we want it dissipated.

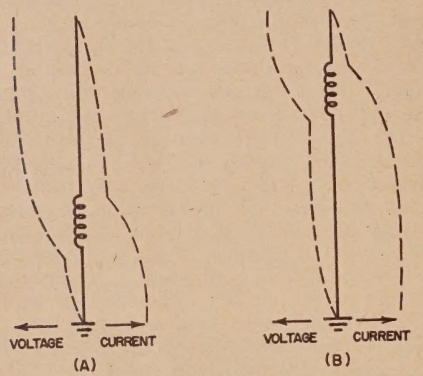


Figure 3.

As in a real resistance, current flow through this shunt depends upon voltage impressed. Now, with the usual rig, voltage at the bottom of the loading coil is in the order of tens of volts. However, at the top of the coil voltage is in the order of hundreds or even thousands of volts. The result is that a moderately-capacitive insulator above the loading coil introduces an equivalent series resistance of ohms. So use a low-capacity base insulator, and keep loss low by placing the loading coil above it in the circuit.

Similarly, base-insulator dielectric leakage introduces a series equivalent resistance, "Rd,":

$$\text{Series Equiv. } Rd = \frac{R^2 + X^2}{Rd \text{ (shunt)}}$$

If the base insulator is located below the coil, a point of low reactance (and low voltage), loss will be negligible. But if the base insulator is above the loading coil, a leakage resistance of hundreds of thousands of ohms, or even megohms, introduces a loss equivalent to that which would be suffered in a series resistance of a husky fraction of an ohm, and in severe conditions, many ohms. Hygroscopic insulators are worst in this respect, but any insulator causes trouble if it is wet or dirty.

Sometimes another loss resistance is encountered—that due to absorption of mutually-coupled circuits, "Rm." This is most prevalent in maritime-mobile operation, although it is suffered on planes, and in some cases in auto operation. Rigging, structural members, or other antennas are contributory. If other conducting objects cannot be kept out of the immediate field of the antenna, see that they have a different resonant frequency, and that they are either "floating" or efficiently grounded. A coupled circuit having a low internal resistance returns some of the energy it soaks up back to the field, where the worst result is a pattern distortion. But an absorptive circuit with loss resistance of its own just soaks up power.

Until now, we've talked only of symbolic configuration of the short antenna. Let's go from symbols to actual hardware. What shape should the antenna have?

In the first place, no one design is best for all conditions. All we hope to do is arrive at something reasonably good for our own particular case. Physical and mechanical considerations are sometimes as important as electrical design, and the most efficient structure might not be satisfactory if it is offensive to the eye or if it is unsound aerodynamically.

But let's assume that through careful construction, we keep controllable losses to a minimum. Is there anything better than the plain whip we have thus far considered?

Figure 3a shows current and voltage distribution in an antenna with the coil at the bottom. If the main portion of the antenna carried more current, radiation figure and pattern would be improved. The most common means of raising the high-current section of the antenna is to move loading inductance upward, giving current and voltage distribution as in *Fig. 3b*.

However, this can't be done blindly, or any gain is gobbled up by increased losses.

Actually, radiation resistance and capacitance are not lumped, but are spread along the entire antenna, as shown by *Fig. 4*. With the

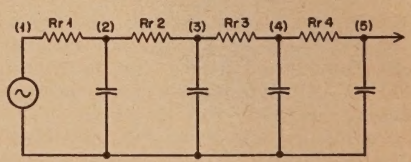
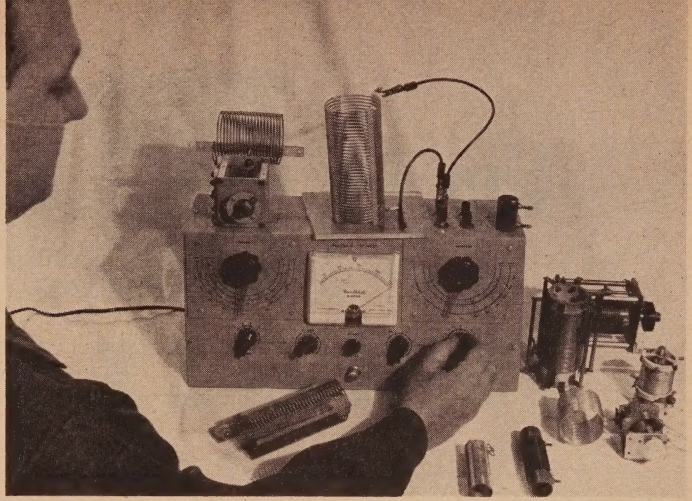


Figure 4.

* Robberson, "Q-Box" *CQ*, April, 1954, page 44.



Antenna efficiency can be decided right here

loading coil in position (1), it is resonated by the entire capacitance of the antenna.

But note that if the coil is placed at points (2), (3), (4), or (5), corresponding to increasingly-higher positions aloft, it faces less and less capacitance. Therefore, to resonate the antenna, the coil must be increasingly larger as it is raised. With the standard of construction remaining constant, resistance of a coil naturally increases as it contains more and more wire. Hence, a point is reached where gain in radiation resistance or pattern is offset by mounting coil loss.

For example, a whip that resonates with a 20-turn coil at the bottom may need 70 turns farther up. And, at the very top, the coil stops acting like an inductance and turns into a low-grade blob of capacitance, so inductance must be added below to resonate the system. Any "gain" in such a case is highly problematical.

When using coils aloft, remember that snug metal shields, dirt, or moisture also increase coil resistance. The antenna-loading coil should have the maximum *Q* attainable, no matter where it is placed in the circuit.

Now let's examine antenna loading from another angle. If the antenna capacitance (other than at the base) is increased, the amount of loading coil required for resonance is reduced, and coil loss with it. *Figure 4* also shows that the best place for the bulk of capacitance is at the end, since to reach this capacitance current must flow through the entire antenna, utilizing the entire radiation resistance. Unfortunately, the end is the poorest location mechanically. Fixed stations get by with "wagon wheels" atop the antenna, but not the family bus.

Antenna capacity can be raised by increasing diameter. A thin whip may have a capacitance of 20 $\mu\mu$fd. Increasing diameter to 1″ raises capacitance to 40 $\mu\mu$fd. Thin-wall tubing of 3″ diameter has almost twice this value. These "thick" structures need not be solid—lattice construction has an equivalent effect.

Increased capacity is realized by "fanning" two or more whips at an included angle of not more than 60°. This arrangement is light and has more "top loading than cylindrical shapes, and it can be accommodated on rear deck or bumpers. But, however we get it, capacitive top loading can reduce the amount of inductive loading required by more than one half with a consequent lower coil loss.

The relative distribution of transmitter power, and hence, efficiency of different antenna configurations, can be checked without complicated instruments. Using a dummy antenna, find transmitter-power output under standard load conditions. Then measure base antenna current with the same transmitter input. Total antenna resistance is found from the formula:

$$R_t = \frac{P}{I^2}$$

Comparing measured resistance of different elements of the system with this total gives an idea of the loss in each part, and dividing radiation by total resistance will show relative antenna efficiency. Resistances of different coils, ground systems, and radiators can be checked by this means.

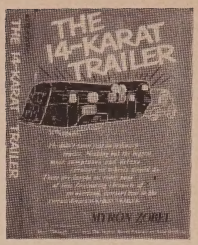
But to make the finest comparisons, there is no substitute for remote field measurements. Stake out a remote field-strength meter. If you don't want to string wires, a "Signal Bouncer" * will give remote signal-strength readings by radio. Then, keeping transmitter power at a standard level, the best balance between height, capacitive, and inductive loading is determined by how much of a stir your signal makes on the air.

A little work on the antenna to reduce unnecessary loss may increase your effective power more than any other improvement you can make!

---

* Robberson, "The Signal Bouncer," **Radio & Television News**, April 1954, page 47.

the 14 Karat TRAILER



"The 14-K Trailer", besides being an apt caption for these pictures, is the title of a soon-to-be-released book on the hilarious Ham-ventures of globe-trotting Myron Zobel, W6NMC, his wife and friends in their super-mobile land yacht, the Continental Clipper. We had the opportunity of reading a pre-release copy, and here is our reaction—

This is the story of the most fabulous mobile station we've ever heard of. Myron Zobel, alias W1LSV, W2NMC, I1NMC, W6NMC, VQ4-NMC, VQ5NMC, NE1NMC, now W6NMC again, relates the fascinating story of his dream-house on wheels, the Continental Clipper. Zobel, better known as "No-More-Cash", tells how the idea for a super-trailer, born on a straw-covered wooden bunk in an Arizona tourist cabin developed into a land-yacht his friends eventually referred to as the "White Elephant on Wheels"—complete with walls of tufted pigskin, indirect lighting, a tiny bar and wine cellar, an elevated observation lounge, and a ham station complete with rotary beam. He expected to spend about $2500, but by the time he was through he had built a plaything that only King Farouk could afford to take off his hands—and, in the end, actually did.



Mobile in motion in the 14-K Trailer.



After two Round-the-World Safaris, the Zobels plan still more travels.

When the Zobels find that Eddie, their driver, is also a Ham, with his own 15-watt mobile rig up front, out-DX-ing their "kilowatt", bedlam increases.

For the most fascinating DX traffic ever handled we'd nominate the time Eddie was in QSO with Santiago, Chile, with the cans on, and couldn't hear the intercomm buzzing him to stop for lunch. Undaunted, No-More-Cash snagged ZS6DZ, had him move onto the Chilean's frequency to shout, "Stop the truck, Eddie! Your 'tiffin' is ready. And take off those cans, Myron wants to give you a tinkle!"

We of the editorial staff liked the book tremendously. We think you'll enjoy every minute of it, but don't get it unless you're prepared to split a side or two. Myron offers to send personally autographed copies to Hams, with his King-size QSL and route map with pictures from his second Round-the-World Safari. Address: Myron Zobel, W6NMC, 912 Glen Oaks, Pasadena 2, Calif. $3.

Converting the

PE-101-C

Leslie A. Venne, WØCBW

The $3 PE-101-C, plus several hours of interesting work, can be made to equal the $30 PE-103!

A trial run of the PE-101-C convinced me that operation with an extra battery plus all the additional relays, required to give a 12-volt run and a 6-volt charge (as per several articles written on that subject), would bring the overall cost to as much or more than starting off with the famed PE-103 dynamotor, even at $30.00.

Description of the PE-101-C

This "powerhouse" consists of two separate 12-volt D.C. motors, with their respective commutators located one at each end, and two separate 300-volt D.C. generators also having commutators at each end. The two motor commutators are located toward the outside while those associated with the high voltage windings are nearer the center. There are also some slip rings, for A.C. output, which have no value in amateur applications. The dynamotor has both series and shunt field coils, that is, it is a compound-wound machine.

Dynamotors in General

In construction, a dynamotor is similar to a direct-current motor and a generator, whose windings generally occupy the same slots, but which are connected to different commutators. The low and high voltage windings are wound over one another in much the same fashion as the primary and secondary windings of a transformer. In service the field coils and the brushes bearing on the low voltage commutator are connected to the source of power in the same way as a direct current motor. The rotation of the armature carries the conductors through the unvarying magnetic flux created by the field winding, and induces a current flow in the high voltage winding. Since both the low and the high voltage windings are cutting the same flux, at the same speed, the "stepup" obtainable is proportional to the relative number of turns in each winding. There is no way to change this ratio without rewinding (Editor: or reconnecting to produce equivalent effects).



WØCBW, first licensed in 1939, now holds Amateur Advanced, Second Class Radiotelegraph and Second Class Radiotelephone licenses. Les holds an ARRL 35 wpm certificate, but prefers 'phone operation on 10 and 75—particularly mobile. Member Arrowhead Radio Amateur Club. Electrical work is his trade. Address: 429 No. 77th Ave., W. Duluth, Minn.

Now let us get down to the PE-101-C. Since I had decided that paralleling the two 12-volt motor commutators did not give sufficient voltage and current output to run a respectable-sized mobile rig, the next possibility was that of stripping the motor coils and rewinding them for 6-volt operation. Upon inspection of the armature it became quite evident that this was imposible as the motor windings were under the generator windings.

With this idea scrapped, I removed one end of the winding from four or five commutator bars in order to free the end of these coils. By the use of an ohmeter I tested between the lifted wires and the bars and was able to determine it was a simplex lap winding, diagrammed in *Figure 1*. In this scheme a coil will start at bar #1 and end up on bar #2. The next coil will start on bar #2 and end up on bar #3, etc., until it has gone all the way around the commutator and returns to bar #1. This, of course, places two wires to each commutator bar, one above the other in the soldering slot. These coils must always be wound in the same direction. One thing I didn't know was whether the top wire soldered to each commutator bar was always the same end of the coil. Experience has shown that, in mass production methods, each coil is wound and connected identically. In order to be sure of this, however, I lifted all the top wires from the commutator of the motor and passed direct current through each individual coil, always keeping the same polarity, and by use of a compass held close to the armature, I found each coil to give the same polarity, indicating that my original assumption was correct. This has been tried on several other types of dynamotors and found to be the same.

Consultation with a book on D.C. motors

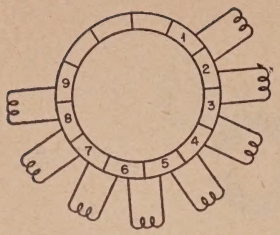
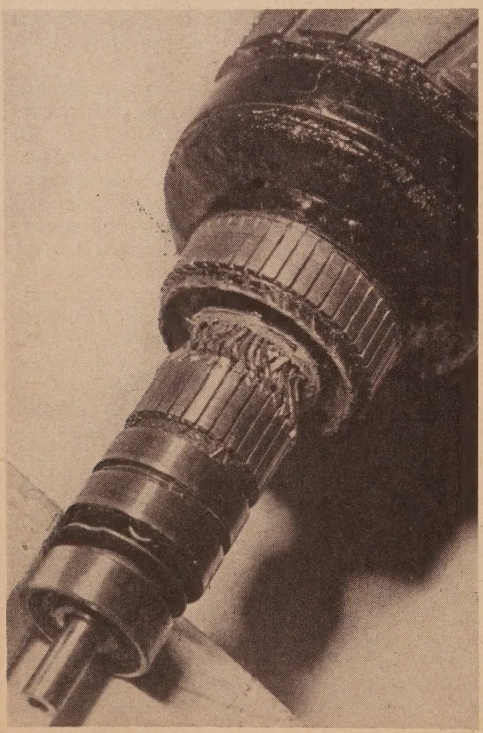


Fig. 1. Simplex lap winding.

disclosed that a direct current machine can be reconnected to operate on one-half its original voltage by changing from a simplex to a multiplex winding. In the multiplex arrangement there is a coil between bars #1 and #3; #2 and #4; #3 and #5; #4 and #6, etc. until it reaches #1 again. Therefore, where you originally had a #1-#2 connection, you will now want a #1-#3 connection.

If you look closely at the diagram (*Fig. 2*) you will find that the even-numbered bars are connected together by their coils and the odd-numbered bars are connected together through their coils, each being separated from the other. Whereas the simplex winding has all coils in series in one circuit, the multiplex winding has half of the coils in series in each of two circuits. This change is made by simply removing the proper end of each coil and moving it one bar ahead of its original place. Remember! This change must be made on *both* motors.



PE-101-C armature. Motor #1 end.

Getting to Work

From here on, reference to motor #1 will indicate the low voltage commutator that is located on the end of the shaft containing the two A.C. slip rings. Motor #2 is at the opposite end of the shaft.

Step 1. Remove all brushes at both ends, being sure to tag them so that they can be replaced in their original holders. Mark them so that you will know which side is up, when the job is completed.

Step 2. Disconnect all wires to the brush-holders on one side only. (Motor #1 side has fewer wires to contend with.)

Step 3. Remove the two long bolts, holding the dynamotor heads in place, and remove the head on the end from which the brush-holder wires were disconnected, leaving the other head in place. If the armature bearing sticks to one head or the other, tap it loose with a small block of wood or fibre, using a small hammer.

Step 4. Cut a "V" in the center of each of two pieces of 2 X 4, about six inches long, to hold the armature while working. Using a sharp pocket knife, remove the insulation on motor #1 between the generator commutator and the motor commutator, in order to expose the wires. You will be able to completely expose these wires about one-half inch back, which will give you sufficient length with which to work. Use extreme care, when removing the insulation, so as not to cut into the wires. This insulation is about one-sixteenth of an inch thick toward the generator side and very thin by the motor commutator.

Step 5. The wires you have now exposed for motor #1 are the top wires, the bottom ones being directly underneath with thin insulation separating them. Using a thin, flat-bladed screwdriver or a small pocket knife, placed underneath each wire, pry up and release the wire from its bar. Do not attempt to unsolder. Care should be taken to keep the tool up close to the commutator so that the wire doesn't break. A slow, easy pry does the trick. Keep the wire near the bar from which it came so no question will arise as to its proper place.

Step 6. Place the armature on the table with the motor #1 end, the one you have been working on, pointing toward you. Move each wire to the *RIGHT* (away from the bar to which

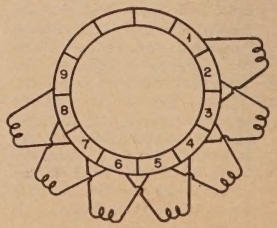


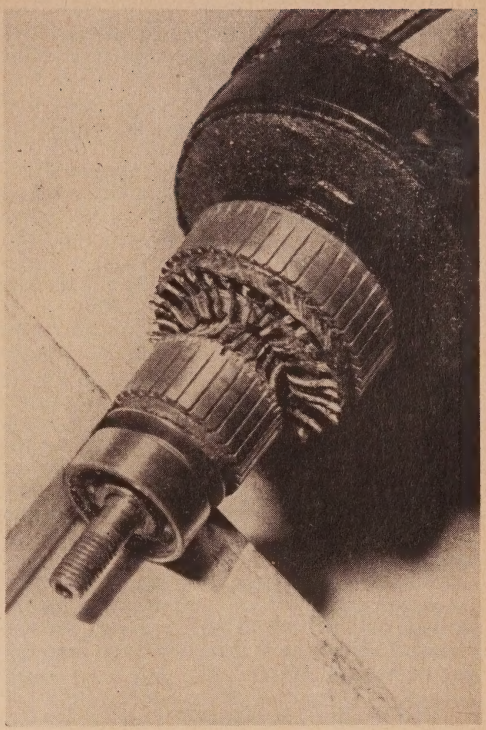
Fig. 2. Multiplex winding.

the other end is connected) by one bar and tap it down into the solder slot with your small screwdriver. This is the entire stunt in converting from simplex to multiplex winding. With the use of a small-point soldering iron resolder the wires to the commutator bars, using very little solder. Hold the iron down hard and let the solder soak in good to insure a good connection. Exercise caution so as not to short out any bars with the solder. The less solder used, the less chance there will be of this happening. In my own case, I found that rosin-cored solder resulted in the best job. The use of soldering paste eases the soldering job but it is very difficult to clean from the commutator later. If you *do* happen to short out some bars, your pocket knife can easily cut away the solder. The knife is handy, also, if you get too large a glob on the connection, to cut it down. Do not let the solder extend down on the flat portion of the commutator where the brushes will hit it. If you have the ohmeter handy it is a good idea to check for any shorts at this time, as the visual method is not foolproof. Remember! You have continuity between every other bar through the coil and none between adjacent bars. Refer to *Fig. 2*.

Step 7. Push the coil wires down as tightly as possible with your finger, then, at the same time, tap them down with a piece of fibre or similar material, checking your soldered connections to insure that none break loose. Replace the insulation that was originally removed by winding some common store string over the wires. Paint well with an insulating varnish or dope to make a tight seal and to keep the string from loosening. Clean the commutator well so that no burrs, dirt, or solder flux is present. If necessary, use a ground-down hacksaw blade to clean between the bars. Sandpaper to smooth commutator surface, removing all copper dust to avoid shorting the bars.

Converting motor #2 is much the same as the one we have just finished, with the following exceptions:

In motor #2 it is necessary to move the bottom wires and replace the top wires in their original places. This is necessary to keep the two motors "in step" with each other. After the top wires have been released from their respective bars, mark one wire and its bar with a drop of paint or colored dope. Bend all wires, in succession, to a vertical position up against the generator commutator. Remove the thin insulation, using the same technique described previously. Pry up the bottom wires and, with motor #2 pointing toward you, move each of the *BOTTOM* wires to the *LEFT* (away from the other end of the coil). Tap the wires into place with the tool. Push down on the wires to make sure they are down as far as they will go. Do not solder at this time. Replace the insulation with any suitable material at hand. I used a single layer of cambric cloth. Cut the insulation to make a good fit with no



PE-101-C armature. Motor #2 end.

bulges or folds. Replace the top wires in their original positions and solder with a hot iron so that sufficient heat reaches the bottom wires also. From here on, the balance of the instructions given for motor #1 apply. Now reassemble the dynamotor.

Try running each motor separately by removing one set of brushes at a time, to see if both motors are running at top speed. This is indicated by a high-pitched whine. A good check is to see if the output voltage of the generator is the full value, which is well over 600 volts. If one or both motors are running slow it is probably due to your brushes not seating properly. Be sure that the commutator is clean and smooth but do not do any excessive sandpapering or you may develop a groove, which may make it quite impossible for you to seat the brushes. To seat brushes, wrap a strip of very fine sandpaper, about three-eighths of an inch wide, tightly around the commutator, with the sandy side out. Put the brushes in the proper holders and turn the armature, with your fingers, several times in the *SAME* direction the motor will turn when operating.

Depending on the power requirements of your mobile rig, you may prefer to operate the two generators in parallel, rather than in series, as they were initially. This will give you a total of 300 volts output, at a considerably higher current. This can be done by removing

the jumper from the positive of one generator to the negative of the next and replacing with jumpers tieing the positives together and the negatives together.

The entire procedure sounds a good deal more complicated than it actually is. I can make this armature conversion in about 4 or 5 hours. After you have converted your first one it becomes very simple and uncomplicated. You might consider a conversion of this type, where you are actually modifying two motors, unnecessarily laborious but for the ham who has the time and but little money, the few dollars spent on a PE-101-C are well invested.

When you have completed the conversion you will find that the dynamotor delivers the same output voltage and current as it originally did with 12-volt input. The drain on your six-volt battery will be double the original drain, of course, but since we are now dividing the doubled current into two paralleled paths in the armature, the heating will be no greater than originally. The brushes and commutator are also carrying double the current but show little or no sparking.

Other 12-volt dynamotors can be modified just as successfully if you first ascertain, by the method outlined, that they are simplex lap wound. I believe most dynamotors do have this type of winding.

Summary

Conversion of surplus dynamotors, to serve as mobile power supplies, is normally limited to rearranging the connections between the brushes and field coils. WØCBW boldly tackles the task of modifying the armature itself and has come up with an extremely effective method of generating full output from these inexpensive units operating from six-volt batteries. Selling on the surplus market for about *one-tenth* the price of the more common PE-103, this power source is the logical one for pocket-book-concious hams. It is important to note that this alteration can probably be made to *any* 12-volt dynamotor.

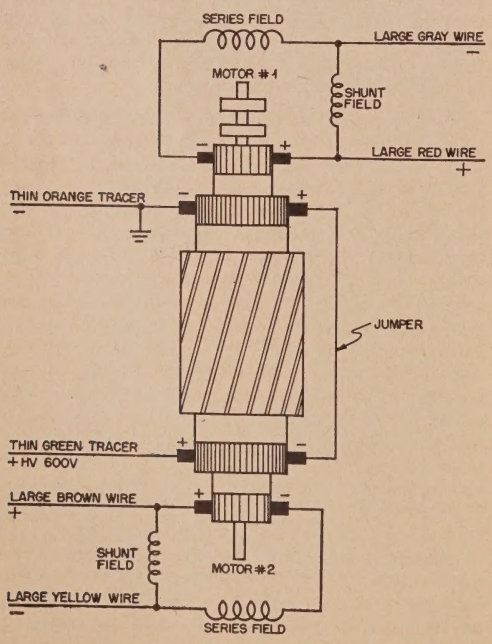


Fig. 1. Internal connections, PE-101-C dynamotor.

More on the PE-101-C

Howard A. Bowman
W6QIR

Obtaining some substantial level of agreement between the power demands of the transmitter and the output capabilities of the power supply source is what one faces when going mobile.

How many amateurs have purchased manufactured transmitters, only to discover that the surplus dynamotor, which had been carefully stored for many years, supplied a voltage which was substantially higher than the transmitting equipment was designed to employ?

The usual answer has been to make use of a light bulb or other dropping resistor in order to reduce the voltage to a usable value. Neither is an acceptable solution for other than short-time emergency purposes, since mobile installa-



W6QIR was first licensed in 1938. Formerly mobile on the old 2½-meter band, more recently on 10. Like many of us, he's waiting for the sunspots to bless us with 10-meter conditions like in the "good old days," and is sitting it out on 2 and 75. Enjoys construction and modification of gear. Charter member Inglewood Amateur Radio Club, having held Presidential and all other offices at various times, also an original member of the L. A. Council of Amateur Radio Clubs, of which he is Chairman this year. Occupied as Supervisor of Measurement and Evaluation, L. A. City School Districts. Address: 2048 W. 77th St., Los Angeles, California.

Table 1

Output Voltage-Current Data, PE-101-C

Terminals	Load	D. C. Volts	D. C. Ma. *
1-2	1500 ohms	300	200
	3600 ohms	330	92
3-4	1500 ohms	330	220
	3600 ohms	360	100

*Measured with simultaneous loads of 1500 ohms on one output winding and 3600 ohms on other output winding.

tions impose unusual demands upon the automobile battery at best, and any power-wasting devices should be discouraged in the interest of efficiency and family harmony.

The writer recently purchased a car equipped with a 12-volt electrical system and began to lay plans for mobile operation. First consideration was for a plate power source. Two PE-101-C dynamotors were at hand, one already converted for six-volt operation in a negative-grounded system, and the other virginal. The twelve-volt system of the car presented the additional problem of a grounded positive.

Rereading of the two articles which have previously appeared in *CQ*[1, 2] and close attention to innumerable advertisements which have appeared in *CQ* and elsewhere, including the "give-away" flyers of local surplus stores, indicated that this equipment was ordinarily rated to deliver something like 650 volts from the high voltage tap, and 350 volts from the low voltage tap. Millar[1] had indicated that both windings were easily capable of delivering an amount of current which would be adequate for the usual low-powered amateur mobile installation.

The high voltage output of 650, however, was considerably beyond our planned needs. Newer tubes, such as the 2E26, 5763, and 6146 operate with high efficiency on much lower plate voltages. Moreover, use of such high values of plate voltage to the final amplifier would presume a plate input which would require a modulator of relatively high output capability in order to secure adequate modulation. The equipment planned for the installation was not to exceed 35 watts input to the final amplifier, which would, in turn, mean a modulator delivering something in the order of 15 to 20 watts of audio power. These operating conditions could easily be met by means of a power source which would deliver something in the order of 300 to 400 volts at about 200 milliamperes.

Since the PE-101-C dynamotor was at hand, it was deemed advisable to use it if possible. Millar[1] had indicated that the high voltages were delivered from two windings which were essentially identical. His drawing, however, had shown but one winding, with the low voltage appearing at a tap on this winding. An empirical study seemed to be in order, and the previously converted six-volt model was sacrificed for this purpose.

We are happy to report that the sacrifice was not in vain. There are indeed two secondary windings (exclusive of a low-voltage A.C. winding, the brushes for which were removed in the interest of mechanical efficiency). These windings are nearly identical, but apparently not exactly so. The brushes for one winding are at one end of the armature and the brushes for the other are at the opposite end. The negative brush of one is mounted integrally with the dynamotor frame, hence must always be used as ground unless the dynamotor is insulated from the car. In the original equipment, the other brush of this winding is connected by a lead to the negative brush of the other winding. Incidentally, the primary leads are entirely insulated from the dynamotor frame, and therefore may be used in a car with either positive or negative system ground.

The lead joining the two high voltage windings was removed, and separate leads were installed for all four high-voltage terminals.

The primary windings were paralleled for operation on the twelve-volt system. Measurements were then made, using resistor loads on the high-voltage windings. Figure 1 indicates the connections to the dynamotor. Table 1 shows the various voltage vs. current relationships.

It will be observed that with a load of 1500 ohms on terminals 1 and 2 and a simultaneous load of 3600 ohms on terminals 3 and 4, the voltage and current relationships were as follows: from terminals 1 and 2, 300 volts at 200 milliamperes; from terminals 3 and 4, 360 volts at 100 milliamperes. Reversing the load values gave these figures: from terminals 1 and 2 330 volts at 92 milliamperes; from terminals 3 and 4, 330 volts at 220 milliamperes.

Assuming that the current versus voltage relationships are reasonably linear, the dynamotor should produce about 315 volts at 150 milliamperes from terminals 1 and 2, and about 340 volts at 150 milliamperes from terminals 3 and 4. These values will be ideal for the purpose on hand. Because of the slight voltage differences, no attempt was made to parallel the two windings, but this might easily be done.

1. "Converting the PE-101-C dynamotor", Millar, Gordon H., and Wm. Mollin, *CQ*, August 1952, p. 25.
2. "More on the PE-101-C", Millar, Gordon H., *CQ*, December 1952, p. 25.

New License Manual

License Manual for Radio Operators, a guide to FCC examinations, by J. Richard Johnson, W2BDL. This is a complete, well-illustrated coverage of the eight elements of the commercial licenses, including the latest law revisions. This is an excellent study manual for those interested in obtaining the Radiotelephone or Radiotelegraph licenses, including the Aircraft Radiotelegraph and Ship Radar Endorsements. The book, published by Rinehart and Company, Inc., contains 430 pages, is very well illustrated, and costs only $5.00.

MOTOR-DRIVEN Loading Coil

Charles T. Miser, W9MDC

If you are one of those who have heard W9MDC demonstrate the ability to shift frequency from one end of the band to the other, without stopping his automobile or suffering any loss in signal strength, you will not require a legislative edict to read this article—Editor.

Notice

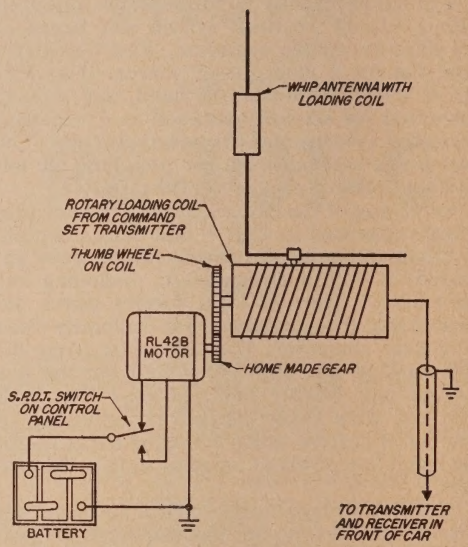
To whom it may concern: Be it known that the Honorable Mr. Charles T. Miser, a member of the House of Representatives, the State of Indiana, has long been a licensed radio amateur, with the assigned call letters of W-9-MDC. Be it further known that the Honorable Mr. Meiser operates a "seventy-five meter" mobile radio transmitter in his automobile.

It has come to the attention of this body assembled that such mobile radio stations use a "loading coil" in the antenna system. We are reliably informed that (a) for proper operation, this coil must be precisely adjusted for the exact frequency used, and (b) that it is frequently desirable to change operating frequency in the said "seventy-five meter" band to avoid interference or to contact stations in other portions of the band.

In view of these facts, some amateurs exit from their automobiles to vary manually the number of turns in the main loading coil, or in an auxiliary coil, or resort to similar expedients to maintain antenna efficiency when changing frequency. In contrast to these expedients, the Honorable Mr. Meiser employs a motor-driven loading coil, which can be, and is, in fact, adjusted for optimum performance by manipulating a switch on the automobile dashboard.



W9MDC, "Mad Dog Charlie", has come a long way since he was first licensed in 1932. 23 years, approximately. But in addition to this remarkable achievement, "Mad Dog", alias Charles T. Miser, multi-band fixed and mobile rag-chewer, holder of all available amateur class licenses, member N.E.I.R.C., Civil Engineer by trade, has been tendered a well-deserved Certificate of Appreciation by the Indiana Radio Club Council for authoring House Bill 239 providing for amateur-call license plates. Home address: Box 63, Garrett, Indiana.



Resolution

Whereas it constitutes, ipso facto, a traffic hazard to have divers amateur radio operators constantly getting out of their automobiles on our busy highways for the express purpose of adjusting any part of their mobile radio stations, be it hereby resolved that the Honorable Mr. Charles H. Meiser be requested to prepare a brief description of his antenna adjusting system for publication in a national amateur radio journal. By the secretary

Dated this first day of March, one thousand, nine hundred fifty three, A. D.

Statement

Pursuant to the above resolution; I, Charles T. Miser, called "Mad Dog Charlie," both for the purposes of identification and to describe my disposition, wish to make a brief statement, to wit:

I humbly state that my ability to write is limited to single-sentence press releases designed to assure my constituents that I am on the job in their behalf in Indianapolis. Also, that my constructional abilities are so well known in my congressional district that no Ham in it ever "haywires" anything together; he "MDC's" it. So if the following does not read pretty, be thankful that you cannot see the actual job.

Looks aren't everything, though, and always having my antenna resonant to my operating frequency is a tremendous operating help. But, heck, you know the importance of antenna resonance when using a loaded whip; so I'll just tell you what I did, and you can figure out for yourself how to do the same.

Construction

First, I requisitioned the rotary antenna coil from a BC-696 "Command" transmitter and the motor from a *surplus* RL-42B antenna reel. Next, I made a gear about one-sixth the diameter of the thumb wheel on the coil. The teeth on this gear match the indentations on the thumb wheel. Then, I fastened the gear to the motor shaft and mounted the motor and coil on a board; so that the teeth on the two gears meshed.

I mounted the board in the car trunk as close to the base terminal of the antenna as possible and connected the coil between the antenna and the center conductor of the feed line.

The RL-42B motor is designed to operate on 24-28 volts, but it performs excellently in this service on six volts. The frame of the motor acts as one terminal of the battery circuit. A little experimenting will quickly show which pair of terminals on the plug should be used in order to permit reversing the motor.

A three-conductor cable brings the motor connections to the transmit/receive control panel. A s.p.d.t., neutral-center switch controls the motor. It is mounted and wired so that in the "up" position, the inductance in the coil is decreased; in the "down" position, increased.

Operation and Adjustment

Probably the most satisfactory way to use the motor-driven coil is as an auxiliary loading coil. To do so, adjust the regular loading coil in the standard manner at 4.0 Mc., with the auxiliary coil set at minimum inductance. On lower-frequencies the additional inductance required to restore antenna resonance is supplied by the rotary coil.

In operation, I set the VFO to the desired frequency and flip the motor switch to resonate the antenna to it, at the same time, resonating the final-amplifier tank condenser. If I move higher in frequency, I push the switch up, if I move lower, I push the switch down.

The best way to check antenna resonance is to set up a field-strength meter where it can be seen through the rear-view mirror and manipulate the switch for maximum meter deflection. It is also possible to resonate the antenna by watching final-amplifier plate current, after verifying that maximum loading corresponds to maximum field strength. Depending upon feeder length, impedance, link size, and similar variables, the two adjustments may not coincide.

Notes

I make no claim for the originality of this idea. Some W2, whom I met on the west coast last summer, suggested it to me. If all your friends decide to keep their "Command-Set" loading coils after reading this article, both the *E. F. Johnson Company* and the *Barker-Williamson Company* make rotary coils that are just the thing for such an installation.[1, 2]

1. Johnson Cat. #229-201. Barker-Williamson Cat. #3852.
2. A possible substitute for the RL-42B motor is the six-volt motor supplied with "Erector" sets, from which source gears to make a reduction gear box may also be "requisitioned," while the junior operator is watching "Space Cadet" on TV—Editor.

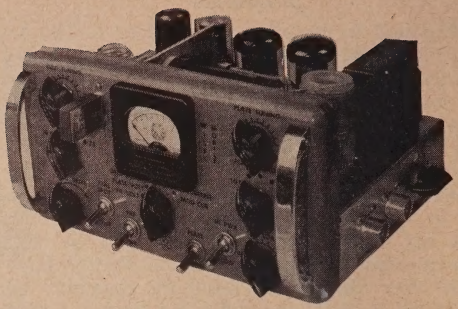
Re the "Ferri-Sweeper" in SINGLE SIDEBAND TECHNIQUES

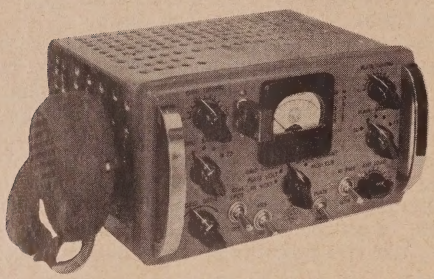
The ferrite toroidal core used for *L1* in the sweep generator, nicknamed "Ferri-Sweeper", in *Single Sideband Techniques* may be purchased in single lots from the United Products Company, Hixon Place, Maplewood, New Jersey. The price is $1.00—not the 10 or 15 cents as mentioned in the handbook. The author got his core from a large production quantity hence the price discrepancy. The manufacturer, H. L. Crowley & Company, West Orange, N. J. has arranged with the United Products Company to handle the small lot amateur requirements. The toroid should be ordered by its number of EX-5391.

RTTY SWEEPSTAKES RESULTS

Band conditions were excellent on 80 and allowed many solid cross-country contacts. Top honors again went to the Southern New Jersey Section with Ed Clammer, W2BDI, topping the scores with 59 stations worked in 24 sections, for a score of 2800 points. In second place was Bob Osborne, W8ZM, with 2600 points in 20 sections. Third was Frank White, W3PYW, with 2520 in 24 sections. Others scoring above 2000 were W8BL, with 2318, W6CG, with 2080, and W6AEE with an even 2000. A total of 94 stations participated, as compared to only 77 in last year's contest. Los Angeles led in section activity with 20 stations. Stations checked in from coast to coast, from Alaska to Louisiana.

the PROFESSIONAL look





Harrison Morgan, W1SSK

It doesn't have to look like a Rube Goldberg monstrosity just because it's home-made equipment. But this seems to be one of the reasons many Hams end up buying a piece of gear instead of building it. Yet it is by building our own gear that we really become acquainted with radio and what makes it tick. True, the demands on equipment are more exacting today than ever before, with crowded bands, TVI, etc. It is also true that there is much fine equipment being offered on the commercial market today. However it appears that the act of purchasing and using commercial equipment doesn't seem to add much to our knowledge of radio. Thus we lose the soul-satisfying thrill accompanying the modest claim, "No, I built it myself." Or, "Yes, I built it myself." Whichever the case may be.

Sometimes, though quite sure we could get a home-built rig to work, we become discouraged for fear it would not look presentable when finished—that it would fail the final test of XYL-appeal.

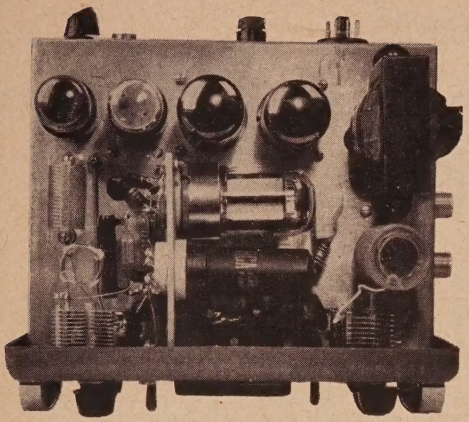
This writer believes that with a little planning on the physical layout, as well as on the circuit, a good-looking as well as a good-operating piece of gear can be constructed at home by the average Amateur.

Of course the commercial builder has some advantages over the home craftsman—mass-produced chassies and cabinets, factory paint jobs, etc. But let's look at the home craftsman's situation—hasn't he some advantages over the commercial builder? The commercial builder has to make a profit on his equipment. The home craftsman does not. This means that the home craftsman can spend more time working on the details of his equipment. He is not limited as to the amount of time to be spent assembling the gear. And he may add or eliminate features as he pleases.

The Transmitter

The accompanying photographs are of a mobile transmitter which was built with these

Here's a neat little rig that won first prize at the New England A.R.R.L. convention last year, as the best home-built installation. A higher-powered version of the W4SIA 30-watt mobile transmitter (May '53 CQ), this one employs a 6146 final, 5881 modulators, and a Colpitts oscillator.



thoughts in mind. The design follows that of W4SIA's 30-watt transmitter (May '53 CQ). This is a higher-powered version incorporating several circuit changes and using octal-base tubes throughout.

A Bud 7″ x 9″ chassis was used in the construction of this transmitter, and the front panel of the top of one of the shield sections from an old Balkite broadcast receiver, 1930 vintage. The paint was removed from the panel and a coat of Sherwin-Williams Industrial dark grey paint was brushed on, allowed to half-dry, the panel then being placed in an oven and baked for an hour. The result was an extremely hard surface which is almost impervious to scratches. The decals are black "Technicals", available from most suppliers.


rters

THIRTY WATTS
ON
FIVE BANDS

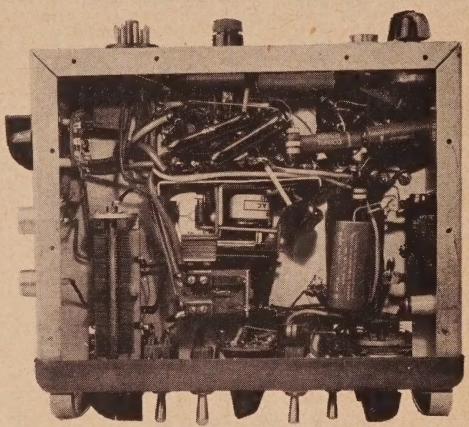
EARL E. FERGUSON, OX3B, W4SIA

The original transmitter as it was publicized in the May '53 issue of CQ.

The cover for the transmitter was constructed from an old 10″ x 17″ x 4″ chassis. It is mounted under the dash and the transmitter is held to the cover with two self-tapping screws on each side. This permits the transmitter to be easily removed for service or adjustment.

The Circuit

Circuit-wise, the 6AG7 Colpitts oscillator *(Fig. 1)* was chosen because of its simplicity and almost fool-proof operation. Since there is no cathode coil, this circuit can be mounted above the chassis, permitting placement of the crystal holder opposite the tube base, on the front panel. The 6AG7 provides plenty of drive for the final stage.



For the final, in place of the original 2E26, a 6146 is used. This rugged tube, and the others as well, have given faithful service for a year and over 30,000 miles of driving. For the 6146, the original grid resistor *R6* is changed to 27K.

5881's are used for modulators, being driven in this particular rig by a 6SN7 phase-inverter. The use of a driving transformer vs. the use of a phase-inverter depends upon the allotment of space above or below the chassis. As the use of octal-base tubes was preferred in this

[*Continued on page 70*]

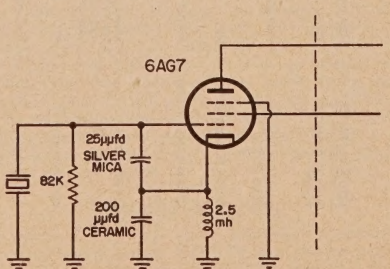


Fig. 1. Revised oscillator circuit.

ALL TIMES IN EST

EASTERN USA TO:	15 Meters	20 Meters	40 Meters	80 Meters
Northern & Central Europe	NIL	0700-1400 (3) 1400-1700 (3-4) 1700-1900 (1-2)	1830-2030 (3-4) 2230-0200 (2)	1930-0000 (3)
Southern Europe & North Africa	1300-1700 (0-1)	0600-1500 (3) 1500-1730 (3-4) 1730-1930 (1-2)	1800-2200 (3-4) 2200-0000 (2)	1930-0030 (2-3)
Near & Middle East	NIL	0600-1300 (1) 1300-1700 (2-3)	1900-2230 (2-3)	2030-2200 (1-2)
Central & South Africa	1330-1700 (1)	0600-1300 (1) 1300-1600 (2-3) 1600-1930 (3-4) 1930-2030 (1-2)	1900-2300 (3)	1930-2230 (2)
South America	1400-1730 (1-2)* 1200-1600 (2-3) 1600-1800 (3-4) 1800-1930 (1-2)	0600-1600 (2-3) 1600-2000 (3-4) 2000-0130 (1-2)	1900-0230 (3-4) 0230-0530 (2-3)	2000-0200 (2-3)
South East Asia	NIL	0700-1100 (1-2) 1100-2200 (0-1)	0300-0600 (0-1)	NIL
Australasia	1700-2030 (1)	0630-0930 (1-2) 1600-1900 (1) 1900-2200 (1-2)	0000-0600 (2) 0600-0800 (3)	0130-0600 (2-3)
Guam & Pacific	NIL	0730-1100 (1-2) 1100-1900 (1) 1900-2200 (2-3)	2330-0800 (3)	0030-0530 (2)
Japan & Far East	NIL	0700-0930 (1) 1500-2200 (1-2)	0200-0700 (1-2)	0300-0600 (0-1)

ALL TIMES IN CST

CENTRAL USA TO:	15 Meters	20 Meters	40 Meters	80 Meters
Western & Central Europe	NIL	0600-1300 (2) 1300-1630 (3) 1630-1800 (1)	1800-0100 (2-3)	1900-2230 (2)
Southern Europe & North Africa	1300-1830 (0-1)	0600-1300 (2-3) 1300-1800 (3-4) 1800-1930 (1-2)	1830-2100 (3-4) 2100-0000 (2)	1930-2300 (2-3)
Central & South Africa	1300-1800 (1)	0600-1300 (1) 1300-1600 (2-3) 1600-1830 (3-4) 1830-2000 (1-2)	1900-2200 (3)	1930-2100 (2)
Central America & Northern South America	1400-1700 (1) * 1000-1800 (3-4) 1800-2000 (1-2)	0700-1600 (3-4) 1600-2000 (4-5) 2000-0100 (1-2)	1800-0430 (4) 0430-0730 (2-3)	2000-0400 (3)
South America	1300-1700 (1-2) * 1100-1500 (2-3) 1500-1730 (3-4) 1730-1900 (1-2)	0600-1500 (2-3) 1500-2000 (3-4) 2000-2200 (2-3) 2200-0200 (1-2)	1930-0430 (3-4)	2000-0330 (2-3)
Japan & Far East	NIL	0700-0900 (1-2) 0900-1500 (1) 1500-2100 (2)	0200-0700 (2)	0330-0500 (0-1)
South East Asia	NIL	0700-1130 (2) 1130-1900 (0-1) 1900-2130 (1-2)	0230-0630 (1)	0300-0500 (0-1)

ALL TIMES IN CST

CENTRAL USA TO:	15 Meters	20 Meters	40 Meters	80 Meters
Hawaii	1800-2100 (1)	0900-1600 (2-3) 1600-2300 (3-4)	2230-0300 (4) 0300-0900 (2-3)	0000-0600 (3)
Australasia	1700-2100 (1)	0700-0930 (1-2) 1200-2000 (1-2) 2000-2300 (2-3)	2300-0400 (3-4) 0400-0800 (2-3)	0130-0500 (2-3)

ALL TIMES IN PST

WESTERN USA TO:	15 Meters	20 Meters	40 Meters	80 Meters
Europe & North Africa	NIL	0600-1300(1) 1300-1600(1-2)	1930-2330(1)	2030-2300(0-1)
Central & South Africa	1400-1700 (0-1)	0500-1400 (1) 1400-1800 (2) 2100-2300 (0-1)	1900-0000 (2)	2030-2300 (1-2)
South America	1100-1800 (0-1) * 1000-1400 (2-3) 1400-1700 (3-4) 1700-1900 (1-2)	0600-1500 (2-3) 1500-2000 (3-4) 2000-0000 (1-2)	1900-0200 (3-4)	2030-0100 (2-3)
Guam & Mariana Islands	1700-2200 (2)	0700-0900 (2-3) 1030-1900 (2) 1900-0000 (3-4) 0000-0300 (1)	0100-0600 (3-4)	0200-0500 (3)
Australasia	1400-2000 (1) * 1300-1900 (2-3) 1900-2100 (3-4)	0730-1800 (1) 1800-2000 (2) 2000-2200 (3-4)	2200-0600 (3-4)	2300-0400 (3)
Japan, Okinawa & Far East	1700-2200 (1)	0730-1000 (1-2) 1000-1900 (2) 1900-2300 (3-4) 2300-0100 (1-2)	2300-0500 (3-4)	0000-0300 (2-3)
Philippine Islands & East Indies	1700-2230 (1)	0700-1000 (3) 1300-2100 (1) 2100-0100 (2-3)	0300-0430 (1-2)	0330-0430 (0-1)
Malaya & South East Asia	1700-2230 (0-1)	0700-1130 (2) 1130-2300 (1) 2300-0100 (1-2)	0400-0600 (0-1)	NIL
Hong Kong, Macao & Formosa	1700-2230 (0-1)	0730-0900 (1) 1200-2000 (1-2) 2000-0100 (3-4)	0300-0500 (3)	0330-0430 (1-2)

Symbols for Expected Percentage of Days of Month Path Open:

(0) None (1) 10% (2) 25% (3) 50% (4) 70% (5) 85% or more.

* Indicates time of possible ten-meter openings.

The CQ Propagation Charts are based upon a CW radiated power of 150 watts and are centered on Washington, D. C., St. Louis, Missouri and Sacramento, California. These forecasts are, for the most part, calculated from basic ionospheric data published by the CRPL of the National Bureau of Standards, and are valid until June 15th, 1955.

Ionospheric Propagation Conditions



Forecasts by
George Jacobs W2PAJ/W3ASK
607 Beacon Road, Silver Spring, Md.

General Propagation Conditions — May

6 Meters: A few short-skip openings between 1000 to 1400 miles expected as a result of a seasonal increase in sporadic-E type propagation.

10 Meters: Occasional DX from all parts of the USA to South America and from the western area of the USA to Australasia. Fairly frequent short-skip openings expected between distances of 900 to 1300 miles.

15 Meters: Fairly good daytime DX openings expected from all areas of the USA to South America and occasional openings possible from the western USA to Australasia and the Far East. Fairly consistent regular F2 layer short-skip openings between 1800 and 2400 miles predicted from approximately noon to 2000 *local standard time*. Speradic-E layer short-skip openings are expected to occur on most days during May and June. The skip distances on these openings will be from 600 to 1300 miles.

20 Meters: Seasonal trend is for this band to remain open later into the early evening than during the winter and early spring months. This will be the best daytime DX band, with DX possible to most areas of the world from about 0600 to 2200 local standard time. Regular F2 layer short-skip is also expected to begin at about 0600 with the skip out about 2000 miles. As afternoon approaches the skip distance should slowly decrease to about 1000 miles by 1800 and then increase again to over 2000 miles by 2200 local standard time when the band is expected to fade out for F2 layer short-skip propagation. Frequent sporadic-E short-skip openings, at distance of 400 to 1200 miles, are expected on most days of the month.

40 Meters: Good DX openings to most areas of the world expected during the evening hours. This will be the best band for DX from shortly before sunset to shortly after sunrise local standard time. Regular F2 layer short-skip is expected around the clock. During the night hours the skip distance will be greater than 800 miles. During the daytime hours ionospheric absorption will limit propagation from about 100 to 700 miles from the transmitter. Seasonally higher atmospheric noise levels will result in higher static on this band.

80 Meters: Fair night time DX possible to many areas of the world, but noticeably higher static level. During daylight hours, seasonally stronger. ionospheric absorption will limit propagation to within approximately 200 miles from the transmitter.

160 Meters: Higher static levels and seasonal increase in ionospheric absorption will not permit DX on this band until early fall. During the night hours regular layer short-skip propagation should be possible out to a distance of about 2000 miles. During the daytime hours ionospheric absorption will limit propagation to a few miles from the transmitter.

This overall picture of band conditions is intended to indicate qualitative changes in each amateur band from month to month for both DX and short-skip conditions. For specific times of band openings for certain popular DX circuits, refer to the *CQ Propagation Charts* on the opposite page.

Daylight Savings Time

During April and May many communities in the United States go on *daylight savings time*. All time referred to in these forecasts are given in *local standard time* and if your community is on daylight savings time remember to *add one hour* to all time shown in the forecast. For example, if for a particular circuit, 20 Meters is forecast to open at 1900 EST, this would be the same as 2000 EDST.

Sunspot Cycle

This month's *Charts* are based upon a predicted smoothed sunspot number of 16, centered on May, 1955. The monthly Zurich sunspot number reported for February, 1955 was 20.8 resulting in a provisional 13-month running smoothed sunspot number of 7.0 centered on August, 1954.

Total Eclipse

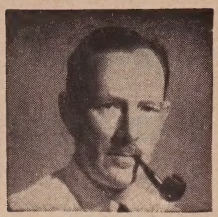
A total eclipse of the sun is one of nature's most spectacular events. The total eclipse of the sun also has special significance to radio researchers. Only during such an event is it possible for the ionizing radiation of the sun (which is responsible for forming the various layers of the ionosphere), to be cut off in the middle of the day. This affords the opportunity to observe the affects upon shortwave radio circuits as rapid changes in ionization take place.

Radio observations made during past total eclipses of the sun have resulted in the formulation of much of our present theories concerning ultra-violet radiation from the sun and its influence upon the ionosphere. On June 30th of last year a total eclipse of the sun was visible over the central United States, northeastern Canada, Greenland, southern Scandinavia, across Russia and into India. Many of us in this country had the opportunity to visually observe this spectacular phenomena and simultaneously observe its affects on radio transmissions (CQ, Nov. 1954, page 33). On June 20, 1955 another total eclipse of the sun will occur. It will be visible, clouds permitting, over the Indian Ocean, south India, across southeastern Asia, to the north Pacific Ocean. While not visible in the United States, its influence upon shortwave radio transmissions will probably be noticed as a brief improvement in 20, 40 and 80 meter amateur band reception from those areas.

URSI-IRE Meeting

This year's URSI (the USA National Committee of the International Scientific Radio Union) spring technical meetings are scheduled to be held at the National Bureau of Standards in Washington, D. C. on May 3, 4, and 5, 1955. This year's co-sponsor will again be the Institute

DX and Overseas News



Gathered and reported by
R. C. "DICK" SPENCELEY, KV4AA
Box 403 St. Thomas, Virgin Islands

Congratulations to the following station upon his achievement of WAZ:

No. 305 Clayton R. Cash
W6LGD 40-175

Clay is the 117th W6 on the WAZ lists. A confirmation from 5A1TC, Zone 34, did the trick.

SAINT MARTIN, PJ2MA: This station came on the air March 11th at 1625 GMT. First contacts followed in this order: W5UFO, W5CEW, W4LX A3, W5EFC A3, W7SIB/4, W5DML, W5CEC, W3HOH, W3MDE, VP9BL, W2GT, W6KQY A3, W6SYG A3, W5ALA A3, W2JT A3, KZ5KA A3, KZ5DG A3, W2JT, W6MUR, YV5AT A3, W4FDF A3, PJ2AN, PJ2AG A3, G4ZU A3, W6AOA and HC1FG A3. George, PJ2AA, who operated PJ2MA, ran 40 watts to a Globe Scout modulated by 6L6's in parallel. Each contact was given a check number and QSL's should go via W1PST. The matter of separate status will be taken up and, as we see it, points in favor of this move are as follows:

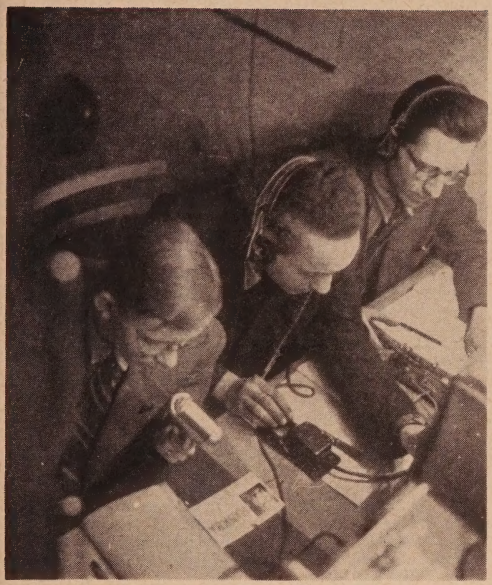
1. This island is some 450 miles to the Northeast of Curacao.
2. St. Martin is in North America while Curacao is South America.
3. Such status is urged by the Amateur Radio Societies of Curacao and Aruba.
4. The Curacao government has been approached and voices no objection.

CAYMAN ISLANDS, *VP5BP:* Noel VE3CJ, repeating his '51 and '52 jaunts to Grand Cayman was on the air from this spot, on phone, from March 5th to March 24th. A Viking Ranger and National NC-125 were used. Accent, this trip, was more on fishing etc. than ham radio but a fair number of contacts were racked up.

CORN ISLAND YNØYN: (West Gulf DX Bulletin) WØAIW has been assigned the call of YNØYN for operation from this QTH and Lee also has authorization from the F.C.C. to use a KS4 call. ARRL says there is a possibility of new country status. YN4CB and WØEIB will accompany WØAIW. As this is written Lee is encountering difficulty arranging surface transportation from the U. S. to Bluefields, Nicaragua (Too much equipment to go via air) but once in Bluefields transportation is "all-set" to the island. If things went well YNØYN should have been heard around mid-April. HKØ operation is also a possibility.

DX Notes

TI9MHB arrived home on March 3rd via air from San Jose CR. 2040 contacts were made during his stay on Cocos. In the process, and helped (?) by a little tummy trouble, John shed 55 pounds!! . . . From the Ohio Valley ETHER WAVES we hear that VQ4NZK is now in Japan for Paramount Pictures but plans VQ9, Seychelles, trip when he returns around May. JA1CR hears that ten licenses have been issued to Formosa nationals but apparently for operation on 7 Mc. only. . . . CE1FF states that he may be 2nd op again at LX1AS in May/June but not definite. Frank also advises that HB1MX is still active from Liechtenstein on weekends but was ordered to drop the "/HE" from his call. Thus, if you hear HB1MX, don't pass him up. . . . SWL, Steve Terry, tell us that YV9AP and YV9BZ may be heard on phone, 14150. These stations are on an expedition to the Amazon territory of Venezuela. See QTH's. . . . ON4QX has been invited to go along with a Cambridge University expedition to the Himalayas which was due to leave England in March. Should he go he will probably be signing ON4QX/AC4 for a five month period. If not he will endeavor to have another ham participate. QSL cards have already been printed!! . . . F9RS reiterates that FN8AD ceased being legal on May 1st, 1950. He has continued to use the FN8 prefix at times although his real call is VU2AX. Charles also states that all rumors regarding ham licenses in Vatican City were, are and will be false. The Vatican authorities will NOT give any permission and it is useless to write. This would seem to quash any optimism regarding the stray HV1AA's, HV1A's and HV1ZZ's that are heard periodically. . . . We understand that the mysterious, and much in evidence, KD6AT is located in Korea! . . . MP4QAL, Halul Island (Qatar), has been quite active. See



HA5KBA, Budapest, Hungary, has been very active on all bands with an extremely potent signal. Opening on Oct. 2nd '54, 100 countries were worked in the first month. Contacts up to Feb. 20th number 3050 in 126 countries, 35 zones and 39 states. 800 watts is run to a pair of 803's with suppressor grid modulation accounting for 300 watts on phone. Left to right are operators Lacy, Bandi and Aurel.



This snap, taken in Chicago, shows Bill Hudgins of W6CIW. Bill now operates from W6CIW/KP4, in Puerto Rico, where he serves as Industrial Manager for the Tenth Naval District.



VE8ML, Ellsmere Island, Arctic Project "Alert", does much to augment the infrequent mail drops in keeping in touch with the "unfrozen". Left to right are ops Frank Adams (VE8MZ), Bob Slakman and Les Snyder. VE8ML may be heard on 14 Mc. phone during the warmer months. (Photo courtesy W4ANE)



Two views of the operating position at VS1BJ, Singapore, show Max (G3JJT), tuning for that elusive stuff, and 2nd op Noel, with the specs, a bit more relaxed.

QTH's. MP4QAK has been heard, MP4QAJ (OD5AD) is off and on pending his flights between Lebanon and Qatar and MP4QAH was due to return to England in March. . . . We see from the West Gulf DX Bulletin that: CN8MM states that FD8AA is definitely NG according to official check made on him. Ray, KS6AB, is the only ham in KS6-land and may be heard, on phone, around 14240 0100/0400 GMT. FR7ZA is active on 21180 week-ends looking for W's. Active in Tunisia are 3V8AX, 3V8AP, 3V8BL and 3V8BP. W2AFZ was heard working XZ2ST on 14 Mc. phone, 1400 GMT, Mar. 5th. Iceland stations expect to have the use of 3.5 Mc. soon. ZD9AC has a good signal on 21 Mc. KS4AW will be on Swan Island until June. ZS2MI, Marion Island, is on 14150 around 1700 GMT and ZS6AIY can help with schedules. . . . KC5DX has been contacted by many. He gives his QTH as May (or Mays) Island and says QSL via the KG6 bureau. . . . Tom, ZD8AA, gets stateside mail once per month via boat from London. He should also be on with A3 shortly. . . . A letter to W6TI form Michel Dumont, Press Counselor, regarding the status of FW8 reads as follows: In answer to your request the two small islands of Wallis and Futuna are small kingdoms under French Protectorate and they are under the authority of the Commissioner of the French Republic in the Pacific who is the Governor of New Caledonia. . . . (North Calif. DX'er). . . . ex-DL1VM hopes to go to VL6LQ for a three year stay. . . . Reminder: There may be IFNI activity in May. . . . W1KGH/VE8 planned activity on 7005 during contest. . . . SP9KAD hears ZA4BKA on 3.5 Mc.



DX'ploits

Jayme, PY2CK, adds ZD8AA to reach 255. TI9MHB gave him 235 on phone. . . . Don, W6AM, hits 253 with TI9MHB which also made him 180 on phone. . . . Frank, W6SYG, upped to 252 with ZD3BFC and TI9MHB while Jim, G6ZO, went to 250 with TI9MHB. . . . Frank, W6MEK, also stands at an even 250 as A1, W8PQQ, goes to 249 with ZD8AA. . . . W6AOA submits new list for 247 while Arkie, W8NBK, also hits 247 with ZD8AA. . . . Bob, W3EVW, ascends to 244 thanks to ZA1BB, HKØAI and TI9MHB and also goes to 166 phone with HB1MX/HE and T19MHB. . . . George VE4RO, nabbed Cocos for No. 241 while A1, W6GDJ, ups to 239 with ZD8AA and TI9MHB. . . . El, W7BD, adds CR5JB and VQ6LQ for 238 as Guy, W6DLY, reaches 227 thanks to KC4AB, HKØAI and FB8XX. . . . A1, CE3DZ, now enjoying good health, adds VS5KU, FO8AJ, TI9MHB, VR3A, HB1MX/-HE, KC4AB and HKØFX to rest on 221 as Epsie, W6EPZ, rises to 220 with LZ1KSI, OY2Z, ZA1BB, TI9MHB and JZØDN. . . . Bert, G8IG, adds KC6CG for No. 215 while Doug, G3DO, ups to 205 with MP4QAH, ZC5VR, F8FW/FC, EAØAC and ZD3BFC. He also miked his way to 183 with EA9DE, and LZ1KDP. . . . W6LDD reached 202 with TI9MHB, VP5AE and HI8EW while Clay, W6LGD, goes to 175 and new WAZ. . . . Vaughn, W6ID, nabbed EA9AP and TI9MHB for 156 while Bill, W5ASG, leads the 39-zoners with a solid 247 thanks to ZD8AA. Bill phone total went to 180 with FY7YE. . . . ZD8AA gave KV4AA No. 244 while Glenn, W8KIA, is right behind, with 243, with help from TI9MHB. . . . Norm, W1HX, pulled in MP4KAC for 225 as W3DRD went to 220 with FG7XB. . . . Ray, W2BJ, rests on 218 thanks to HI6EC and TI9MHB. . . . Joe, W8UAS, discovered UAØKKB card which makes him 39-214 while Bob, W2EMW, goes to 201 with EA9DF and TI9MHB. . . . Pat, W2GVZ, upped to 191 with ZD8AA and HKØAI as Juan, KP4CC, stands on 199 with KC4AB and HKØAI. . . . Rip, W4EPA, goes to 173 with ET3LF, AP5TM and ZD8AA while Harry, WØANF, joins the CW listings at 159 with such as FY7YE, EAØAR, FB8BR, VQ5EK and VK1EG his phone total went to 145 with HKØAI. . . . Jim, W5FXN, ups to 176 with VQ8CB, JZØDN and TI9MHB while Ned, W1RAN, makes it 153 with KC4AB, TI9MHB and ZD6EF. . . . W6KQY goes to 181, A3, with FF8AP, FD8AA and TI9MHB while Willard, W1NWO, reaches 209 with TI9MHB and HKØAI. . . . WØNCG miked with ST2NW, M1B, VQ6LQ, HKØAI and VP8AQ to hit 167. . . .W1WLW goes to 102 with FY7YE, VQ2W and SVØWL. . . . TI9MHB was No. 115 for W4BRB on 3.5 Mc. . . . W9YNB nabbed EA9DF and T19MHB to reach 180. . . . A1, W8PQQ, reached 100 on 3.5 with FP8AP, PJ2AA and CX1KB. . . . Some terrific scores are in the making in the recent DX contest. We hear that Vic, W4KFC, rolled up a 245 multiplier and 450 contacts in the FIRST HALF on CW single op! W6YMD (with W6BXL, W6AOA and W6OR) made 400 QSO's, 160 multiplier for first half. . . .W9UKG went to 123 with TI9MHB. . . . Latest stuff at DL4ZC (W4KE) includes ET3GB, VS6CU, MP4QAH, VS9GV, KR6PT, W7WPC, FF8GP and ZL1AX on twenty, HK5OM, ZS6ALT on forty, OA4ED, HZ1HZ and ZS5S on twenty-one and W2HEP and W4CDC on eighty. . . . ON4QX goes to 111 with OQ5DZ, IT1AGA, HZ1AB, PJ2AA and ET3LF. Paul. K2GFQ, (ex-W6JKH) hits 148 with ZD2FFB. LB8ZB turned out to be a portable station in Norway. . . . K6EBB hears UAØGF, UA4KEA, UAØKKB, UAØKKA, UAØAG and HL1TA and keyed with ZS5DE, DU1SCS, JZØDN and SM8CWC (This last one is probably a Swedish ship Don as SM8 is a portable call). . . .

[*Continued on page 78*]

⬅ QSL Contest Winner

Winner this month is W6MYD, with this tear-jerker follow-up card for those overdue QSL's.

Keep those cards coming in. A new winner each month. Prize is a 2-year subscription.

WAZ HONOR ROLL
(To March 15th 1955)

CW AND PHONE

W1FH	259
W6VFR	256
PY2CK	255
W6ENV	254
W6AM	253
WØYXO	252
W6SYG	252
W8HGW	251
W5KUC	251
W6SN	250
G6ZO	250
W6MEK	250
W8PQQ	250
W2BXA	248
W2AGW	248
W8JIN	247
W3GHD	247
W6MX	247
W6AOA	247
W8NBK	247
W3BES	246
W3KT	246
G6RH	245
W9NDA	244
W3EVW	244
W8BHW	242
W6ADP	241
VE4RO	241
W3JTC	240
W3GAU	239
W6DZZ	239
W3JNN	239
W6GDJ	239
W7BD	238
W6GRL	237
W6TS	237
W6MEK	236
CE3AG	236
W3CPV	235
W7AMX	235
LU6DJX	234
W6AMA	233
SM5LL	233
W6VE	233
G2LB	232
G4CP	232
W7DL	232
VK2ACX	230
W7GUI	229
W8BRA	228
ZL2GX	228
W6EBG	227
W6TI	227
W6DLY	227
W6PFD	226
W6SAI	224
WØPNQ	224
DL1FF	223
VK3BZ	223
OE1ER	223
W6UHA	223
ZL1BY	223
W3LQE	222
W6FSJ	222
W3BHV	222
W6MVQ	221
W6PB	221
G6QB	221
CE3DZ	221
SM5KP	220
W6CY1	220
WØELA	220
W6EFM	220
W6EPZ	220
W6ITA	219
W6TT	218
WØNUC	218
W6PQT	218
G2PL	218
KH6IJ	218
WØDU	218
W6PKO	218
W9DUY	217
W2PEO	216
W6BUD	215
G8IG	215
W3IYE	214
PY1DM	214
ZS2X	214
KH6BA	214
W6DI	214
W6OEG	213
W4AIT	213
KH6OT	213
VK4HR	213
W6RBQ	213
PY1AHL	213
W6HX	212
VE7HC	212
W5GEL	212
W6NNV	211
W6BPD	210
W6MJB	210
W6IBD	210
W9VW	209
W6RW	209
W2AQW	208
ZL1HY	208
W6SC	207
VK3KB	207
VE7VM	206
W4BPD	206
W6SR	206
W6ERI	205
G3DO	205
W6ZCY	204
VK2DI	204
W6AVM	204
DL7AA	204
W4CYU	203
W6HJT	203
LU8EN	203
W6IRM	202
W6OMC	202
G2MI	202
W6LDD	202
W6LW	201
W6NTR	201
W9KOK	200
VK5JS	200
W7OY	200
W6MHB	200
G3YF	200
W6LN	200
PY1GJ	199
W6RLN	198
W6SRF	198
W6UCX	198
W2IOP	197
KH6QH	197
W6BAX	197
W6NZ	197
OK1CX	196
W6LS	196
W7KMC	196
KH6PY	195
W7DXZ	194
W6AYZ	193
VE6GD	195
VS6AE	192
W9NRB	192
VK4DO	192
OK2SO	191
ON4TA	191
G3BI	190
W7LYL	189
KG6GD	189
W3IXN	188
W6AOD	186
VK2PV	186
ZC1CL	186
OK1WX	186
W7BTH	185
G3AZ	185
W6TEU	185
W6RDR	185
W6AUT	184
VE7KC	184
W6OBD	184
ZS2CR	183
CR9AN	183
W6IDZ	182
W7ASG	182
W7GBW	181
G8IP	179
G5BJ	178
VK6SA	177
PK6HA	177
G5VU	177
W6NRQ	176
W6MLY	176
ZL1GX	175
VK5MF	175
ZL2CU	175
ZS2EC	174
ZS6CT	174
W6DVB	174
W7KWA	174
W6DUB	173
W7IYA	173

39 ZONES

W5ASG	247
KV4AA	244
W8KIA	243
W2WZ	239
W1CLX	235
W3EPV	234
F8BS	232
W2NSZ	232
W9RBI	230
W3DPA	230
W2QHH	227
W8DMD	225
W1ENE	224
W1HX	224
4X4BE	224
W3OCU	224
W9LNM	224
W1BIH	221
W3DRD	220
W1GKK	219
W1JYH	219
W2BJ	218
W9FKC	216
W9HUZ	216
W4GG	216
W8ASU	214
W3DKT	212
W5MPG	211
W5FFW	211
VK4FJ	210
JA2KG	160
KH6MG	160
W6ONZ	160
WØFFV	158
WØOUH	157
G3TK	157
W6BUY	157
W6QD	157
ZS6FN	157
OH5NK	157
W7BE	156
KH6IG	156
W6ID	156
DL1DC	155
VK5KO	155
W6BUO	155
G3AAM	154
G2IO	154
W6RLQ	154
W6KEV	153
OK1RW	153
W6FHW	153
G3YF	152
KP6AA	152
VK2QL	151
VK2AM	151
W6LEE	150
W6FHE	150
WØEYR	150
W6LER	150
W6BIL	150
W6NZ	148
W6MUC	147
W6LS	147
W7KMC	147
KH6PY	147
W7DXZ	146
W6AYZ	146
VE6GD	146
VS6AE	146
W9NRB	145
VK4DO	145
OK2SO	144
VE8AW	144
W2RGV	143
W8VLK	143
W8CVU	141
W4DKA	140
VK3XO	140
W4VE	138
W7ONM	171
W9LM	170
KL7PI	170
W6CTL	133
W1NMP	133
W3JTK	133
OZ7EU	133
HC2OT	131
PY2AC	131
W2CYS	131
W8LEC	130
SM7MS	129
W3EBB	127
G6QX	127
W9NZZ	126
W4OM	126
SM7QY	124
W6KYV	124
WØAIW	123
I1AY	123
W8WWU	122
WØRBA	121
DL1AT	120
W9YNB	116
DL1FK	113
I1AIV	104
DL1KB	98
W6CUL	89
G3AKU	59

38 ZONES

KP4KD	210
W5LYD	209
W8SYC	209
W2HHF	208
CO2SW	208
W8HFE	207
W3KDP	207
W1ZL	207
VE3QD	206
W4LVV	205
F9BO	204
W4RBQ	203
WØIU	201
W2EMW	201
W2HZY	200
W3JKO	200
W9MXX	197
W7PGS	197
W6GPB	197
SM5WI	196
W2CWE	192
VE3AAZ	192
W2IMU	192
W2AGO	191
W1AWX	191
OK1VW	190
GM3CSM	190
OE3CC	189
WØEYR	186
VE3IJ	186
W8BDZ	184
W9TQL	184
W4INL	183
G2MEL	183
W1DQM	181
W2CNT	181
G3FXB	181
W2RDK	180
W4AZK	180
WØAZT	180
VO6EP	179
VK4DO	179
W9ABA	179
W6WO	179
VE8AW	178
W2RGV	178
W8VLK	177
W8CVU	172
W4DKA	172
VK3XO	172
W4VE	171
W7ONM	171
W9LM	170
KL7PI	170
W6CTL	169
W1NMP	169
W3JTK	169
OZ7EU	169
HC2OT	169
PY2AC	168
W2CYS	167
W8LEC	166
SM7MS	164
W3EBB	162
G6QX	160
W9NZZ	160
W4OM	158
SM7QY	158
W6KYV	158
WØAIW	157
I1AY	157
W8WWU	157
WØRBA	157
DL1AT	156
W9YNB	155
DL1FK	155
I1AIV	154
DL1KB	154
W6CUL	154
G3AKU	150
VE7VC	150
W1ZD	150
ZL4BO	147
W2GUR	146
W6CAE	146
TF3SF	145
OK1AB	144
W6MUF	144
TF3EA	142
VS7NX	140
W6KYT	135
W7HXG	134
W7ETK	132
W9ALI	132
W6TE	131
W6WJX	131
W5CPI	130
KL7UM	129
DL1DA	127
W6EYC	126
VR5PL	124
DL3DU	118
W6NRZ	117
W6JWL	114
W6FBC	114
W6VAT	110
DL3AR	107
W7GXA	105
W6LEV	103
W6FXL	93
W7LEE	91

CW AND PHONE

38 ZONES

TI2TG	221
PY4IE	215
W1HA	214
W2HMJ	206
GM3EST	202
W5KUJ	191
W2GVZ	191
WØTKX	189
W8KPL	188
W2PUD	181
W2SHZ	180
W9VP	177
W8FJN	173
W8EYE	172
W3FYS	172
W1BFT	166
GM2UU	165
F9AH	165
W4LQN	164
VE2BV	163
W6TXL	161
I1UV	160
ZL3CC	159
W3LVJ	157
W2UEI	156
LU7CD	155
OE1FF	154
DL1YA	153
W5MET	150
W6ETJ	144
W8ZMC	143
ZL8AB	143
W9YKH	135
MP4BAD	135
W4PFK	131
VE6MN	131
W2PQJ	130
W3ZN	129
EA1AB	129
W9MZP	126
FE8AB	126
W9TB	125
GW4CX	120
WØFET	118
KL7PJ	117
W7EYS	107
VK6DX	103
C1CH	84

37 ZONES

W6KYG	200
KP4CC	199
W1KFV	177
OZ7BG	174
W4EPA	173
W2OST	169
VE3LJ	167
W3WU	162
W2ZA	160
W9WCE	156
W9LI	151
W4WO	149
W6YK	144
W4ML	140
ZLJQW	138
W1APA	138
W2AYJ	133
W7HKT	130
W4DIA	129
VE5JV	126
W9LNH	122
OH3OE	118
W6YX	117
VE1EA	116
G3BPP	112
W6AX	110
WØFFW	108
W7PK	104
W8HSW	104
W2BLS	99
W6WVW	99
KL7KV	88

36 ZONES

W5JUF	206
W4HA	182
WØAIH	176
W2ZVS	172
GM2DBX	165
WØANF	159
W3AXT	156
W3AYS	151
W3MZE	150
I1IT	140
WØCU	139
F9RS	139
OA4AK	128
VE1PQ	128
I1IZ	128
F8TM	124
W2BF	115
4X4BX	112
W5CD	108
W2JA	102

35 ZONES

KV4BB	185
KG4AF	182
W8YIN	181
W5FXN	176
W1DEP	159
WIRAN	153
W2AZS	142
W6ZS	135
W4DTZ	132
W9CXP	132
W1MQP	130
W8AWT	125
OE5TL	122
ZL3CP	121
W6HJ	121
W9RQM	119
CO6AJ	119
WØGBJ	116
W9GDA	115
W2HAZ	115
W9FNR	114
W8AVB	113
I1ER	112
KZ5IP	108
KL7CZ	80

PHONE ONLY

WAZ

VQ4ERR	223

39 ZONES

PY2CK	235
XE1AC	217
W3LTU	206
W6DI	201
G8IG	190
W6VFR	184
PK4DA	175
W7HTS	161
W8HUD	161
F9BO	158

38 ZONES

VE7ZM	145
DL1FK	125
SM5KP	199
W2BXA	204
W9NDA	203
W9RBI	202
W6KQY	181
W6AM	180
W4CYU	160
ZL1HY	157
W1HKK	153

37 ZONES

W3JNN	201
ZS6Q	192
W3BES	190
W1JCX	189
CE3AB	186
W3GHD	184
W8BF	183
G3DO	183
W8REU	176
VK3BZ	173
W7MBX	164
W9HB	161
W6PXH	159
GM2UU	158
W6WNH	157
W6TT	145
WØHX	143
F8VC	124
W7MBW	112
C1CH	83

36 ZONES

W1MCW	216
W1NWO	209
TI2TG	182
W5ASG	180
W1BEQ	164
GM2DBX	163
W9BVX	160
W4ESP	159
W2DYR	140
W9BZB	139
W9HP	139
W8AUP	131
W8PDB	130
VE2BNQ	130
W4INL	129
W1FJN	128
G6BW	127
VE7HC	123
W8CYL	112
W3DHM	96
W6SA	92
F8DC	87

35 ZONES

HC2JR	178
W4HA	173
W5JUF	171
W3EVW	169
WØNCG	167
W9RNX	155
W6PCK	152
W2RGV	148
WØANF	145
PY2JU	140
W2GHV	137
W6CHV	135
WØPUE	135
HC2OT	134
WØEYR	131
WØPRZ	124
W9CKP	124
G8QX	123
W8ZMC	122
W6YX	110

Choo Choo MOBILE



Ed Luckey, W6MJ

While riding on trains many times in recent years, I developed an intense desire to operate railroad mobile or shall we say: "Choo Choo Mobile." How to do it was the question. I realized that, for obvious reasons, railroads wouldn't allow a station on a regular run train.

Returning from the East last October, I met Carl Braubach, excursion director for the Pacific Railroad Society, an organization of people in Southern California interested in railroading. We discussed our hobbies and thought it would be interesting to combine the two. Upon receiving a notice of an excursion to Bakersfield and return, via Southern Pacific's famous Tehachapi Loop route, I decided to make a real effort.

The railroaders secured permission from Southern Pacific for me to operate on "their" train. The two meter band was selected because it allowed the use of a small antenna, compact low powered equipment working from batteries and the fact that numerous active stations in Southern California would be available for contacts.

I decided that this was no one man safari and talked my friend Bill Nico, K6BSW, into going along. We thought it wise to inspect the train ahead of time and, if possible, erect the antenna and select a good operating position before the crowd arrived. It was a wise move indeed. We traveled out to the passenger coach yards (about five miles from the station) the night before we left. It was a rainy Saturday night and after having been lost, we finally found the place at 10.30 P.M. The Yardmaster was most helpful in providing access to the cars, turning on the lights and producing a ladder for us.

We were caught short at the last minute for a practical antenna to meet the necessary requisites. Clearance for tunnels is 38 inches above the car roof top, so a 19-inch (quarter wave) ground plane was decided upon. We must thank Bill Myers, W6IHK, for quickly building our antenna. He even fitted it with rubber suction cups for mounting.

Bill Nico climbed up to do the installing. The car roof was wet and slippery and to our disappointment, the suction cups would not hold a vacuum due to the rough surface of the much painted roof. On the adjoining car were "ventillators" with smooth metal tops. Bill fastened the cups to one of these and they held like iron. The co-ax lead-in was fed down between the cars and slipped through an opening of the canvas flaps to the vestibule, thence over the top of the door which didn't close too tightly after all these years.

We selected a corner of the lounge car, just right for our needs. The co-ax was fastened up out of the way and all seemed well. We had brought the rig and a storage battery along for a test. It worked fine, several local signals pounding in loud and clear. We worked one and received a good report. We were satisfied that all was ready and pulled the switches.

As we were leaving, the yardmaster looked up and discovered that the "ventillators" were the tops of the dining car kitchen flues. They would be hot all day long on the trip and would certainly affect the suction cups and no doubt dislodge the antenna. There was nothing left to do but move it. Bill climbed up once more in the drizzle and found the prospects for fastening the GP were very poor. He noticed a vent pipe protruding from the roof of our car. The only thing left to do was to wire the aluminum strap radials of the GP to the pipe, resulting in a 15-degree list of the radiator. This done, we went home for some much needed sleep.

Next morning at 6 a.m. we were on our way back to Union Station in the pouring rain. We were taking identical rigs (Gonset Communicators) and four heavy 100-ampere-hour automobile batteries. In addition, we had all of the accessories . . . tools, crystals, spare mikes, log



K6BSW left, W6MJ right. Installation is in the lounge car of the Southern Pacific Special.

book and of course, our tickets. We unloaded the stuff on the station sidewalk and engaged a redcap to wheel it away on a hand truck. As you perhaps know, it is nearly a half mile from the station entrance to trainside.

We were soon aboard our special and had the equipment installed in short order. The train was still at rest as we first listened. Not a single signal on the band! Who would get up at 7 a.m. on a rainy Sunday morning to work 2-meter train mobile . . . even though we had notified them in advance? We started to move and gave out with a CQ. K6ALL, about ten miles up the line in San Fernando Valley, answered us, but was too weak to work at the moment. We asked him to stand by and began tuning the band. W6CDK, some twelve miles away at the beach, was calling us with a rock crushing signal. We worked him and received a fine report. Things were clicking! We finished with him and listened. K6BXW, at Sun Valley (a few miles north of Burbank) was calling us. We exchanged loud reports and Jim said he would be in the air with his aeronautical mobile to follow us as soon as he could get clearance to take off.

We were really busy from now on as we headed out the San Fernando Valley to Glendale, Burbank and San Fernando. We stopped in Glendale to pick up more railroaders and worked W6YYG, who had just awakened and run across us. Within four minutes after we signed, "Grid" and his wife, Opal, were in their clothes and starting out to chase after us in their car. We continued to work locals, logging SCR, KAE, ZRU, UCW and AFG, with wonderful reports both ways. There was little flutter. The ground plane was doing a fine job. We heard few signals after leaving the city until we were high up in Soledad Canyon, where we contacted W6EJL at Manhattan Beach on the ocean front, just West of Los Angeles. The sun had come out as we approached the Antellope Valley and we had clear weather a good part of the day.

Starting down grade for Palmdale, we contacted KN6BPA, located there. We talked with him as we approached and passed the town. No other stations were heard as we traversed the floor of the Mojave Desert, though we held KN6BPA until we started to climb the Tehachapis, just north of Mojave. We were highballing all the way along the desert flats. W6YYG was timing us with his speedometer and calling off our speed . . . now 70 . . . now 80 . . . NOW 90! He pulled away and told us he was doing 102 mph in order to beat us to a crossing ahead. He made it!

The ride became most scenic as we climbed the Tehachapis. When fairly high up in this range, we picked up W7BQX/6 employed at a TV station on 7610-ft. Breckenridge Mountain. Needless to say, he was loud and clear. Soon W6EHN in Bakersfield began pounding in . . . then KN6ACR and W6OPP in the same area. We worked them until we rolled into Bakersfield yards at 2 p.m. All of their signals were very steady all through the Tehachapis even when we were behind ridges and peaks in many places.

Our railroad mobile was soon to pay off; Three club members wandered away from the trainside, and though warned by whistle blasts, didn't make it back in time. They were left behind in that very lonely and remote region. When their wives and friends realized what had happened, they came to us for help. We contacted W6YYG on the highway some distance away and advised him of the predicament. He returned to the area and after driving over some bad roads found the stranded three. He picked them up and brought them into Bakersfield to rejoin their loved ones and the excursion.

The Bakersfield gang came down to the train to visit with us and later, when we started the return trip, worked us again until we reached the Tehachapis, when they signed. Things were rather routine on the return trip until we reached San Fernando Valley again. The local boys were waiting for us and we worked a gang of them as we were high-balling down the valley towards Union Station. W6TDM fixed us up with a fine phone patch to our homes and the railroad fans were amazed at this "trick."

We finally reached home, much pleased with our venture. Much was learned from the experience. If you desire to go railroad mobile, make connections with a railroad fan club and have them get you in on one of their excursions. Your rig will come in handy in the event of any emergency. THIS IS YOUR SELLING POINT!

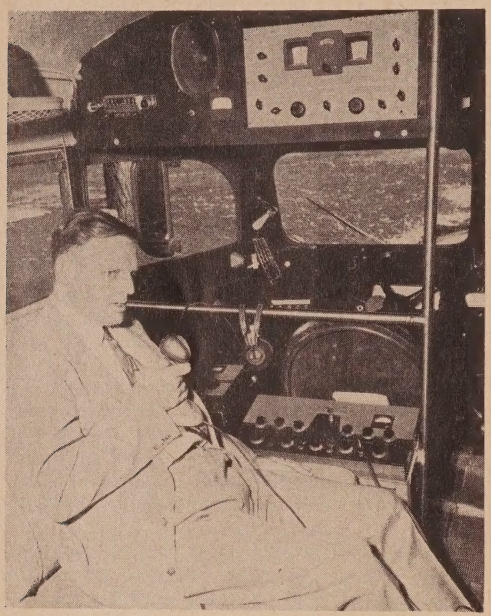
Since this will be a chartered train you can do most anything you wish is so far as hamming is concerned. This includes erecting antennas ahead of time. . . . A MUST! . . . testing out your installation, selecting a good operating

[*Continued on page 83*]

Net Control— MOBILE

WØWIT has a dream-shack on wheels which is a real asset in times of emergency—not to mention possible use for vacations or as a portable dog-house *deluxe* . . .

Paul Kersten, WØWIT
1235 5th Ave., South, Ft. Dodge, Iowa



Doc Kersten in hte radio operator's position of the "mobile apartment".

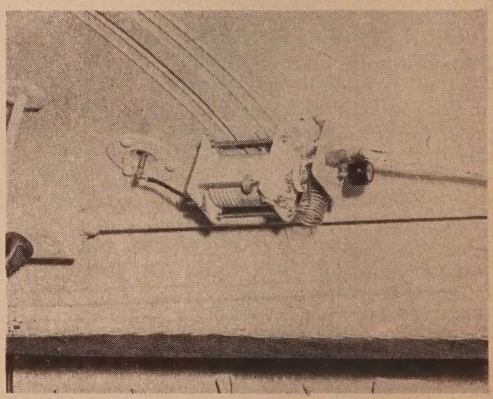
There are many mobile stations suitable for emergency use available today, but still relatively few self-sufficient medium or high-powered net-control stations—and fewer still that can move easily to the best net-control location *and* provide complete first-aid facilities, a refrigerator and stove, hot water, compressed air, reserve fuel, and an a-c power plant. Not to mention central heating, shower, bunk-space for six, *and* a *kitchen sink*.

Though this unit will appeal to many emergency-communication-minded individual Hams, it represents an approach which can most easily be duplicated by a group of Hams or by a radio club.

The installation at WØWIT is a mobile station of sufficient power and with reception facilities ideally suited for a net-control station during times of emergency. That it can be readily moved to the most ideal location makes it doubly-suited to meet this need. With the present growth of the RACES program over the nation such a unit could be used to excellent advantages in many local communications systems.

The portable/mobile station pictured here is housed in a converted 1942 school bus. It incorporates complete 6-volt d.c. and 110-volt a.c. power systems and all the comfort and utility of a small apartment in addition to a complete medium-power amateur station.

The truck chassis which carries the bus body is a '41 Ford to which numerous alterations have been made. The original motor was removed and replaced with a Ford F-8 engine and transmission. Air brakes were substituted for the original hydraulic brakes, in order to give adequate braking for the 7-ton unit, and to supply air pressure for the pressurized water system. The main air-storage tanks are maintained at a pressure of 105 lbs. by an engine-driven compressor, and the water tanks are maintained at approximately 30 lbs. by means

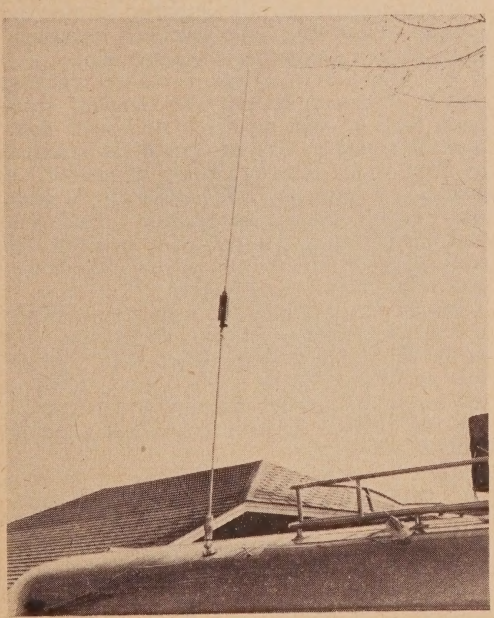


Supplementary base-loading and impedance-matching coils under roof.

of a decompression valve off the main storage tanks. This pressure supplies an adequate amount of water for the shower, toilet and sink in the bathroom and for the sink in the kitchen area. Storage tanks having a capacity of 80 gallons are carried under the body of the bus. A septic tank receives the discharge from the toilet. A butane hot-water heater of 20-gallon capacity furnishes a ready and plentiful supply of hot water to the shower, bathroom and kitchen sinks. A butane floor heater keeps the mobile station at a comfortable temperature. An apartment-size 110-volt ac-operated refrigerator is located in the kitchen area.

Power for the refrigerator, lights and station components is furnished by a gasoline-driven generator mounted on a special frame inset in the left-front fender and securely attached to the truck chassis and the bus body. This unit is remotely-controlled by buttons to the left of the driver's seat. It has its own 12-volt starting battery—a small 35-amp.-hr. aircraft battery mounted directly beneath it as pictured. The 1-kw. capacity of this unit is adequate.

There are two separate lighting systems in the unit. One consists of the eight overhead 6-volt d.c. lights which came as original equipment, the other is a 110-volt a.c. system added in the course of modification. Numerous outlets were installed at convenient locations.



The 19-ft. high antenna is pulled down from the inside by a clothes-line & pulley arrangement, when necessary.

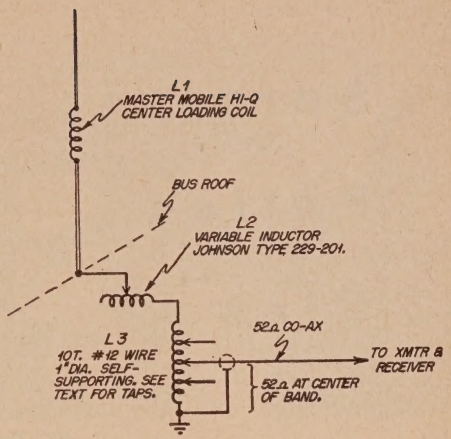


Figure 1.

There are comfortable sleeping accommodations for six. Four can be bunked on double bunks located on each side of the bus just forward of the bathroom and kitchen area. Two more can be accommodated on a Simmons "Hide-a-Bed" which serves as a comfortable couch during operating periods. With the couch in place there is adequate space forward for the placement of an operating table.

The station equipment here at WØWIT/m consists of a Johnson Viking II transmitter & VFO and an HQ129X. The transmitter slides into a padded steel frame which is securely welded to the upright hand-hold and the back of the driver's seat, and is also bolted to the bus floor. The VFO bolts to a steel projection from the left side of the transmitter rack, as shown in the photos. A special rack and storage compartment was constructed directly over the driver's seat. As can be seen in the picture, this rack also contains the receiving equipment (HQ129X plus a 6-volt d.c. receiver), a speaker and switch, and a 110-volt a-c voltmeter.

Two separate antenna systems are used. When operating mobile, a modified Master Mobile center-loaded antenna emits an effective signal. The circuit for this modified antenna is shown in *Fig. 1*. In reality this is a combination base-and-center-loaded antenna which can be kept at resonance, as one moves down in frequency in a given band, by inserting increasing amounts of base inductance by means of a Johnson variable inductor (*L2*). A further refinement of this system is the method of loading. You will notice in the photograph and circuit diagram the additional inductance *L3*. This is a self-supporting coil wound with 10 turns No. 14 tinned wire spaced the width of

(Continued on page 77)

Surplus Police Rigs for CD

Bill Bailey, W9JJD

Occasionally it is said that amateur radio has become too commercial.

This criticism probably is justified where a new amateur buys his way past the junk box and hay-wire stage at the outset, and avails himself of a "ready-mix" package rig, complete with advanced features he can scarcely adjust, let alone understand.

But the use of commercial equipment in civil defense communications not only is wise, but is almost mandatory to establish the kind of thorough-going reliability that a life-and-death situation would demand.

The use of factory-built gear takes a tremendous work-shop load off the amateur CD group at the very time that its attention should be directed toward formulating a sufficiently well-knit organization to be of value to the community. It enables actual practice operations to begin in a relatively short time, thus practically assuring the lively, continuing interest of each member.



Shown here are (l. to r.): W9KMT; W9JJD; W9FKV and W9PMW. Lou Brown, W9MAT, and Carl O. Gustafson, W9PKO, were not present for the photo. (photo courtesy Motorola)

Particularly desirable is commercial equipment which originally was designed for mobile two-way applications, since its mechanical and electrical stability, circuitry and size all have been carefully engineered to give the utmost in reliable performance under the most rigorous conditions.

Still another benefit is standardization. With all installations the same, everyone is thoroughly familiar with and can readily operate any mobile unit, which is not likely to be the case when each ham builds his own.

Maintenance is greatly simplified because the group, collectively, soon becomes expert in every technical aspect of the equipment.

A substantial saving also is realized because only a minimum quantity of standard spare parts need be kept on hand. And since commercially-built mobile equipment is designed to allow quick disconnection and removal of transmitter, receiver, and power supply from their mobile mountings, routine adjustments and maintenance can be done without the tedious labor often associated with home-grown installations.

Moreover, during an emergency an inoperative section of the equipment can be pulled out of the car and a spare quickly put in its place. If a spare installation is not kept at hand at the base station, any one of the mobile units can be "robbed" to keep a particular mobile unit operating.

These are some of the advantages of utilizing used commercial equipment which have made it much easier for the LaGrange Park, Illinois, civil defense communications section to develop an effective organization.

The group was formed four years ago, and early in 1954 became the first city in the state of Illinois to receive its R.A.C.E.S. authorization, the plan for which was written by Herbert Clark, Jr., W9FKV. Clark's call is used for the base station, and as provided under R.A.C.E.S.

regulations each car was assigned a mobile identifier. For convenience and brevity LaGrange Park selected LP1, LP2, etc., for its five mobile units, and while these are perfectly legal, their use has caused momentary consternation to more than one Chicago area ham who at first thought he had stumbled upon a nest of bootleggers.

These "bootleggers" had their first small success in the fall of 1953. An arrangement had been worked out to assist the LaGrange Park police in patrolling the streets on Halloween night, a procedure which has been followed each year since. On this first occasion one of the amateur radio units spotted—and dispersed—a gang of boys about to bombard a local greenhouse with rocks. Another unit returned a small, lost boy to his father. Another recovered a misplaced bicycle.

The experience gained in actual operations such as this proved of real value when a cloudburst inundated the greater Chicago area last October 10. While the use of the work "flood" here no doubt would draw sardonic comments from hams who have tangled with an Ohio River emergency, nevertheless hundreds of homes in the area had water in their basements and living rooms, and there is hardly any other way of describing the situation.

Without prior warning, the LaGrange Park CD group went into action with its base station and three available mobile units. Each car carried a load of firemen whose job was to turn off the gas escaping in flooded basements; where electrical hazards were found the CD radio cars reported them to the base station at the village hall, and word was relayed to an electrical crew.



Everyone is familiar with the uniform equipment. Here W9KMT, CD Communications Section Chairman, is shown operating Clark's mobile unit, LP3, a typical installation. (photo courtesy Motorola)

The CD cars operated for almost 12 hours straight under the worst conditions, yet throughout the entire time 100% radio contact was maintained with all units. Several non-amateur relief operators who, under R.A.C.E.S. regulations can operate with a Restricted Radiotelephone License, helped keep the emergency net going. The simple, reliable performance of the commercial units allowed them to perform like veterans.

Conversion of the T-69-20 series transmitters is extremely simple. Most can be put in operation merely by plugging in a 7 Mc. crystal that hits ten meters. Some requires lowering the final tank frequency, which is easily done by squeezing and tieing turns with lacing cord. Others which operated in the old 30 and 40 Mc. police channels require new coils the same size but with two or three additional turns.

Although such equipment is widely used throughout the country, there may still be some who are not aware of the modest cost involved, which usually is less than the cost of the parts alone, were one to build the equipment himself.

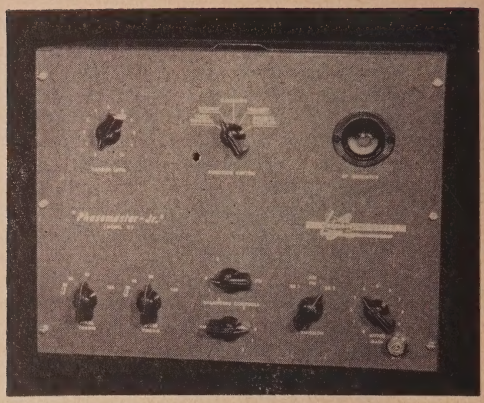
Each Motorola T-69-20A transmitter and P-8083 power supply combination in use by LaGrange Park CD cost only $50, purchased used in an "as is" condition, and similar deals frequently can be made to obtain equipment from the manufacturers.

Motorola, typical of commercial two-way radio equipment manufacturers, makes its trade-in equipment available. These units generally can be purchased "as is" for reconditioning by the amateur group or the group can take advantage of a factory reconditioning process such as Motorola's, which puts the units in first-class condition before being sold.



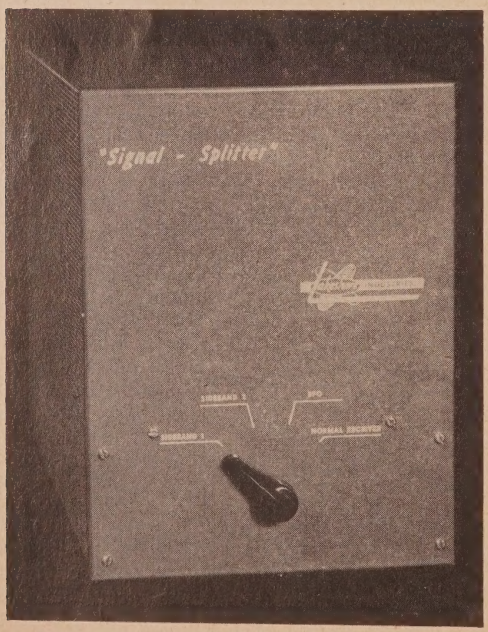
Herbert Clark, Jr. contacts a mobile unit from W9FKV net control, which controls five CD mobile units. A Motorola P-69-17A mobile receiver monitors the Chicago CD net frequency, and a spare T-69-20A transmitter is available when needed. (photo courtesy Motorola)

SSB MOBILE



Lakeshore Industries Phasemaster Jr. Model C SSB transmitter for mobile operation.

Mobile operation used to be a frustrating thing in general. The low power and inefficient antennas that go with mobile operation generally often lead to broken QSO's and a dismaying proportion of calls to answers. Those that have tried mobile SSB operation have found a good answer to his situation. The power advantage, improved reception characteristics and break-in techniques of SSB all work in the favor of the mobile operator with the result that almost every QSO is 100%.



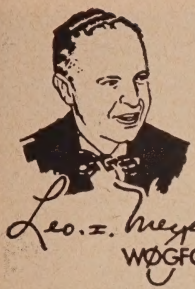
Lakeshore Industries Signal Splitter for SSB reception.

Lakeshore Industries has introduced a mobile version of their popular "Phasemaster Jr." SSB transmitter. It only takes a few minutes to put it in your car and load it into your whip. (Well, it took me about an hour, complete with making up a new power cable).

My rig loaded immediately into my 75 meter whip and the first station called came right back! Now that's the way mobile operation should be. Ask any SSB mobile station how they like it compared to trying to fight it out with the AM boys. After just a small sample of mobile SSB I predict that it is going to be mighty popular in a hurry.

Reception is not any great problem either. I am using the Gonset Super-Six and Super-Ceiver combination and have very little trouble with the BFO drifting. The Super-Ceiver has an RF gain control on it which is important for SSB reception. I expect before long to have one of the Lakeshore Signal Splitters installed in the car too for even better reception. The unit has been doing a terrific job with the regular home station receiver, but now that summer is about here I think that it will be of more use in the car. See you on SSB.

W2NSD



Use This Checklist . . .

FOR COMPLETE INFORMATION ON THE *Best Buys* FROM *the World's Most Personalized Radio Supply House !*

The NC-98
ONLY $8.19
per month
Pay Just $15.00 Down

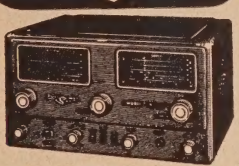
Top-notch value! Now, for the first time, a crystal filter, an S-meter, electrical bandspread, a large, easy-to-read slide rule dial, an RF stage and 2 IF stages — only a few of its many fine features.

National NC



CASH PRICE: $149.95

National NC



CASH PRICE: $119.95

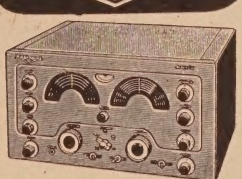
The NC-88
ONLY $9.54
per month
Pay Just $12.00 Down

Built-in speaker, advanced AC superhet circuit, tuned RF stage, 2 IF stages, 2 hi-fi audio stages with phono input. Separate hi-frequency oscillator. Many, many other features. Ask us for complete specs.

The NC-183D
ONLY $21.78
per month
Pay Just $39.95 Down

Designed for maximum sensitivity and selectivity. Dual conversion added to IF system with 1720 kc. first conversion frequency. Special push-pull, high fidelity audio system incorporated. Includes all time-tested features of the NC line.

National NC



CASH PRICE: $399.50

SPEAKER NC-183TS . . . $16.00

We Stock the Complete Line of Famous National Receivers. Write for Detailed Information Today.

FREE 1955 CATALOG

Tells the Complete Story On Over 15,000 Items of Top-Notch Equipment for the Amateur, Serviceman, Experimenter, Industrialist and Hi-Fi Enthusiast.



All Prices Subject To Change Without Notice!

Rush me the Following Information Immediately. Also Quote me the Trade-In Value On Your:

_____ (WRL Eqpt. Desired)

For My: _____ (Present Equipment)

	I want full information on National's NC-98.
	I'm interested in the NC-88.
	Send Details on the NC-183D.
	I'd like a copy of your 1955 catalog Send me your latest free list of reconditioned equipment with the 90 day factory new guarantee. I'm interested in saving up to 50%.
	I'd like your giant size (3'x4') wall type radio map of the U.S.A. I'm enclosing 25c in cash.
	Send full details on your 65 watt, completely bandswitching Globe Scout Transmitter.
	Send full details on your 500 watt completely bandswitching Globe King Transmitter.
	Tell me about your E-Z Pay Plan where I need only 10% down on any equipment I wish to buy.
	I'm interested in your Novice Kits. Please forward all details.
	Include info on the National HRO-60.
	Include info on National's SW-54.
	Include info on the NC-125.

Name: _____

Address: _____

City and State: _____

WORLD'S MOST PERSONALIZED RADIO SUPPLY HOUSE

World Radio LABORATORIES



3415 W. BROADWAY, CO. BLUFFS, IA., Phone 2-0277

S-Meter and Crystal Marker for mobile receivers

M. G. Bullock, WØAJU

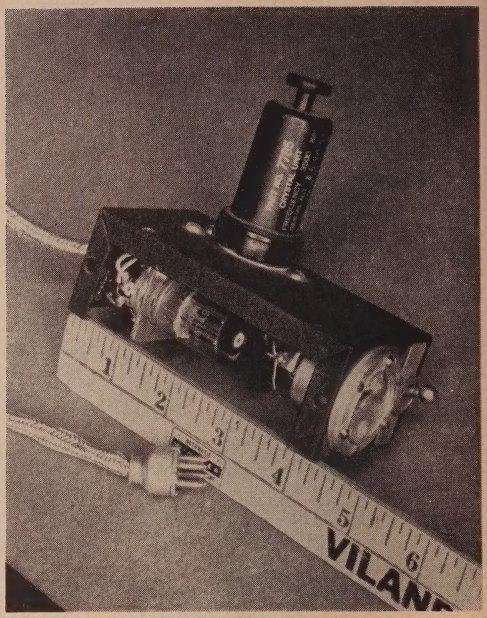
Users of the Gonset Super-ceiver can easily add an external S-meter and crystal marker in the small package shown here.

The crystal marker is very useful to accurately calibrate the Gonset Super-6 converter on the various bands (via the trimmer on the converter). By using the BFO it also serves to double-check the accuracy of the transmitter VFO on the various bands. Considering the exposure of the VFO to vibration and severe temperature variations, the crystal-marker check is good insurance against possible greetings from you-know-who for emitting a signal on the wrong frequency.

The S-meter is really more useful in peaking the antenna for various bands, or in trimming up the converter-receiver combination for maximum performance. Actually little use is made of the S-meter in mobile operation for rendering signal reports since the eyes should be kept on the road.

Luckily, an accessory socket (SOC4) at the rear of the tuning-head of the Gonset Super-ceiver provides convenient connections for AVC, GND, B+ 180 V., and heater voltage. The B+ will provide approximately 5 ma. continuous (adequate for the S-meter) and approximately 25 ma. for a few seconds (for the crystal marker if only used for a short duration).

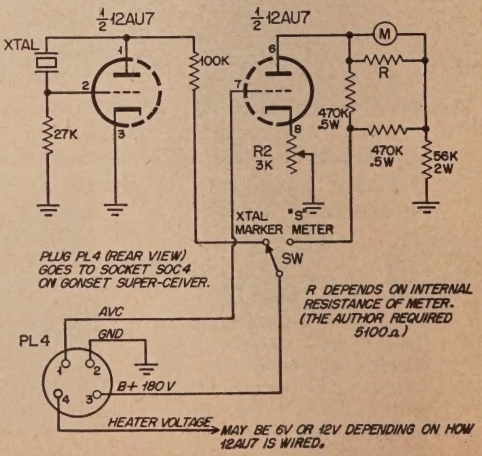
This unit uses a twin-triode 12AU7 tube and a small one-inch-diameter O-1 ma. meter to save space. The crystal is mounted externally to allow for easy change. The B+ toggle switch, mounted adjacent to the S-meter, switches the unit from S-meter to crystal marker. The unit mounts on the steering post adjacent to the converter. The small cabinet measures only 4¼" long, 2¼" wide, and 1½" high, a standard catalog item.

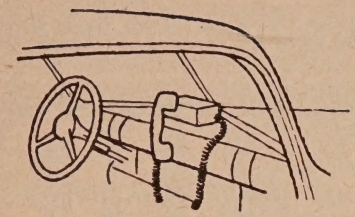


A 3.5 Mc. crystal from a Command transmitter is excellent for accurately spotting 28, 21, 14, and 7, Mc. A 3900 KC PR crystal in the same socket spots the center of the 75 meter 'phone band. A regular 8-pin octal socket, properly wired, serves well as the crystal holder.

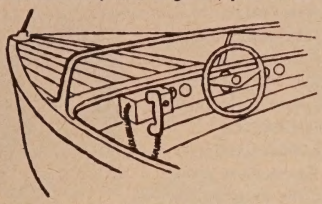
Adjustment: Turn the r-f gain to maximum, pull the tube and adjust resister R across the meter for maximum reading. Replace the tube, switch on the BFO and adjust R2 for a zero reading. Now switch off the BFO and the meter should respond to the incoming signal.

I don't claim this as a new circuit, though possibly the application is new. It's simple and very useful. Try it and you'll like it.

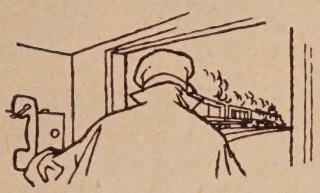




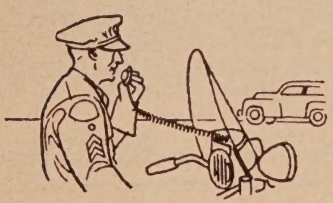
Private mobile phones, taxicabs, trucks, ambulances, fire engines, patrol cars.



Boating, police and fire patrol boats.



Railroads



Police

CANNON PLUGS

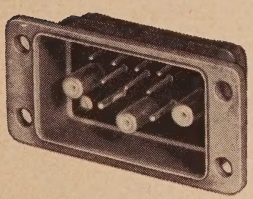
...best for mobile communication circuits!

You'll find many items for mobile communication needs among the 20,000 different electric connectors in the Cannon line... each one carefully engineered for compactness, positive contact, quick disconnect... each design proved in the field by thousands of users.

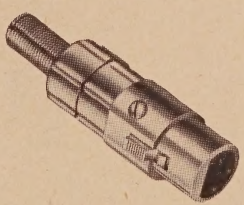
Each series can be supplied with control, audio, and power circuit contacts. Audio connectors available through radio distributors everywhere. Engineering representatives in all principal cities available to you to discuss your engineering problems. See your phone book.

For highest quality, dependability, top service, always CONNECT with CANNON.

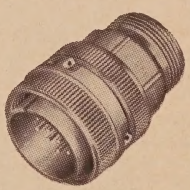
TYPICAL CANNON MULTI-CONTACT CONNECTORS FOR MOBILE USE



Rack-panel-chassis



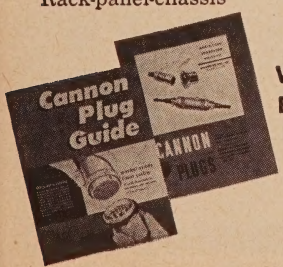
Latchlock audio



Military approved



Power, control, audio



WRITE FOR CANNON "PLUG GUIDE" AND AUDIO CONNECTOR BULLETIN... TODAY! REFER TO DEPT. 150.

Since 1915

CANNON ELECTRIC COMPANY, 3209 Humboldt Street, Los Angeles 31, California. Factories in Los Angeles; East Haven; Toronto, Canada; London, England.

CANNON ELECTRIC

the Novice Shack



Conducted by
Herbert "Herb" S. Brier, W9EGQ
385 Johnson St., Gary 3, Indiana

Sections 12.132 and 12.133 of the Federal Communications Commission regulations governing amateur radio specify technical standards for the type of signals that amateur transmitters may emit. Shorn of technical language, they mean signals should be stable, occupy a minimum of space in the band, and be free of spurious content.

Not by any stretch of the imagination do all signals heard in the amateur bands meet these standards. Some are broad and unsteady; they drift and they gurgle; they click and they chirp. There are two explanations for such signals. A few amateurs do not care how their signals sound or how much unnecessary interference they cause. Others have never heard their own signals; therefore, they do not realize how they sound.

Of course, you can't tell them apart when they get FCC discrepancy-reports on their signals. They all wail, "Why didn't someone tell me? I always get good reports." They are usually telling the truth, too. Most amateurs give quality reports on the basis of, *"If you can't say something good about a signal, don't say anything."* Therefore, unless a signal is really bad, it will probably get pretty good reports. The only certain method of knowing exactly how your own signal sounds is to check it yourself.

This month, I will discuss how to monitor your own signal and how to improve its quality, should you discover that it could stand improvement. You already have the equipment needed—your communications receiver.



Paul Johnston (16), WN9OPD, Maywood, Ill. In 22 days of operation, Paul has had 101 radio contacts in 30 states, mostly on 7 Mc. Transmitter is a Stancor ST-202A running 75 watts, the receiver is an SX-42, and the antenna is a Windom.

To use a receiver as a monitor, you must reduce the strength of the signal it picks up from your transmitter to a level that does not overload it. With the average communications receiver, this is easily done by removing the receiving antenna, shorting the antenna and ground terminals together with a short length of wire, and retarding its sensitivity control. Less-expensive receivers may still overload under these conditions through excessive signal pickup via the power cord or by direct pickup by the components in their radio-frequency sections. Moving them further away from the transmitter will help.

Checking Novice Transmitters

Once you have eliminated receiver overloading, you can start evaluating your signal. With the receiver beat oscillator on, the signal picked up from the transmitter should produce a clear whistle,



Members of the Radio Club of the Polytechnic High School, Riverside, California and their sponsors. Standing: KN6ITG and W9VYR (sponsors), KN6JAD, K6DLY, KN6EJA, KN6JDJ, and KN6EJC. Seated is KN6JHQ. W9VYR has been a Ham for 19 years, but the others got their Novice licenses in December. K6DLY now has his "General," and the rest are just about ready for theirs.

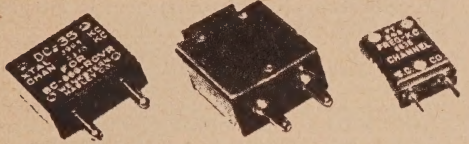
CRYSTAL PACKAGE SALE!

Genuine Govt. Surplus Crystals! Same day shipment! Assorted frequencies!

100 GOVERNMENT SURPLUS CRYSTALS ASSORTED FREQUENCIES

Same Day Shipment!

WARRANTY: All crystals in Packages Number 1, 2, 3 and 4 are GENUINE government surplus crystals manufactured by well-known COMMERCIAL COMPANIES such as Bliley, Piazza, Monitor, John Meck, Cecor, Telicon, etc. U.S. CRYSTALS, INC. GUARANTEES YOUR SATISFACTION OR YOUR MONEY BACK IN FULL!



SPECIAL PACKAGE DEAL NO. 1 — $9.95

Satisfaction guaranteed!

Regular value $69.00!

PACKAGE DEAL NO. 1 CONSISTS OF:

80 ..... FT-243 10 ..... FT-171

10 ..... DC-34-35 Shipping wt: 5¾ lbs.

100 CRYSTALS MIXED FREQUENCIES! AT LEAST 20 HAM BAND FREQUENCIES! FOR OPERATION ON 160, 80, 40, 20, 10, 6, AND 2 METERS ON EITHER FUNDAMENTAL OR HARMONIC FREQUENCIES.

SHIPPING TERMS: Check your postal zone and add sufficient postage to cover cost of mailing.

SPECIAL PACKAGE DEAL NO. 2

GUARANTEED TO OSCILLATE! Consists of 5 choice crystals:

1—ZENITH MODEL DC-18-A 1,000 KC CRYSTAL: Built-in 12 V. automatic thermostatic controlled heating unit. 8-pin octal base. Regular value $5.95
1—SR-5 BLILEY. 10,000 Kc. Reg. value 1.99
1—FT-243. 5,000 Kc. Reg. value 1.99
1—FT-241, 200 Kc. Reg. value 1.99
1—FT-241. 500 Kc. Reg. value 1.99
Total value $13.91

SPECIAL PACKAGE DEAL NO. 2 PRICE **$8.95** POSTPAID

Satisfaction guaranteed!

SPECIAL PACKAGE DEAL NO. 3

FOR SINGLE SIDE BANDS!

36 FT-241 LOW FREQUENCY CRYSTALS

Frequency range from 370.370 Kc. to 435.185 Kc. in steps of every 1.852 Kc. approximately. Channels: 0 to 35.
Regular vlaue $14.04

SPECIAL PACKAGE DEAL NO. 3 PRICE **$3.95** POSTPAID

Satisfaction guaranteed!

SPECIAL PACKAGE DEAL NUMBER 4

THE BIGGEST CRYSTAL BARGAIN EVER OFFERED! CONSISTS OF:

1 SPECIAL PACKAGE NO. 1. Regular value $9.95
1 SPECIAL PACKAGE NO. 2. Regular value 8.95
1 SPECIAL PACKAGE NO. 3. Regular value 3.95
Total value $22.85

SPECIAL PRICE FOR ALL 3 PACKAGES ..... **$19.95** POSTPAID!

Satisfaction guaranteed!

Sensational Package Offer of

3 RECEIVERS

COMPLETE WITH TUBES AND DYNAMOTORS!

75 MC. RECEIVER

Shipping Weight 14 lbs. Used, clean condition. Ea. $4.95

COMMAND RECEIVER

6-9 MC. with tubes. Used, good cond. Wt. 10 lbs. Ea. $4.95

ARC-5 RECEIVER

3 to 6 MC. Less dial plate. Shipping wt. 10 lbs. Used, clean. Ea. $4.95

Regular value $12.85

SPECIAL! ALL 3 RECEIVERS **$9.95**

Shipping weight total: 40 lbs., via railway express freight charges collect.

MISCELLANEOUS SPECIALS!

2 MFD. 6,000 V. CONDENSER. Used. Ea. $6.95
2 MFD 5,000 V. CONDENSER, Pyranol. Brand new Ea. $5.95

PLATE TRANSFORMERS

American Trans. Co. INPUT: 115 VAC, 60 cycles. 525 KVA. PRI. 2240/1120 V. SEC. 500 MA. Brand new! Special. Shipping weight: 55 lbs **$14.95**

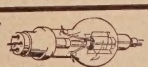
NEW CODE PRACTICE TAPE

Reels No. 10, 11, 13, 14. Each ..... $1.25 (Wt. 1½ lbs ea.)

G.E. PYRANOL CAPACITOR

MU-F 660 VAC—1800 DC. New.
Ship. wt. 3 lbs. Each **$3.95**

RK-65 ideal for SINGLE SIDE BAND



500 W. CARRIER RAYTHEON TETRODE TRANSMITTING TUBE

Ideal for use in grounded grid circuit. Requires only 6 W. grid driving power. Operates similar to 4-250A. (See Radio Ham Book for complete details.) Guaranteed. Brand new. Original box. Ship. wt. 3 lbs. **$9.95**

NOTE: All orders must be accompanied by check, cash or money order with payment in full. No C.O.D. Only freight collect charges permitted. Check your postal zone and add sufficient postage for items other than those sent postpaid. Postpaid shipments made in U.S. and possessions only. All items F.O.B. Los Angeles, subject to prior sale and change of price without notice. California buyers: add sales tax.

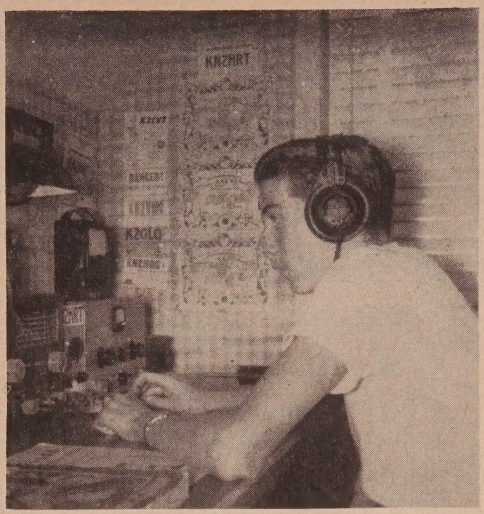
INDIVIDUAL CRYSTALS!

For complete list of selected crystals—your choice of frequencies—Novice Band, FT-243, Single Side Band, Miscellaneous and Ship Band frequencies see . . .

PAGE 113, MARCH, 1955 RADIO & TV NEWS
PAGE 42, MARCH, 1955 C.Q. MAGAZINE

U. S. CRYSTALS, INC. DEPT. C

805 S. UNION AVE. LOS ANGELES 17, CALIF.



Bill Riley, KN2HRT, Chatham, New Jersey, had worked 15 states on 40 meters when this picture was taken. Bill's receiver is an NC-88, his transmitter is an AT-1, and the antenna is a 65-foot doublet.

without any trace of roughness, in the phones. The whistle should be perfectly steady.

With the beat oscillator off, there should be no audible signal in the phones, except possibly a slight "rushing" noise. No hum, whistle or buzz should be heard.

The likelihood of a crystal-controlled transmitter developing an unsteady signal is rather remote, unless the crystal is defective or the oscillator tube goes bad. Either could happen, but the symptoms would probably be a complete loss of transmitter output. If the crystal is actually controlling the transmitter frequency, bumping the transmitter or adjusting its control will have little or no effect on the output frequency.

The easiest way to check a crystal is to try it in another transmitter or compare its operation with that of another crystal in the same transmitter.

Ripple on the signal is more likely. Temporarily bridge an additional filter condenser across the output terminals of the transmitter power supply. If this eliminates the ripple, solder it permanently in place. However, if the ripple on the signal gradually increased over a period of time, it is a probable indication that the electrolytic filter condensers in the power supply have dried out and lost most of their capacity. Replace them with new units of the same voltage and capacity ratings as the originals.

A defective tube, especially a rectifier, can also cause undesired modulation on a signal. Sometimes, half of a rectifier tube may stop functioning, and the tube acts as a half-wave rectifier, rather than as a full-wave one, greatly increasing the percentage of ripple component in the power-supply output voltage.

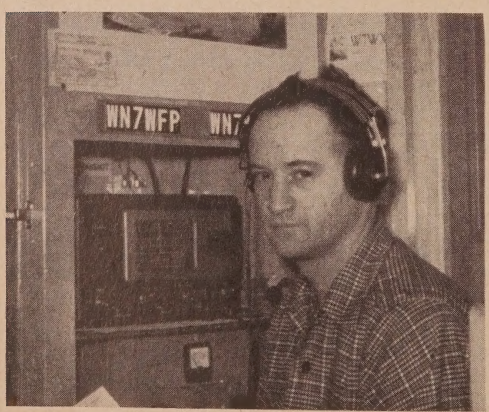
Chirpy keying is the most common defect of Novice transmitters. If chirps are present, the signal will go "oop-cheep chee-oop" every time the key is pressed or released. A chirpy signal is unpleasant to listen to and is difficult to copy, especially on a selective receiver.

In a crystal-controlled transmitter, chirps are usually associated with oscillator keying. Many Novice transmitters contain two stages, an oscillator followed by an amplifier, both of which are keyed simultaneously. When the key is pressed, the transmitter is on the air. When it is released, it is off the air. Unfortunately, this simple keying system encourages chirps, especially on the higher-frequency amateur bands.

If the chirps are excessive, the simplest cure is to allow the oscillator to run continuously during transmissions. To do so, disconnect the oscillator tube from the key jack and connect it to the common B— line in the transmitter. Of course, if the transmitter previously keyed without a keying chirp, it is not necessary to change the keying method. Find out what caused the change. The most-likely cause is a weak oscillator tube.

It is obviously impossible to avoid keying the oscillator in single-stage transmitters. But their keying is usually at least passable on 3.7 Mc when good, active crystals are used. In fact, it is amazing how much difference there is in the way different crystals key.

[*Continued on page 80*]





One station, two operators. The husband and wife station of TV, WN7WFP, and Marianna, WN7WFO, Kearney, Portland, Oregon. They live in a house trailer without enough room at the operating position to snap them both in the same picture. Marianna is the artist.

NOW HENRY DARES TO GIVE YOU THIS GUARANTEE

100% SATISFACTION
or Your Money Back at end of 10 day Trial



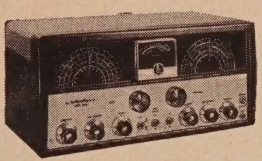
Bob Henry, WØARA Butler, Mo.



Ted Henry, WGUOU Los Angeles

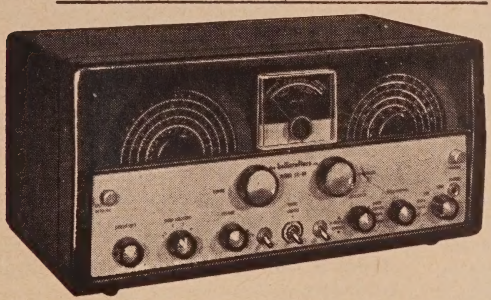
hallicrafters

***NEW* SX 96**



For top performance with extra pull power and ability to tune in stations.

$25.00 Down
18 monthly payments of $13.60
—$249.95 Cash Price.



SX99—$15.00 down
18 monthly payments of $8.00—$149.95 Cash Price

MODEL	CASH DOWN	20 MONTHLY PAYMENTS	CASH PRICE
S38D	$ 5.00	$ 2.45	$ 49.50
S94	6.00	2.97	59.95
S95	6.00	2.97	59.95
S85	12.00	5.94	119.95
S93	10.00	4.95	99.95
SX96	25.00	12.37	249.95
SX62A	35.00	17.32	349.95
SX88	67.50	33.41	675.00

Only Henry gives you

- **Top Trades**
- **Only 10% Down**
- **Easy Terms**
- **Fast Delivery**
- **Personal Service**
- **Low Prices**
- **Complete Stocks**
- **We *want* you to be satisfied. Ask any Ham about Henry. And Henry has the new equipment *first*.**

Write, wire, phone or visit either store today.

Butler 1, Missouri
Phone 395

Henry Radio Stores

BRadshaw 2-2917
11240 West Olympic Blvd. Los Angeles 64

the YL's Frequency





Cover girl W6NAZ, Lenore Kingston, Conn., goes mobile in a Jaguar. (Photo by W6VGQ)

Our cover girl for this special mobile issue is well known in both amateur and professional radio fields—W6NAZ, Lenore Kingston Conn. The mobile gear for W6NAZ consists of a Morrow converter; a Babcock DX-Mitter (35 watts) on 80 to 10 meters, crystal controlled; a headset which leaves both hands free for driving, and a Master Mount antenna with changeable coils. Lenore says its chief charm is its good record as XEØNAZ and adds: "That expeirence (mobile in Mexico) led me to believe the FCC should give each Ham, on his birthday, permission to operate outside the 'American' band—hi! Nothing wrong with low power in Ham radio that a clear channel won't cure!"

Lenore is no new-comer to these pages, as we have followed her career with much interest over the years. A former vice president of YLRL, Lenore was a charter member of the club, having joined in 1939, the year she got her first ticket, W9CHD, in Chicago. When she married W2MSC, a TV engineer, she became W2NAZ in New York City. Since late 1946 they have made California their QTH (Lenore's home originally) where Joe has continued as a TV engineer. Lenore, herself, has starred in a number of TV shows and is currently doing quite a bit of free-lance work. Lenore has been in the theatre since she was a little girl —on the stage, in movies and on network radio shows before TV. She is a writer as well as an actress.

Monitored by

Louisa B. Sando, W5RZJ

Jicarilla Apache School, Dulce, New Mexico

Formerly AARS, W6NAZ enjoys traffic, has 35 wpm CPC, is ORS, has WAC, and has handled many many personal QSOs. Her home rig is a kilowatt, phone and CW, on all bands. Lenore has just completed editing the new *YLRL Directory*.

ZS YLs

The YLs of South Africa have always been of special interest to us stemming no doubt from the U.S. visit of ZS6GH, Diana, back in 1947. As far as we know, they are the only YLs, outside of W-land, to have an organized YL club. Formerly known as the South African YLRL, this club went out of existence in 1951, and the following year the South African Women's Radio Club was formed, with ZS2AA, Iris Hayes, as organizing president. The club publishes its own monthly bulletin, *YL Beam*, and is affiliated with the SARL.

The SAWRC Council is held by a different division every year, and Iris says they find this system works exceptionally well—no more QRM! Last year the council was held by district 1. This year the council includes ZS2AA, Iris, president; ZS2BR, Vi Cruickshanks, vice president; ZS2FR, Stella Brown, secretary; ZS1MU, Pat Woodland, editress of *YL Beam*, with ZS1NQ, Gwen Smith, co-editress.

ZS2AA, by the way, was the very first YL station in South Africa. It started back in 1937. Iris says she was then a "lonely farmer's wife" (her OM is a sheep farmer and they have 16,000 acres in four different ranches). One day she happened to listen in on a QSO and heard ZS5CJ ask for reports and give his QTH. Iris wrote him

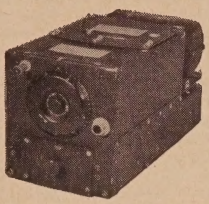
1st International YLRL Convention

Date: June 24-27, 1955
Place: Miramar Hotel, Santa Monica, Calif.
Sponsors: Los Angeles YL Radio Club
Chairman: W6UHA, Maxine Willis

Chairman W6UHA reports the reservations are beginning to roll in. To date (early March) these YLs (other than 6th district) have expressed their intention of attending the YLRL convention: W3's CDQ, OQF, LSX/Ø; W4's LAS, UDQ, VTO, ERD, TTM; W5's WVE, ZUD, SPV, RZJ; W7s SBX, PUV, RVM, PUV, LXQ; W9RUJ; WØ's: AK, TQQ; VE2AOB; KH6's AFN, AFL; KL7RN. Will you be there?

ESSE SPRING SPECIALS!

BC-455-B RECEIVER—$5.75



Ideal receiver for mobile or fixed operation. Excellent sensitivity and frequency stability are found in these receivers. New surplus release order—new supply will not last long at this price. Complete with tubes and guaranteed. Less dynamotor.

Brand New — $7.50
Good Used — $5.75

Brand New
R-1/ARR-1 RECEIVER — $2.95



Described in "Radio TV News" Jan. 1949 for use as 220 Mc. converter. Essentially a two stage RF acorn tube superhet converter as it now stands. Small enough for mobile only 3½"W x 3"H x 10"D. Rugged Aluminum construction. Uses four 954 acorn tubes included. Filaments now operate on 12 or 24 volts by merely throwing switch in unit or very easily modified for 6 V. operation. Dial is calibrated in range of 234-258 Mc. Operation can be changed for use from 50 to possibly 300 Mc. Also, the ARR-1 could be used for a preselector. Wgt. of unit 4 lbs. Cover not shown but included. Complete with conversion as written in above mag. Brand new demilitarized units.

Price, Brand New — $2.95

ARR-1 Antennas for above receiver and frequencies—NEW **$1.25 ea.**

Co-axial antenna relay for use with above or other transmitter-receiver combinations—NEW **$1.25 ea.**



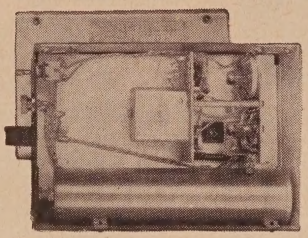
BATTERIES

3-TA5-9B—Manufactured by Exide Battery Co. for aircraft. Size 5" x 5" x 9" overall. Shipping weight 15 lbs. New dry charged. Fill with 1.265 sp.g. sulphuric acid. Price .....ea. **$4.95**

DELCO MODEL 6TN23 12 V. 70 AH

Brand new dry charged 12 V. 70 AH storage battery in hard rubber case size 10½" x 10" x 9" h. Ideal for boat use or auto. Keep one around the shop for your experimenting or service work. Wt. 72 lbs. **Price—$10.00**

ARR-1 TEST OSCILLATOR — $4.95



Operates in range of 234-258 mc. using goldplated cavity. Adapt this unit for a transmitter for companion to receiver listed this page. Circuit uses two type 955 acorn type tubes included. For battery operation using two 45 V. B and one 6 V. A batteries (not incl.). Houses in alum. cabinet size 6¾" x 7" x 9¾". Wt. 5½ lbs. Circuit diagram pasted to back of cabinet.

Good used, price..... **$4.95**

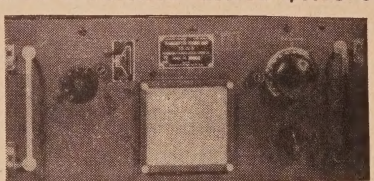
Brand New **$6.95**

BRAND NEW 12 V. DYNAMOTORS



DM-40 Input: 12-14 V. 3.4 A. Output: 172 V. -138 MA. Here is an ideal dynamotor to adapt to mobile uses on the new 12 V. cars. Don't pass up this buy even if your intended uses are not immediate. Size 6¾" L x 3½" dia. 4" lead with 6 pin Jones plug. Shipping weight 7½ lbs.
New Price.....ea. **$2.75**

TU-10-B TUNING UNITS $1.95 ea.



Used in the BC-375 transmitter, but the most favorable and acceptable piece of surplus gear for obtaining good cheap useable parts. The TU-10-B contains three double spaced transmitting type variable condensers of 16, 27 and 7 plate varieties, 3 mica transmitting type micas, 2 isolantite shaft couplings, antenna coupling switch, two precision vernier dials, chokes, inductances and other useful parts. Better order plenty before supply is exhausted again. TU-7, and TU-26 also in stock, same price. Ship wt. 13 lbs., size 7⅝" x 16½" x 7½".

Used — $1.95 ea.
New — $2.50 ea.

REMIT SHIPPING CHARGE AND INSTRUCTIONS WITH ALL ORDERS, OTHERWISE ORDER WILL BE SHIPPED EXPRESS COLLECT. ALL ITEMS GUARANTEED TO YOUR SATISFACTION OR MONEY REFUNDED IF RETURNED PREPAID WITHIN 10 DAYS OF RECEIPT. MINIMUM ORDER $5.00.

ESSE RADIO CO.

40 WEST SOUTH STREET
INDIANAPOLIS 25, IND.



ZS2AA, Iris Hayes, South Africa's first YL op, currently president of the South African Womn's Radio Club.

and by return mail came his letter suggesting that she become a YL operator. Soon she set out to learn CW and three months later, August, 1937, she became S.A.'s first YL operator. Iris says she was thrilled with herself, but that her OM thought she was "quite bats!"

ZS2AA's first transmitter was 2½ watts! The second was 10 watts. Both worked off batteries and a Mallory Vibropack. After the war Iris got a 50-watt rig using a single 6L6 into an 807 in the final, VFO, an SX-28 receiver and two rhombic antennas. She operates on 10, 20, 40 and 80 meters. To date ZS2AA has worked 97 countries (73 confirmed). In '49 she worked dozens of W stations (says she can't even hear them now), and is longing for the DX to open up again. She holds WAC and enjoys local contests.

Iris' other hobbies include stamp collecting, and she has a collection of native bead work and other native crafts. She enjoys music, playing jazz on the piano and classics on the cello. She has two married daughters and three little grandchildren. In addition, Iris is president of her local Red Cross branch, is president of the Cape Province Women's Agricultural Assn. and she serves on five other committees. With all these activities and Hamming as well, Iris finds she is no longer a lonely farmer's wife!

Mid-West YL Convention

Just a reminder of the 5th Annual Mid-west YL Convention, details of which appeared here last month. Dates are May 20-22; place, the Allerton Hotel in Chicago. Contact W9SJR, Bernice, for further information.



W9AYX, Jackie Toppe, one of the better-known W9-YL operators.

At one of the earlier Mid-west conventions, the W9 YLs at the get-together chose W9AYX, Jackie Toppe, as their outstanding YL. For one reason or another her story didn't get into these pages; now we are happy to present W9AYX.

Jackie's OM, W9QFL, gets the credit for her start in Ham radio. George has been a Ham since 1925, and Jackie says that for 14 years after they were married she sat in the background and did the odd jobs he should have been doing. Then in May, 1947 she got her license, and since then he's not only helped with all the jobs but she's taken over most of the operating as well!

W9AYX gained fame at the time of the Gatti-Hallicrafters expedition in Africa, arranging for many personal QSOs for members of the expedition with family or friends back home, via the expedition's mobile station VQ4EHG. The expedition's photographer was from Milwaukee, then Jackie's QTH, and with Jackie's help he often spoke to his XYL and 9-yr. old son. Jackie was dubbed an "honorary member" of the safari and she talked with members a few hours after the expedition reached the top of Mt. Kilimanjaro, highest African peak. From Commander Attilio Gatti, famous African explorer, she received a pith helmet in recognition of her work as unofficial liaison officer between the expedition and Milwaukee firms providing ararngements and equipment.

Another satisfying experience for Jackie was when she arranged a personal QSO for Father Edward Misik, a missionary in the Admiralty Islands, with his mother in Milwaukee. During the Korean War Jackie relayed countless messages between soldiers and their families. She also likes rag-chewing and DX, and has worked 118 countries, all on 10-meter phone.

Now at Barrington, Ill., W9AYX-W9QFL, operate on 10, 20 and 75, having converted part of their garage into a Ham shack. Jackie is a member of MARS and she and her OM also operate mobile. Completing the Toppe family are two jr. YLs, 15 and 20.



W1OAK. Ann prefers CW.

Ann Chandler, W1OAK

Though many YLs prefer phone, a goodly number are dyed-in-the-wool CW operators. One is Ann Chandler, W1OAK, of Barre, Vt., who received her license in 1941. W1OAK operates on 80 CW and is active in the nets —VTN, TRN, EAN. She is RM for Vermont, has ORS, A1-op and RCC certificates. Other hobbies include a dachshund named Wiener, painting, stenciling and bronzing, needle point and gardening. Ann is one of a family of Hams—her OM is W1MMN, her brother is W1KRV and her sister-in-law is W1QBJ

SOS

We're searching for information about women maritime radio operators. It does not matter whether they are still ship-board operators, or whether they served in that capacity in the past. Nor do we care whether or not they held amateur licenses as well as commercial. Any information about women marine operators will be appreciated. *Please* send this editor a note if you know of any women who are, or have been, maritime operators.—*W5RZJ.*

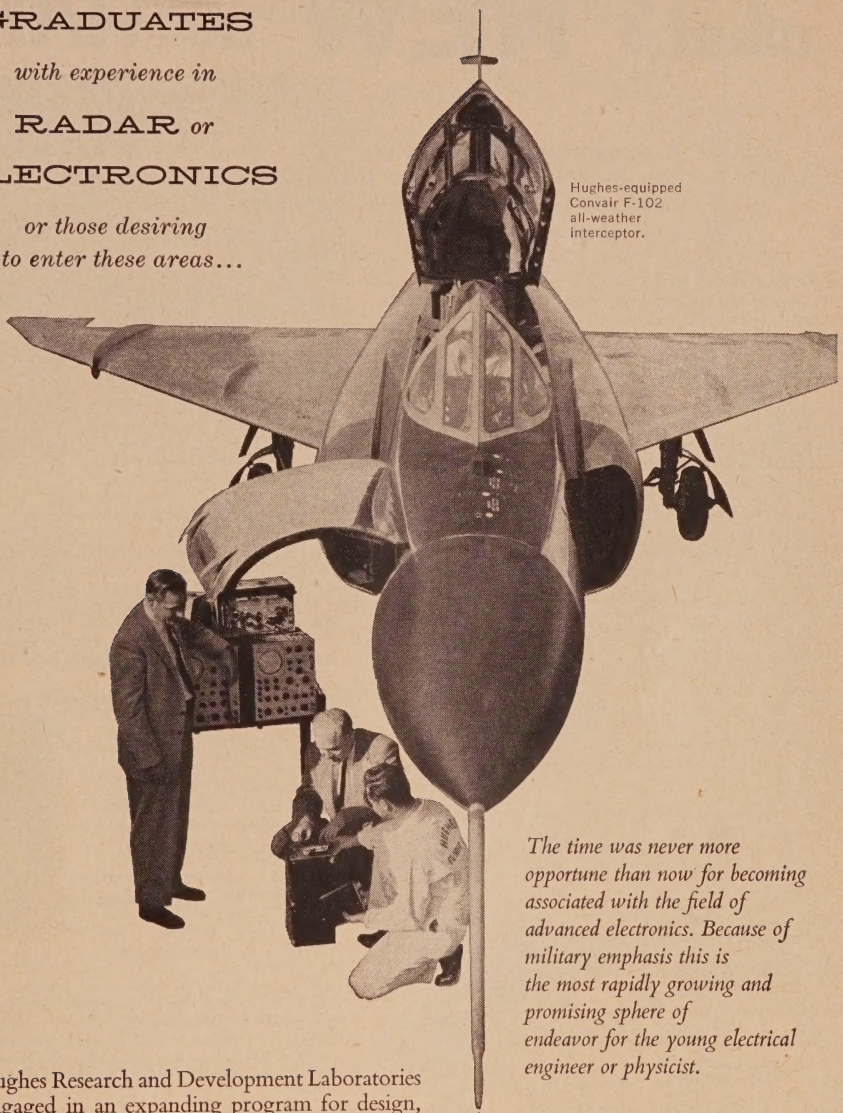
[*Continud on page 88*]

E. E. *or* PHYSICS GRADUATES

with experience in

RADAR *or* ELECTRONICS

or those desiring to enter these areas...



Hughes-equipped Convair F-102 all-weather interceptor.

The time was never more opportune than now for becoming associated with the field of advanced electronics. Because of military emphasis this is the most rapidly growing and promising sphere of endeavor for the young electrical engineer or physicist.

Since 1948 Hughes Research and Development Laboratories have been engaged in an expanding program for design, development and manufacture of highly complex radar fire control systems for fighter and interceptor aircraft. This requires Hughes technical advisors in the field to serve companies and military agencies employing the equipment.

As one of these field engineers *you will become familiar with the entire systems* involved, including the most advanced electronic computers. With this advantage you will be ideally situated to broaden your experience and learning more quickly for future application to advanced electronics activity in either the military or the commercial field.

Positions are available in the continental United States for married and single men under 35 years of age. Overseas assignments are open to single men only.

SCIENTIFIC AND ENGINEERING STAFF

HUGHES

RESEARCH AND DEVELOPMENT LABORATORIES

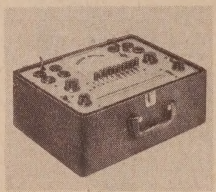
Culver City, Los Angeles County, California

Relocation of applicant must not cause disruption of an urgent military project.

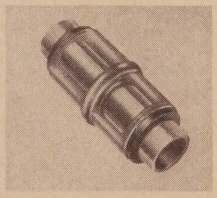
what's NEW in HAM RADIO

A comprehensive listing of late developments on the Ham Market, designed to keep the Radio Amateur well informed.

Now Hear This! The new RCA 5U4-GB, 6AF4-A and 6CG7 are on the market. This new 5U4-GB is a lulu. Remember how the old style 5U4 starts to poop out after a few months service when you really pour the coal to it? Well, this new bottle has a maximum peak plate current rating that is 48% higher than the old 5U4! Nuf sed! The 6AF4-A is a 7 pin miniature triode designed for use in TV sets, but mighty practical as a grounded-grid triode in the 144, 220 and 420 ham bands. Silver plated base pins, and twin connections for both plate and grid. Transconductance is about 7500. Sounds good enough to eat, huh? The 6CG7 is a 9 pin minature version of the old stand-by, the 6SN7. This should make a swell phase inverter to drive a pair of 2A3's in your next speech amplifier! For all the dope on these or any other RCA tubes, write to Tube Division, RCA, Harrison, N. J.

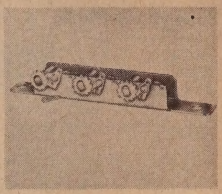


Here's a real good deal! A tube tester kit for less than $30! It is so designed that when the captains of industry come to the conclusion that a 9DJ8-GTB tube is just what is needed to prevent the industry from stagnating the tube tester will be able to test this new addition without a major overhaul job! Using a 4½" meter plus a line voltage compensator, the new Knight tube tester kit is priced at only $29.75 net, F.O.B. Chicago. For complete specifications, write to Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill.



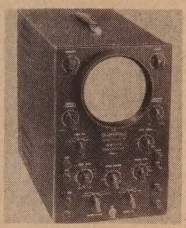
Now that you have popped all those gassy, surplus vacuum condensers, you might be interested in a cool deal. Dolinko & Wilkens, Inc., 1901 Summit Ave., Union City, N. J. is turning out a new line of heavy-duty vacuum capacitors, 32 KV rating. Just the thing for that California KW job. Most popular ranges are 250 mmfd, 100 mmfd, and 50 mmfd. Pyrex glass, copper seals, 100 ampere current rating—all the factors that make up an excellent high frequency vacuum condenser are incorporated in this new line. I bet if you wrote to Messrs. Dolinko & Wilkens they would really fall all over themselves to tell you the whole story of these little gems.

The Hams at Penta Labs, 312 North Nopal St, Santa Barbara, Calif. have perfected the new PL-6549 pentode. This tube is designed for top performance at plate voltages from 600 to 2000. The inclusion of a suppressor grid in the PL-6549 gives it excellent current division characteristics, and the screen power requirements are very low, making the tube well suited for mobile work at a plate voltage of 600 or 700 volts. Driving power is less than 0.8 watts for an output of 250 watts at 2000 plate volts. Not bad for a pee-wee bottle like this, is it? Better think about the PL-6549 when you design that dream rig!

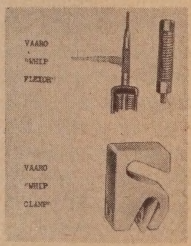


Here's an idea that the amateurs can well afford to swipe from the TV servicemen. It's called the Royal Giline Winch. This miniature winch may be placed in a set of guy-wires on a mast. Each guy wire passes over a separate ratchet, and wraps around an individual drum. A turn of the wrench on each ratchet produces the proper tension in each guy-wire. If a tower has, say, three guy-anchors, with three guys on each anchor, three Giline Winches are used at each anchor point, and all tension adjustments may be made by the separate adjustment points on the winch. (Funny, I want to keep saying wench. Wonder why?)

The Giline Winch is made of 12 gauge steel, heavily electroplated, and designed for heavy service. It is one of those fine California products, manufactured by the Royal Television Supply Co., of Modesto, Calif.



The Supply Division of the National Radio Institute (16th and You Sts., N.W., Washington 9, D.C.) have announced an inexpensive oscilloscope that has laboratory-quality features. This gadget is designed for TV-service work, so it will pass up to 4.5 mcs in the vertical amplifier. You Single-sideband boys on 80 meters should really go for a job like this, as the wide pass-band feature is a "must" item for SSB work. The 'scope has a sensitivity of .014 volts (RMS) per inch and an input impedance of 2 megohms. Voltage regulated supply, and sync circuits for positive and negative pulses, too! If you write to the Supply Division of NRI at the above QTH, they will be happy to send you a complete description of the 'scope. *Gracias, amigo.*

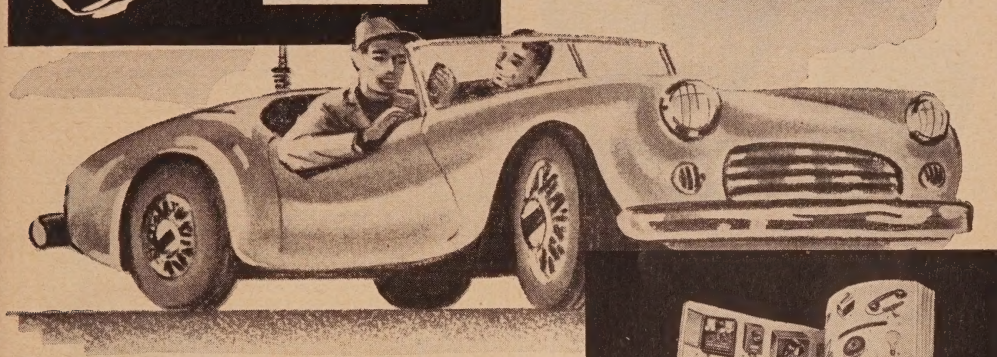


Ahoy, mobileers! The Vaaro Division of Davis Electronics out in sunny, sunny California have come up with some interesting little gadgets to delight the heart of the mobile enthusiast. First of all, we see a Whip-flexor, designed to keep the mobile whip vertical when eluding a speed cop at 90 per. Throw away the base spring and put the Whip-flexor above the loading coil and your troubles are over. Next, is a "Whip-clamp" to fasten the whip down to the car roof level so you won't pop the top section off when you put the jallopy in the garage. Drop a QSL to Davis Electronics, Box 1247, Burbank, California for the dope on these two items.

All the gear for the road



ALLIED has it in stock!



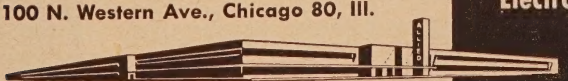
we stock all these famous mobile gear lines

Astatic	James Knights
Bliley	Mallory
Eldico	Master Mobile
Electro-Voice	Morrow
Elmac	RME (Div. E-V)
Gonset	Shure
Harvey-Wells	Ward
E. F. Johnson	Webster

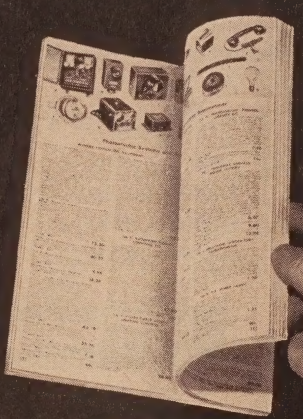
. . . and others

We're your dependable one-supply-source for *all* your mobile gear needs. Whether it's a tube of anti-static powder or a complete mobile installation, *we've got it in stock* for immediate shipment. Having all the gear all the time and backing you up with heads-up ham-to-ham service is our business. That's what has made us Amateur Radio's leading supply house. For your complete electronic supply needs, get and use the ALLIED Catalog. It's Free—just write to:

ALLIED RADIO
100 N. Western Ave., Chicago 80, Ill.



The Leading Amateur Supply House



you'll find it in the complete, up-to-date ALLIED CATALOG

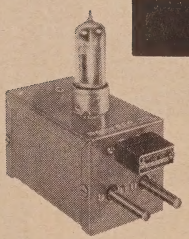
free: the world's most widely used Amateur and Electronic Equipment Guide



Now . . . for spot frequencies . . . the Bliley AX2 is supplied at any integral frequency desired in ranges indicated. Calibration ±500 cycles; drift less than .0002% per °C.

RANGE	PRICE
1800 kc - 2000 kc	$3.75
3500 kc - 4000 kc	$2.95
7000 kc - 7425 kc	$2.95
8000 kc - 9000 kc	$2.95

Bliley CCO-2L



Now available for your amateur rig, a completely packaged oscillator unit designed and engineered to utilize the many advantages of crystal control on two and six meters. Output is obtained directly on six meters; operation on two meters requires only a tripler stage.

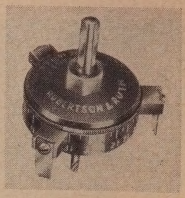
CCO-2L *Output:* 48 to 54 mc; *Dimensions:* 2¼" x 2¼" x 4"; *Price:* $11.95 less tube and crystal (8-9 mc).

Bliley CRYSTALS

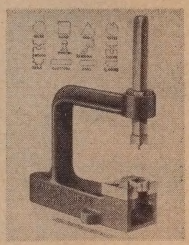
BLILEY ELECTRIC COMPANY
UNION STATION BUILDING
ERIE, PENNSYLVANIA

WHAT'S NEW

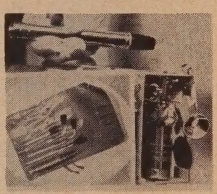
[*from page 64*]



I always shudder when I have to use a fly-cutter in a drill press. It is really a lethal weapon if it gets away from the operator. Robertson & Ruth Co., Box 534, Elmhurst, Ill. obviously thinks so, too. They are marketing a "Dial Saw" shown in the accompanying photograph. It has three cutting blades that are adjusted simultaneously to the correct cutting diameter by rotation of the calibrated dial! No guessing at the diameter of the cut-out, and no off-center cutting tool that may grab the work and jam up at any moment! No kidding, this tool looks so good I think that I will buy one myself! They only cost $14.95 with three sets of cutters for plastics and non-ferrous metals, for iron and steel, and for wood. Remember! Model 400 Dial Saw! This is IT!



The Chase Mfg. Co., 5008 W. Jefferson Blvd., Los Angeles 6, California is now producing a new Ham-R-Press. This is a low cost hand operated punch-type press designed to cut metal up to 14 ga. You can have more fun punching out square, oval and round holes and all sorts of curley-cues in the lid of your receiver. You can even use it for punching chassis mounting holes. A very handy piece of equipment for use in the shop of the ham who likes to build his own equipment. Two sizes of the Ham-R-Press are made: No. 75 with a 7½" throat, and No. 120 with a 12" throat. Chase also makes a complete line of punches and dies, riveting and marking tools. All in all, a pretty versatile outfit. Suggest you contact your local supply house for the new punch. Right??



Remember that little lamp the dentist jams down your throat to peer around? Well, here is a less gruesome version, designed to provide illumination in out-of-the-way places. Powered by flashlight batteries, the Syte-Ayde has four different lucite light transmission rods with mirror tips. Just the ticket to look for that 6-32 nut you dropped in the bottom of your transmitter. The lamp, the rods, carrying case and all the fixin's cost only $5.50 from the General Scientific Equipment Co., 2700 W. Huntingdon St., Phila. 32, Pa. Better order one right now before they realize what a steal it is and jack the price up!



Being crowded out of your shack by surplus junk? Instead of throwing that valuable (?) stuff away, just get yourself a Swing-bin cabinet, as shown in the illustration. Invented for pack-rats and radio hams the Swing-bin will create extra space for the storage of non-essentials. You can see what is stored in the plastic drawers, too. The Swing-bin bolts to the wall, table top, under shelves——m-m-m-m boy! What a handy affair! Made by Akro Mils, Inc., 820 E. Market St., Akron Ohio.

NOW! 3 ARROW SALES OFFICES!

FASTER SERVICE! LOWER SHIPPING COSTS! BIGGER SELECTION OF ELECTRONIC EQUIPMENT

MOBILE COMBO SPECIAL

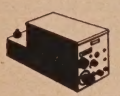
BC-430 TRANSMITTER

Companion aircraft transmitter to receiver at right. 12 or 24 V. Contains two type 10 and two type 45 tubes. 0-1.5 amp R.F. Ammeter and power output approx. 25 W. Freq. range 195-13, 975 KC, Wt. Approx 13 lbs. . . . Used, good condition. **$3.50**

BC-429 RECEIVER

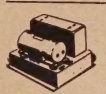
If you can afford ANY receiver, you can buy this one! Made to operate from 24 VDC. Dynamotor supply not supplied but an AC or mobile supply can be readily adapted. Uses six tubes. Used, good condition, supplied with 1 coil. Wt. approx. 13 lbs. **$3.50**
Special only .....

MOBILE COMBINATION SPECIAL
BOTH UNITS FOR ONLY..... **$6.50**



R4/ARR-2 RECEIVER

11 tube UHF tuneable receiver for operation on 1¼ meter band. 6AK5 RF cascade, broad band detector, low frequency preselection, and audio stages. Six preset frequency channels and variable tuning. Other purposes double modulation on the transmitter to eliminate QRM and effect confidential communications; remote control applications; preselector on 50 MC, 144 MC or 220 MC and TV signal booster. With tubes, schematic, less dynamotor. **$7.95**
Excellent condition. Wt.: 10 lbs.....



MD-7 MODULATOR

Provides plate and screen modulation for any transmitter of the AN/ARC-5 equip. with 28 VDC plug-in dynamotor. Has receptacle for cables to the receiver mounting rack and all units of transmitting equipment. With 4 tubes. **$7.95**
Excellent condition. Wt.: 21 lbs.
SPECIAL WITH DYNAMOTOR.....

Exceptional Offer! RCA TELEVISION CAMERA

Has many uses: in industry, home, schools, TV stations, and for the amateur. Input: 12 VDC @ 25 amp. Output: 400 VDC @ 5 amp., 6.3 VDC @ 6 amp. Complete with case, all tubes, dynamotor. Wt: approx 100 lbs. **$99.50**
Like new .....

UHF TRANSMITTER

1 tube. Frequency range: 397 MC. For remote control of model boats, planes, etc. With tube, antenna. Less battery. Size of transmitter: 4¾x2¾x6". Wt. approx. 2 lbs. **$2.95**
New .....

ECHO BOX

Hand tuned ring box with associated dipole which picks up the RF energy from radar set. Freq. range: 3140-3640 MC. Ideal unit for experimental lab. Wt. 7 lbs. **$4.95**
New condition .....

BATTERY CHARGER

PE-219 Charger is designed to charge one or two 6 V. @ 7 amps batteries from a 6, 12 or 24 VDC source. Charger uses one plug-in vibrator which serves as a rectifier and circuit breakers instead of fuses—no tubes. Like new condition. **$8.95**
With schematic.
Wt. 40 lbs.....

R-28 VHF RECEIVER

ARC freq. range 100-156 MC. Four crystal controlled channels for A2, A3 reception. Includes circuits for MVC and AVC. Uses 28 VDC plug-in dynamotor. Wt 19 lbs.
Used, good condition:..... **$12.75** Brand new Only..... **$17.50**

SPRING COIL CORD

3-conductor mike cable with lugs in both ends. Normal length: 18 in. Expands to over 5 ft. Heavy rubber casing. Wt. 1 lb.
Excel . . . 95c ea. 6 for . . . $5.00

FM MODULATOR CAPACITOR

Frequency modulation unit with permanent magnetic field and a moving coil mechanism driving a metal diaphragm supported at its rim. This diaphragm acts as a moving plate of the frequency modulator capacitor. With schematic. See Dec. Radio TV News for data.
BRAND NEW **$2.75**
2 for . . . **$4.95**

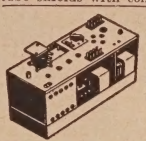
MOBILE POWER SUPPLY — HEAVY DUTY

PE-125 Vibrator Power Supply complete with filter base, starting relay and fuses. 12-24 V.D.C. input, output 400 V.D.C. @ 200 Ma. New **$12.95**

UHF TRANSMITTER-RECEIVER

APS-13 **$3.95** **2 for $6.00**

Freq. range 415-420 MC. 5 stages of 30MC. IF amplifier. Complete with R.F. and I.F. sections. Less dynamotor, tubes, tube shields with conversion data. Excel. cond. Weight 14 lbs.



C.A.P. SPECIAL

BC-625 VHF TRANSMITTER: Frequency range: 110-156 MC. With Modulation section and speech amplifier. Less tubes and crystals. With conversion dope.
Used, good cond. **$9.95**
Wt. 17 lbs. .....

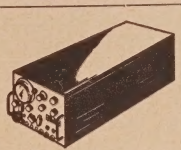


INDICATOR SCOPE ID6A/APN4

Made to operate in conjunction with Radio Receiver R9/APN-4. Unit includes one 5" scope tube, crystal controlled standard oscillator, sweep circuits, marked pulses. Good cond. Weight 40 lbs. **$19.95**
With 27 tubes,
No Crystal and schematic
Less Tubes & Crystal $14.95

AC POWER SUPPLY

Complete 110 V. 60 cps. power supply for Command Equipment, LM frequency meter, GF/RU receiver-transmitter. Output voltage: Sec. #1, 5 V & 3 amps; Sec #2, 800 VCT @ 150 MA; Sec. #3, 13 V @ 6 amps; Sec. #4, 25 V. @ 2 amps. With tubes and manual. New Cond. **$34.50**
Wt. approx. 45 lbs.....



PANADAPTER and SCOPE ID-60/APA-10

A combined Panoramic Adapter and Oscilloscope. Has 3 coax input connectors for feeding in from receivers having I.F. of 455kc., 5.2 mc or 30 mc. Designed also to be used as regular oscilloscope for testing other equipment. Has both vertical and horizontal push-pull amplifier inputs, etc. Complete with 21 tubes including 3" CR scope tube. **For operation on 115V. 400 Cy. with Schematic Excellent condition. Price** **$49.50**
Shipping Wt. approx. 55 lbs.

NEW ID60/APA-10! LARGE SHIPMENT JUST ARRIVED!

Slightly de-militarized. Same as above except IF cans dented and ceramic wafers in switch cracked. **$29.50**
AS IS CONDITION. F.O.B. CHICAGO.....

COMMAND SPECIALS

BC-458 Xmtr. 5.3-7 MC.	Excellent	$ 3.95
BC-459 Xmtr. 7-9.1 MC. Excellent condition.....		9.95
BC-696 Xmtr. 3-4 MC. Excellent condition		17.50
The Lazy "Q 5-er" RECEIVER .19-.55 MC. Excellent		9.95
BC-454 Recvr. 3-6 MC. Excellent. $7.95	New.....	12.50
BC-455 Recvr. 6-9.1 MC. Excellent $3.95	New.....	5.95

WHATA BARGAIN!

APX-IFF EQUIPMENT: This transceiver is a treasure-house of tubes, sockets, relays, coaxial fittings, resistors, condensers, microswitches, amphenol conductor and a raft of other parts. Less tubes. WITH 24 V. BLOWER MOTOR AND 24 V. GEAR TRAIN MOTOR WHICH CAN BE USED AS BAR-B-QUE MOTOR, ANTENNA ROTOR MOTOR, ETC. Wt. Approx. 33 lbs. **The motors alone are worth triple the price! Limited quant.** **$6.95**
ACT NOW. Only.....

ARROW SALES, INCORPORATED Dept. C

Western Mailing Address
P.O. BOX 3878,
N. HOLLYWOOD, CAL.

Central Mailing Address
2441 S. MICHIGAN AVE.,
CHICAGO 16, ILL., CAlumet 5-4750

Visit our sales-showroom at 2005 EMPIRE AVE., BURBANK, CAL.
Phone: Victoria 9-2834
HOURS: Week days—9 A.M. to 6 P.M. Sundays: 11 A.M. to 2 P.M.

All shpts. F.O.B. whse., 25% deposit required on all C.O.D. orders. ADD SHIPPING COSTS TO EACH ORDER. All items subject to prior sale and change of price without notice. Min. order $2.50.

GET ON OUR MAILING LIST FOR NEW SPRING FLYER!



R. L. DRAKE's

High-Patch

AUTOMATIC HYBRID PHONE PATCH

Want to get rid of switch-flipping and lengthy instruction on Phone Patches? Then here's your answer. The New Drake "High-Patch" was specially developed for SSB, but is fully automatic with any voice operated Transmit-Receive set-up. Operating on the principle of the telephone hybrid coil, the new "High-Patch" automatically switches to transmit when local phone participant is talking — then switches automatically to receive when he stops.

FEATURES

- Output of receiver can be nulled more than 20 db below telephone at transmitter input
- Special circuit reduces the effect of phone line impedance variations
- RF filtering prevents RF feedback from phone line pickup
- Undistorted audio quality, free from hum.

CONTROLS

- Mike-Patch Selector Switch
- Transmit Input Control
- Receive Output Control
- Line Null Control

EXTERNAL CONNECTIONS

- Crystal Mike Input Connector
- Line Connections
- Voice Coil Connections
- Output to Transmitter

Accessories Furnished—Mike Connector, Phone Plug, .01 ceramic for carbon mike by-pass, full instructions.

Drake "High-Patch" Model 584. Amateur Net only **$24.95**

*See article "The Phone Patch and the Law" in Sept. '54 C-Q.

Available from your local distributor who handles R. L. Drake Filters

R. L. DRAKE CO. MIAMISBURG, OHIO

New TVI Low Pass Filter

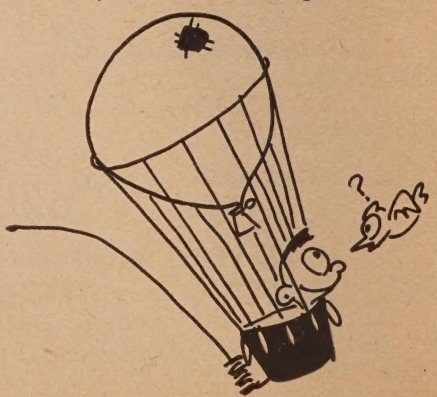
The American Electronics Company has come out with a low pass filter which sells for only $1.95. This small unit is designed for powers of about 200 watts for use with coaxial cable. They claim 35 db attenuation of frequencies over 50 mc. A sample furnished us was installed by K2KLY (together with the *AMECO* High Pass Filter) in the worst TVI complaint (the apartment superintendent) and completely cleared up the difficulty. It works!

Free Class In Amateur Radio

A course in Code and Radio Theory for novices and Technicians is now being given at Allied Radio Corporation at 100 N. Western Avenue, Chicago, every Monday and Thursday from 7 to 9 p.m. This program is sponsored by the Quarter Century Wireless Association, The Hallicrafters Corporation and Allied Radio. The group is authorized by the FCC to give examinations for the Novice and Technician License and makes all necessary arrangements for obtaining the license. Classes are open to all at no charge. No formal registration is required before attendance—anyone interested can come to *Allied* any Monday or Thursday evening to get started. Classes will continue through May 26, and resume in the Fall.

Directory of School Amateur Radio Clubs

A directory is available free to those interested from the Department of Health, Education, and Welfare; Office of Education, Washington 25, D. C. To get a directory for your club send in the address of the club, officers, club call, bands operated, whether desiring of schedules, day and hour schedule is desired, and frequency desired. Also include the number of members in the club, the number that are licensed, and the dues required, if any.



PIERSON HOLT RECEIVERS

Model KE-93



COMING SOON! For the first time a full fledged 11-tube (some dual), all-band, precision communications receiver in a small mobile package.

- ★ Seven Bands—10, 15, 20, 40, 80, 160 meters, plus broadcast band.
- ★ Dual conversion, crystal second mixer, virtually eliminates image responses.
- ★ Dial displays only the band in use. Indirect lighting of mat silver letters on black mat background provides non-glare readability, large, legible lettering.
- ★ Oxidized silver finished panel styled to match the most luxurious car interiors, indirectly illuminated permitting night reading of all panel indicators without glare.
- ★ Each ham band spread over entire length of dial.
- ★ Extreme selectivity and sensitivity.
- ★ Size: 5" H, x 6" W and 8½" D.
- ★ Rigid construction, die cast panel and turret housing.
- ★ Highly effective noise silencer and squelch circuits of new design are employed.
- ★ Provisions are made for external S meter.
- ★ Controls are placed in the most practical and convenient operating panel position for mobile operation.
- ★ Function switch provides ideal settings for A.M., C.W. and S.S.B. operation. Excellent S.S.B. reception even in "mobile in motion" operation.
- ★ Versatile, 7 position turret band switching.
- ★ Tube line up: 6BA6 R.F., 6BE6 first mixer, 6AK6 Local Osc., 6BE6 2nd Mixer and Xtal. Osc., 6BA6 first low freq. I.F., 6BA6 2nd low freq., I.F., 6AL5 2nd Det. & A.V.C. Det., 12AX7 1st audio & squelch, 12AX7 B.F.O. & Limiter threshhold, 6AL5 Limiter, 6AQ5 Output Audio.
- ★ 6 or 12 V.D.C. or 110 V.A.C. power packs permit mobile, fixed or portable operation.

Competitively priced. For further information, write to:

PIERSON HOLT ELECTRONICS

P.O. Box No. 8835, Crenshaw Station
LOS ANGELES 8, CALIFORNIA

A....Always
B....Buy
C....Columbia

TECHNICIANS! This is for you!

NAVY WALKIE-TALKIE TBY TRANSCEIVER

28-80 MC. Here is a terrific portable deal for the new 6 meter band. Complete with all tubes and new vibrator battery power supply. With spare parts. A STEAL at ONLY..... **$29.95**

TBY VIBRATOR POWER SUPPLY

With 4 V. 40 AH Wet Cell battery and spare parts. Complete. New in original box..... **$8.95**

ANTENNA: Citizens' band and 420 MC. 2 SETS to the package. Overseas packed. Brand new. Per Package ..... **95¢**

SURPRISE! SURPRISE! SURPRISE! 20 pound package of new, packaged electronic items—tube sockets, resistors, transformers and such. All useable! All brand new! This is a must!..... **$3.50**

REACTOR CHOKE SPECIALS

800 Hy @ 2 MA. Ea.....	49¢	3 for	$1.25
6 Hy @ 150 MA. Ea	$1.49	2 for	$2.75
15 Hy @ 150 MA. Ea..	1.95	2 for	3.75
15 Hy @ 200 MA. Ea..	3.95	2 for	7.50
20 Hy @ 225 MA. Ea..	4.95	2 for	9.50

FILAMENT TRANSFORMERS

All brand new! 115 V. 60 cyc. input

Vct	@Amps	Ea.	2 for	Vct	@Amps	Ea.	2 for
2.5	3	95¢	$1.75	2.5	10	$2.95	$5.50
2.5	10(10KV)	4.95	9.50	5-5.25	13	2.49	4.75
6.3	10	2.95	5.50	6.3	6	1.95	3.75

POWER TRANSFORMERS: New! 115 V. 60 cy. input

4700 VCT @ 350 MA. Each.....$24.50 2 for...$47.50
750 VCT @ 250 MA; 6.3 VCT @ 5 A.; 5V. @ 4 A. Ea.....$4.95 2 for $9.50
600 VCT @ 75 MA; 6.3 VCT @ 2.85 A.; 5 V. @ 2 A. Ea.....$2.95 2 for $5.50
540 VCT @ 55 MA; 6.3 VCT @ 2 A.; 5 V. @ 2 A. Ea.....$2.49 2 for $4.75

COMMAND SPECIALS

All checked out! Complete with all tubes!

4-5.3 MC. TRANSMITTER. New, boxed	$10.95
4-5.3 MC. TRANSMITTER. Excellent	7.95
5.3-7 MC. TRANSMITTER. Excellent cond	5.95
3-6 MC. RECEIVER. Excellent	6.95
3-6 MC. RECEIVER. Fair cond. ONLY	4.95
.19-.55 MC "Q" 5'er. Nice Shape	7.95
6-9.1 MC. RECEIVER. Nice cond.	5.95
6-9.1 MC. RECEIVER. New, boxed	12.95

7 FT. TELESCOPIC ANTENNA: Collapses to about about 1 ft. New. Less clamps. Ea..... **95¢**

WESTINGHOUSE HIGHWAY SAFETY KIT

Contains stand-up Scotch Light "CAUTION" sign. Westinghouse sealedbeam headlamp. Utility light frame, 12 ft. extension cord, cigarette lighter plug. NEW. Packaged. Per kit, assembled ready for use. BUY IT NOW..... **$3.95**

HALLICRAFTERS "S" METER: 3" rd. illuminated scale 0-5 MA basic movement calibrated to 40 DV over S-9. New in box..... **$4.95**

DYNAMOTOR GIVEAWAYS! We mean cheap!

PE-55—The ones you wanted! Terrific for your transmitters! 12 V. input. 500 V. output @ 350 mils. Excellent cond..... **$17.50**

RECEIVER DYNAMOTOR

For yer mobile rig! 12 V. input. 172 VDC output @ 138 MA. Small, compact, BRAND NEW, with spare parts kit. Ea..... **$1.95**
4 for $6.50

PE-103 DYNAMOTOR

Input 6-12 VDC. Output 500 VDC @ 200 MA. Brand new, Orig. box..... **$29.95**

NEW FREE BULLETIN **Get Your Copy Today!**

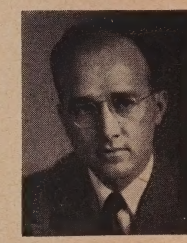
All orders FOB Los Angeles. 25% deposit required. All items subject to prior sale. MIN. ORDER $3.00.

Columbia **ELECTRONICS**
2251 W. WASHINGTON BLVD.
LOS ANGELES 18, CALIFORNIA

PROFESSIONAL LOOK

[*from page 39*]

unit, there would not have been enough room above the chassis for a driver-transformer. Therefore, a conventional phase-inverter requiring less space above the chassis (but more below) was used. Circuit-wise, of course, the transformer is simpler. These circuits are not reproduced here, as they are conventional and may be obtained from the tube handbooks.



W1SSK has taken an active interest in radio since early grade-school days. Interest in flying, then in photography developed later, and during W.W. II he was an Air Corps aircraft mechanic. Postwar, a projectionist, news photographer, studio photographer, and now a field engineer for Fairchild Camera & Instrument Corp. Needless to mention after this prologue, Harrison made his own pix of this rig, doing a 1/c job. Entered Ham radio in 1950 as class-C, now holds extra-class and first class commercial licenses. President Concord Brass-pounders, Full address: Academy Road, Pembroke, New Hampshire.

A 6SL7 is used for speech amplification. This tube is equivalent to the miniature 12AX7, and provides plenty of gain for 100% modulation.

Two d.p.d.t. relays are mounted under the chassis and control all circuits including push-to-talk. The high-current dynamotor relay is mounted under the hood with the dynamotor.

Chrome-plated metal drawer-pulls were added to the front panel as an aid in handling the transmitter and to protect the control knobs from knee-damage.

The round corners of the front panel, along with the baked-on finish and the symmetrical layout makes for a fine appearance, and many Hams seeing this transmitter have asked what company made it!

As for performance, I have been able to work the XYL, who was at the home station, from all New England states and once while in New York state, on 75 meters. The results on ten meters are also very good.

Compact, rugged, simple in design, this transmitter has given us much fun and no trouble in the year that it has been in operation—in addition to being a piece of equipment we can point to with some aesthetic pride.

SAVE!...BARGAINS GALORE!...SAVE!

COMMAND SETS

"Q"5'rs 190-550 KC **$10.95**

LIKE NEW! XLNT COND.
274N and ARC 5 EQUIPMENT



Type
BC-455 40 Meter Recr. 6-9 Mc.
Used, with tubes. $3.95
Used—Like New.....$4.95
Brand New.....$5.95
BC-454 Recvr. 3-6 Mc. Used with tubes. XLNT..... **$7.95**

Dynamotor for above Recvr. $1.00 ex. with each Recvr.

1.5 to 3 Mc. Arc 5. Ship Band Recvr. Like New.....$9.95
BC-456 Modulator. Used with tubes..... 3.95
Sold as is, Less tubes..... 2.95
BC-696 Xmtr. 3-4 Mc. As is, less tubes..... 9.95
BC-457 Xmtr. 4-5.3 Mc. Used, with tubes..... 5.95
Sold as is. Less tubes..... 3.95
BC-458 Xmtr. 5.3-7 Mc. Used, with tubes..... 4.95
Sold as is. Less tubes..... 3.95
BC-459 Xmtr. 7-9.1 Mc. Used with tubes..... 9.95
Sold as is. Less tubes..... 5.95
BC-450 3 Recvr. Control Box. Used..... 1.49
BC-451 Xmtr. Control Box. Used..... 1.49
3 Receiver Rack. Used..... 1.49
2 Xmtr. Rack. Used..... 1.49
Fil. XFMER for above equipment—110 Pri. Sec., 24 V—CT @ 2 Amps. New..... 2.49

Command Sets—Combination Specials 40 Meter Group

1-BC-458 Xmtr.—5.3-7 Mc. Xlnt. Cond. with Tubes.
1-BC-456 Modulator, Xlnt. Cond. with Tubes.
1-BC-455—6-9 Mc. Recvr., Xlnt Cond. with Tubes.
Special — Complete Group.....$11.95

75 & 80 Meter Group

1-BC-457 Xmtr., 4-5.3 Mc. Xlnt Cond. with Tubes.
1-BC-456 Modulator, Xlnt. Cond. with Tubes.
1-BC-454—3-6 Mc. Recvr., Xlnt. Cond. with Tubes.
Special — Complete Group.....$14.95
Combination of Above 2 Groups less 1 Modulator—Special $25.95



110 V. Power Supply Arc 5 or 274N Command Receivers

Just plug it into the rear of your 274-N RECEIVER . . . any model. Complete kit and black metal case, with ALL parts and diagrams. Simple and easy to build in a jiffy. Delivers 24 volts plus B voltage. No wiring changes to be made. Designed especially for the 274-N receiver. **Only $8.95** Assem. $12.95

GP-7 TRANSMITTER

100-watt master oscillator type. Can be used on any frequency from 350 to 9050 KC by using the proper plug-in tuning unit. Type 803 PA and built-in 400 cycle power supply using a pair of 1616 rectifiers. Three 2-inch panel meters: 0-300 MA DC, 0-9 RF Amps. 0-15 AC Volts. A gold mine of excellent usable components for building and servicing any high wattage rig. Comes complete with one tuning unit and tubes. Excellent condition. **$13.95**

PLATE TRANSFORMER

American Trans. Co. Input: 115 V.A.C. 60 Cycle.
Sec. 2240 V.A.C. CT @ 500 Ma.
BRAND NEW **$14.95**
Shipping Wt. 55 lbs.

METERS—WESTON • SANGAMO

All New. All D.C. 2" Square.

0-2 Ma
0-5 Ma
0-15 Ma
0-50 Ma
0-100 Ma
0-200 Ma
0-300 Ma
0-500 Ma

$3.29 each
or
3 for $9.00



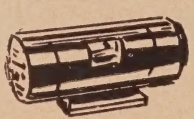
DC VOLT METERS—2" SQ.

0-20 V. DC
0.40 V. DC
0-300 V. DC

$3.29 each
or
3 for $9.00

BC-375 Mod. XFMR. Matches pair of 6146's, 815, 807, 1625. New $2.95

6 & 12 Volt Dynamotor Specials



PE-101C
DYNAMOTOR

This is the Dynamotor the hams have been talking about! Easily adapted to supply on 12 V. input 500 V. DC. @ 200 Ma. and also 325 V. DC @ 125 Ma. Brand New $6.95

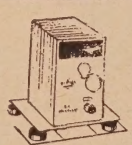
Eicor Dynamotor—11.6 V. DC. input. Output 425 V. DC. @ 375 Ma. Brand New.....$10.95

Wincharger Dynamotor—12 V. input. Output 440 V. DC. @ 220 Ma. Brand New.....$14.95

BD-77 Dynamotor—12 V. input. Output 1000 V. DC. @ 350 Ma. Brand New.....$14.95

BD-69 Dynamotor—Made by Eicor—14 V. input @ 2.8 A. Output 220 V. DC. @ 80 Ma. Brand New $9.95

PE-73 Dynamotor—24 V. input. Output 1000 V. DC. @ 350 Ma. Brand New.....$8.95
Used $6.95



BC-357
Radio Beacon Receiver

62-80 Mc. radio controlled receiver. Contains 10,000 ohm plate relay. Power requirements are 24 V. AC. @ .5 Amps. and 220 V. DC. @ 20 Ma. Swell for Garage Door Opener, Receiver, and other remote control installations.
Brand New **$4.95**

OIL CONDENSERS



2 MFD—5000VDC GE. New.....$5.95
3 MFD—Sprague, 4000 V. New..... 5.95
2 MFD—GE, 4000 V. New..... 3.95
2 MFD—Aerovox, 2500 V. New..... 2.49
10 MFD—Fast, 600 V. New..... 1.49
2 MFD—Aerovox or Solar, 600 V. New .....3 for .59
4 MFD—GE, 600 V. DC. New..... .97

All prices subject to change without notice
Cash with order. Include 4% Sales Tax with California orders—All orders F.O.B. Los Angeles.

SAM'S SURPLUS

1306 BOND STREET
LOS ANGELES 15, CALIF

HARVEY

ALWAYS CARRIES A COMPLETE STOCK OF

MOBILE GEAR

FOR IMMEDIATE DELIVERY...

plus THE LATEST AND NEWEST IN ALL HAM EQUIPMENT

Keep up-to-date with Harvey's New HAM CATALOG

hrc

HARVEY RADIO CO., INC.
103 W. 43rd St., New York 36, N.Y.

☐ Please send FREE 1955 HAM CATALOG

☐ Please place my name on your Mailing List

I am also interested in information on the following equipment.....

.....

NAME.....

ADDRESS.....

CITY.....ZONE.....STATE.....

Dinners

One of the high spots of the recent IRE Show for many of the hams was the SSB Dinner. Over 280 turned up to rub elbows and swap stories that they haven't been able to pull over the air. It was quite a confab. I was struck by the large proportion of two-letter calls present. I also noticed that many of the best known hams have swung to SSB. The temporary technical bulwark of SSB seems to have given the elder statesmen of ham radio a common playground where they can get together without too much interference from the hello-goodby operators.

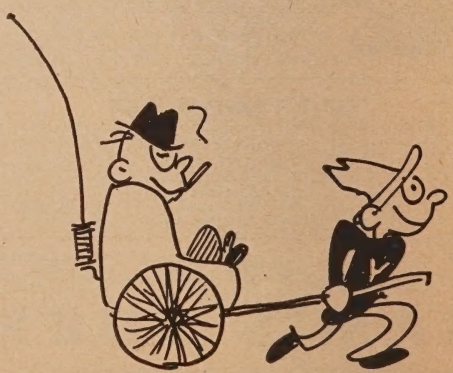
Another haven of the experimenter is RTTY. The Teletypers had what might be called the first annual dinner. The turnout was not up to the SSB gathering, but I think it was a bit better than the SSB boys managed for their first dinner.

W2NSD Transmits

Say, I'm on the air quite a bit these days. Quite a bit for me, anyway. Most of the time I'm hanging around the low end of 75 meters (midnight on), with some local work on 20 meters sandwiched in to keep up with the local gossip. Mobile usually on 20M, but you will be hearing more from my mobile SSB rig on 75M.

New Transistor Book

Transistor Audio Amplifiers, by Richard F. Shea. This book will probably be as popular as his previous *Principles of Transistor Circuits* (1953) for it provides the engineer with a thorough but easy to understand reference to circuits and circuit design of practically any audio amplifier for whcih transistors can be used. Mathematics has been greatly reduced by the use of some 150 graphs. 219 pages, published by John Wiley and Sons, Inc., $6.50.





RTTY Meeting

Some of those present at the first annual RTTY dinner. Front row: W4ZC/2, W2TBD, W6AEE, W1BGW. Second row: W3MHD, W1AFN, W3PYW, W3CRO, W2BDI, W2JAV, WØ/BP, W2NSD. Third row: W2EBZ, W9TCJ, W2OOG, W1RBF, W2PBG. Last row: W1FGL, W3UWM, W2TKO, W9CNN, W2PAU.

Over twenty-five active Radioteletype amateurs met for a symposium and dinner on March 21st in New York. Most of the above are active on the 40 and 80 meter bands, centering their activity near 7140 and 3620 Kcs. It was emphasized at the meeting that almost all amateur RTTY activity takes place near these frequencies and that most of the other TT signals heard within our amateur bands are commercial or military stations. All amateur TT stations give their call letters frequently in Morse code for identification.

POWER

Power Output: Single Side-Band 400 Watts Peak Envelope
C.W.—350 Watts

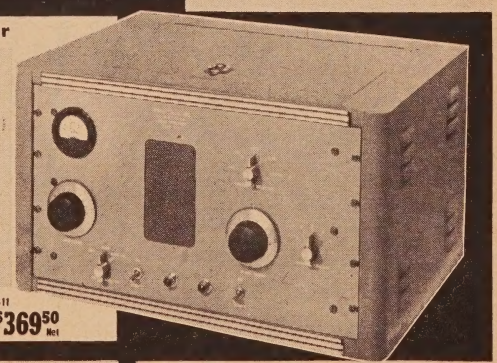
TRANSITRON "500" LINEAR AMPLIFIER

Designed By Hams — To Serve Hams Better

HERE is an "honest to goodness" power-laden linear amplifier that comes right out of the design facilities of Transitron, Inc. So easy to operate, the Transitron 500 is a compact, fully shielded unit, *ideally suited for single side-band operation.*

IT HAS *no plug-in coils*, and features a minimum number of tuning adjustments. Field tests have proven the "500" to be of *low harmonic output*, free from parasitics, and with excellent stability on all bands.

- **Single Side-Band Operation**
- **No Plug-In Coils**
- **Low Harmonic Output**
- Continuous tuning from 3.5 to 30 MC
- Driving Power Required: 5 watts



T-11
$369.50 Net

T-R SWITCH Model TR-1000



The most practical and efficient answer to operation of amateur and commercial transmitters and receivers from a common antenna. Requires no tuning adjustments of any kind and has a power handling capacity of 1000 watts.

$9.95

See the Transitron Line at your local parts distributor, or for more complete technical information write

TRANSITRON, INC.
154 Spring Street New York 12, N.Y.



Shack and Workshop...

In small towns it is often difficult to obtain bare bus wire for winding coils, etc. Plastic-covered wire handled by hardware stores in sizes 10, 12, & 14, commonly called Knob & Tube Wire or Conduit Wire is excellent for this use. It can be stripped easily by gripping the end of the wire in a vice and pulling back the plastic sleeve, which may be kept for use as spaghetti tubing. Romax, stripped of its paper covering, may be prepared the same way. The wire is pure, bare copper, and tins beautifully.

. . . W4OHM

Taking a lead from hams and other mobile operators, the motorist of today seems to like to sport his BC antenna on his rear fender. Often cars are seen with two receiving whips—front and rear. The more daring even carry four!

Now you do not have to worry about drilling a hole in the resale value of your new Snorkle Six when drilling a hole in the rear fender. When it comes time to part with the chariot, simply replace the transmitting whip with a receiving whip and mark it among the assets rather than the liabilities.

. . . W5HOV

Hamfest Calendar

Pittsburgh . . .

On May 22, 1955, the *Breeze Shooters Net* will hold its Spring Hamfest at the Lodge, North Park, Pittsburgh, Pa. This fast-growing club expects a large attendance for a real shindig. Contact Chairman Earl L. Fowkes W3SJK, 565 Parker St., Verona, Pa.

Rochester . . .

The 1955 Western New York Hamfest, presented by the *Rochester Amateur Radio Association,* will be held on May 21st at the Doud American Legion Post in Rochester (Rt. 33). There will be a display of amateur equipment, door prizes, and a banquet, in addition to a full schedule of activities and speakers. For further information write R.A.R.A., Box 1388, Rochester, N. Y.

New Mexico . . .

The Amateur Radio *Caravan Club of New Mexico* is sponsoring a hamfest and picnic on June 4th and 5th, complete with prizes, contests, etc. Write the club at 2909 Garcia, NE., Albuquerque, New Mexico.

Shack and Workshop...

Mobile operators on the lower frequency bands, according to W5JJL, may find that car noise can be eliminated without resorting to coaxial condensers, by remembering that two .05 tubulars in parallel have somewhat less inductance than one .1; and that a regular .1 (or two .05's) can be further paralleled with a .01 ceramic condenser to remove the higher frequency components. Admittedly somewhat inferior to a good coax condenser, it is nevertheless a cheaper method and sometimes a more available method in the field; and should prove adequate in many cases.

SCRATCHI

(from page 8)

it not money. . . . Scratchi not in the bux after all. On paper I reeding "Acme 1/c Peechy Green Guarantee Bond Insulating Paper No. 10."

Now what I doing. I quicklike drilling to holes thru wall, putting in insulators, going outside and connecting antenna feedlines to them, rushing back and locking shack reel tite. If Itchi ever finding out what happening I ded duck with fried goose. Can't going on air, can't going in shack. Hon. Ed., you having opening for 1/c hole-driller on your Hon. Rag?

Respectively yours,
Hashifisti Scratchi

PROPAGATION

(from page 41)

of Radio Engineers Professional Group on Antennas and Propagation as well as other IRE Professional Groups. Papers will be presented discussing the latest research in the fields of Ionospheric and Tropospheric Radio Propagation, Radio Astronomy, theory of Antennas and generally related subjects. In July this column will be devoted to a discussion of the more interesting papers presented at the meetings.

Next month we shall continue with our discussion of a "Review of Shortwave Propagation" which we began in April's column and because of space limitation cannot be presented this month.

Flash Forecast

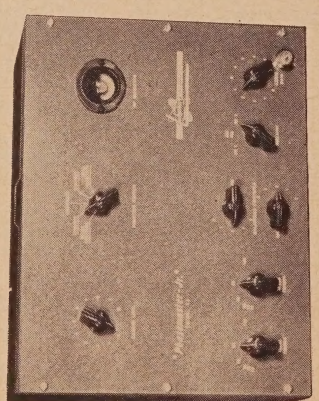
A greater than usual degree of fluctuation in ionospheric conditions is forecast for May. Moderate to severe ionospheric disturbances will probably occur on May 3-4, 8-10, 24-26 and 30-31. The period May 16-20 is expected to be unstable with the possibility of considerable aurora activity and the period May 12-15 is expected to be somewhat better than seasonally normal.

"Phasemaster-Jr."
(MODEL-C)

Going MOBILE??? then you need a.....

60 watt peak envelope power input — SSB with switchable sidebands — AM PM CW operation — all band operation 160M thru 10M — voice control and anti trip operation available — switch for VFO or crystal — new simplified function and operating controls — complete with tubes — supplied wired and tested or in kit form — supplied with coils and crystal for 80M operation — NOVICES use fundamental frequency crystal for CW — use PE 103 or other suitable power source —

The ONLY phasing type exciter-transmitter which can drive any popular-KW triode to its full KW limit is a "Phasemaster — Jr" either DeLuxe, Model-C or Kit



Wired and tested (with tubes) $174.50
Kit form (with tubes) $147.50

DON'T FORGET THESE FAMOUS ITEMS

P-500 Power Amplifier	$197.50
DeLuxe "Phasemaster-Jr"	$194.50
"Phasemaster-Jr" Kit	$ 74.50
"Signal-Splitter" (W&T)	$ 72.50

Write for complete catalog

Lakeshore INDUSTRIES
408 COMMERCIAL STREET MANITOWOC, WISCONSIN
MANUFACTURERS OF PRECISION ELECTRONIC EQUIPMENT

THE ORIGINAL

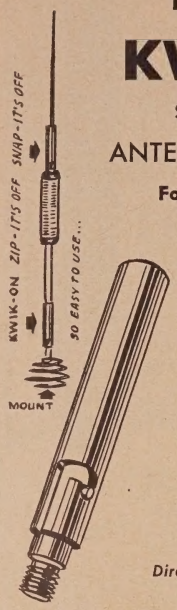
KWIK-ON

STAINLESS STEEL

ANTENNA CONNECTOR

For Mobile Antennas

(Patent applied for)



Connect or remove your antenna in less than 5 seconds. No wrenches, pliers, or screwdrivers.

Positive lock—Will not corrode Machined from stainless steel.

INTRODUCTORY PRICE

Only 3.95* Plus Postage

Direct — Dealer Inquiries Invited

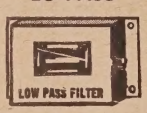
KNIGHT RADIO & ELEC. CO.

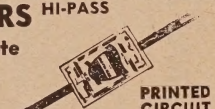
6806 So. Western Ave. Los Angeles 47, Calif.

*Calif. residents include state and applicable local sales tax.

LO-PASS **FILTERS** HI-PASS

Eliminate TVI





Prevents radiation of spurious signals over 40 mc. Designed for 52-72 ohm coax. Negligible insertion loss. Over 40 db. attenuation. Handles above 200 watts RF power. Complete **$1.50** POST PAID

Cuts out all interference below 50 mc on 300 ohm balanced line. Signals over 54 mc pass through filter without loss. 10 components: 6 coils & 4 condensers. Complete, full instructions **98¢** POST PAID

Send check or money order. (Both for $2.25 PPD)

Complete line of more than 75 filters and wavetraps. Send for free literature. Money back guarantee.

CAPCON, INC. 25E WILLETT ST. NEW YORK 2, N.Y.

Headquarters for AMATEUR and MARS CAPS

We are Headquarters for AMATEUR and MARS (Overseas Type) Caps which are distinctive and may be worn at Ham Fests, Conventions, Radio Club Meetings, and Field Day Exercises.

The AMATEUR Cap with your personal call Letters embroidered on one Side (Red Cap with Call Letters) Washable in all sizes is available at $1.25, Postage and Tax Paid.

Caps for MARS members only are light Tan in color, with Call on one Side and the Words MARS—Army or (Air Force) on the other, in embroidery.

These are obtainable for $2.00, postage and Tax paid.

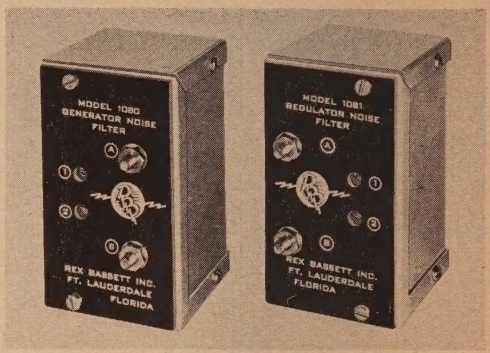
Send Check or Money order to

ECONOMY CAP WORKS

2645 San Jose Ave., San Francisco, 12, California

OUT, DAMNED NOISE!

Spark plug filters quieted things down somewhat for me, but it wasn't until I put in a set of the Bassett filters that I could actually work some of the weaker stations. Apparently quite a few of the mobile boys have had the same misery for the filters seem to be pretty popular. How many of you have to go into neutral gear and coast while working a weak station so that the generator and regulator noise won't drown him out? I had trouble of this nature with my regular generator, but when I put in the new 85 ampere Lincoln generator to try to break even with the rig drain the noise really began!



Rex Bassett has recently made available a set of filters designed for suppression of noise from the generator and the regulator. It took me about fifteen minutes to install them in the car, no extra holes being necessary for the job. The filters have two trimmers built in for nulling the noise in the receiver. They work.

W2NSD

SWL Clubs

Our SWL readers are reminded that a number of SWL clubs are very active in the United States and overseas. In this country the foremost SWL club is the "Newark News Radio Club" which has been going strong since 1927. They issue very informative "Official Bulletins" on all phases of SWLing. Their dues are quite reasonable, although membership requirements are strict. Their address is: 215 Market Street, Newark 1, N. J. Another active club is the "Universal Radio DX Club" (21446 Birch Street, Hayward, Calif.). They distribute 19 issues of their 'Universalite' each year. Both clubs will undoubtedly be glad to send SWL readers further information. Just mention you saw it in *CQ*.

NET CONTROL—MOBILE

(from page 49)

the wire, one inch in diameter, and is connected between one side of the variable inductance and ground. It should be stressed that for effective operation the best ground connections possible should be made.

By the use of an impedance bridge and a grid-dip oscillator various taps are made on *L3* which represent points of 52 ohms impedance for each band to be worked. This simple operation maintains correct impedance relationships throughout, assuring efficient transmission of r.f. on all bands.

When initial adjustments are made on the various center-loading inductances for the different bands, the variable inductance is set at minimum. The center-loading coils are pruned so that the entire system resonates at the high end of the particular band in question. During operation, as one moves lower in frequency, additional base inductance is introduced to maintain resonance. This system results in a very high-Q antenna which has proven to be extremely effective. Antenna resonance is indicated by a sharp rise in final-plate current at the correct position of *L2*.

Because of the height of the bus, the tip of the mobile antenna is approximately 19 feet off the ground. Since the average highway has many overhead obstructions which play havoc with such a system, a Rube Goldberg gimmick was devised. It consists of a pulley mounted aft of the antenna through which a small piece of clothes-line passes from the antenna via eyelets to an opening in the side of the bus forward. The clothes-line is separated from the antenna by an insulator. By means of this arrangement, the antenna can be pulled down and made to lay back nearly parallel to the bus roof. A conveniently-located cleat is used inside to make fast this line when the antenna is down. The heavy-duty base-spring has enough resiliency to draw the antenna to the upright position when the line is removed from the cleat. In practice this has proved to be an effective system and to date only one center-loading coil has been ruined.

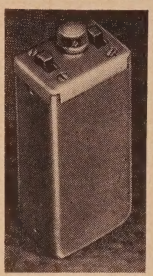
During times of portable operation from a semi-fixed location a variety of folded dipoles are used and are matched to the unbalanced output of the transmitter through balun coils. A little practice produces adeptness as throwing lines over convenient limbs for the erection of these antennas.

Aside from the advantages of this unit already enumerated it will appeal to many Amateurs who like the Great Outdoors. It is a complete mobile home which can travel anywhere with the greatest ease. And the basic bus was purchased for the surprising sum of $225!

LOOK YOU MOBILEERS!

MALLARD by Electrend

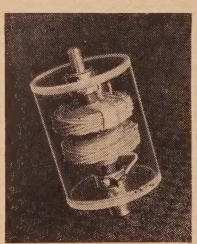
NOW MOBILE RECEPTION OF SSB & CW!

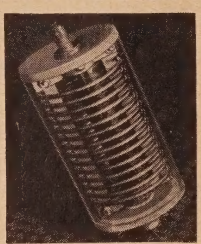


The Mallard beat frequency oscillator with output at 262 kc & 455 kc! Stability and slight variable shift provides instant tuning of SSB! Spots your VFO frequency! No connections needed in your present set! Power taken from converter power plug. Uses 6C4 tube as oscillator. Over-all dimensions only 1-7/16"x1⅞"x4".

Expertly yours for Amateur net **$9.95**

STILL TOPS BY FAR. MALLARD "Hi-Q" BASE LOADING ANTENNA COILS





"Q" is high enough to do the job but good, and LOW ENOUGH TO ALLOW QSY WITHOUT RETUNING! Truly OPTIMUM "Q" and a good 100 kc bandwidth too! For mobile you MUST be efficient. For efficiency your coil must be TAILORED for the job PER BAND. There is no compensation loss in these base loading beauties!

Hi-Q 20	amateur net	$8.95
Hi-Q 40	amateur net	7.95
Hi-Q 75	amateur net	7.95
Hi-Q 160	amateur net	7.95

MALLARD "WHIP-CLIP"



Holds that whip down, but does not short it out! Molded from practically indestructible black nylon.

Amateur net **$1.00**

REMEMBER

For plumbing, it's plumbers, but FOR MOBILE, IT'S MALLARD!

See it at your favorite supply house, or drop us a line today!

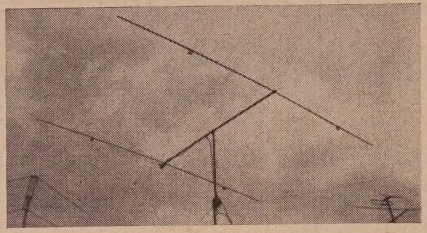
73s, Don, W8QBN and BOB W8JFW

MANUFACTURED BY

ELECTREND PROD. CORP.

606 Water St. St. Joseph, Mich.

DX HOUND SHORT BEAM.....$39.95



Antenna fundamental: The strength of the radiation from any section is proportional to the current flowing in that section of the antenna. *That* is why the DX HOUND BEAM has the loading coils towards the ends of the elements and not in the center.

Specifications for 10-20 or 10-15 meter two element beams:

- **Elements are 16', ¾" dia. .049 Wall.**
- **Boom is ten feet long**
- **Weight less than 7 pounds**
- **Very low wind resistance**
- **Over 25 db front-to-back**
- **Over 5 db forward gain**
- **Will handle a kilowatt easily**
- **52 Ohm Gamma Match for 1:1 SWR**
- **Can easily be stacked**
- **Pretuning instructions**
- **Adjustable to CW or phone band**
- **Assemble in less than ten minutes**
- **Use with any TV rotator**

For either 10-20 or 10-15 beams. ONLY $39.95

Send Check or Money Order.

Write for information on the end loaded 75-80 or 40 meter short doublet for 52 ohm coax . . . $14.00 less coax.

DX HOUND PRODUCTS

2087 Coney Island Avenue, Brooklyn, N. Y.

ONAN 800 CYCLE MG SETS

For less than the price of the motor, buy your Lab an ONAN 213G motor generator. Dual output 28V 18A DC and 110V 14A 800 cycle AC. (400 cycles at half speed with reduced output). Motor 5 HP 220-440 60 cycle 3Ø. Allan Bradley starter—carbon pile voltage regulator. Price $160. Less motor $90. (Includes base, adjustable motor mount, belt guard, belts etc.) ONAN 59R—same generator coupled to 5.2 HP gasoline engine. Pneumatic tired cart, push button start. $150 less battery.

OIL FILLED FILTER CONDENSERS

8-8-8-8-600V Cornell Dubilier	$3.50
8-8-600V Tobe	1.25
5-660V AC (1500 DC) Sprague	2.25
.2-.2-.2 4000V Tobe	2.25
.02 20 KV Cornell Dubilier	5.00
.01-.005-.005—10 KV Gen. Electric	2.50
Thousands of transmitting micas	20c ea.

TUBES—IN ORIGINAL BOXES—GUARANTEED

1B22	.50	12C8	.40	801A	8/1.00
1LA4	.40	72	2/1.00	814	3/5.00
1LA5	.40	274B(5R4)	3/1.00	838	3/5.00
3FP7	.75	707B	2.00	954	5/1.00
5CP1	2.25	730A	6.00	1629	10/1.00

Power Trans. 850 V CT 250MA 3-6V and 2-5V Fil. 950V CRT. Wt. 13 lbs. $5.50
Swinging choke 3 to 10H 350MA—30 ohm 2000V 2.50
Swinging choke 3 to 10H 550MA—20 ohm 2000V 4.00

RELAYS

Advance 1001-1B DPDT ceramic ant. 110V AC	$2.50
Potter Blumfield B4500 latching overload	2.50
Struthers Dunn 1XBX DPDT 110V AC	1.75
Leach keying #1024 6V DC SPST	1.75
Allied 3P03 12V DC SPST ceramic	1.25
Espey #24.047 midget ceramic 6V DC SPST	1.25
Allan Brad. Bull. 702 #2 220V DPST 50 A.	8.00

Many C.P. Clare 24V sealed. 10,000 others.

SPECIALS

Command rec. 6 to 9 meg. with tubes 7.00 Exc. used $ 4.00
6 cond. shielded cable 9/16 dia. 360' reel 14.00

Large stocks—quantity discounts—Export orders invited. EVERY ITEM BRAND NEW. Most relays and cond. export packed. Minimum order $5.00. FOB San Diego. Write for list.

NORTH ELECTRONIC SUPPLY

3704 Bandini St., San Diego, California

WILLARD NORTH, W6OR, OWNER

DX NEWS

[*from page 44*]

New DX Addresses

FB8BC——Victor Defaysse, Box 587 Tananarive, Madagascar.
FB8BP——Jack de Saint Amand, 143 Avenue Foch, Tananarive, Madagascar.
ex-FB8XX——Joseph Klein, Kaisersberg, Haut-Rhin, France.
FY7YE——Via W4ML. Tom Stuart, 601 West 35th St., Norfolk, Va.
HC1KC——Jim, U. S. Army Mission, U. S. Embassy, Quito, Ecuador.
JZØDN——Via W6YMD, 15917 Northfield St., Pacific Palisades, Calif.
KP4ABA——R. Ramirez de Arellano, Box 2072, Univ. of P.R. Sta., Rio Piedras, P.R.
MP4QAL——Fergus Walshe, Decca Navigator Co., Shell Oil Co., Doha, Qatar.
PJ2MA——(PJ2AA) Via W1PST (With stamped return envelope).
PZ1QM——Frank, P. O. Box 631, Paramaribo, Dutch Guiana.
VP5BP——Via VE3CJ.
VP7NI——(ex-ZL1MP) D. Mitchell, Box 83, Governors Harbour, Bahama Islands, Eleuthera Island.
W5GAX/KG6——6319 Comm. Sqdn. APO 334, San Francisco.
YV9AP/YV9BZ——Apartado Correo 3208, Caracas, Venezuela.
ZD9AC——Nick Meyer, Edinburgh, Tristan da Cuhna Island, via Capetown.
3V8BL——Claude Marques, Boite Postale 747, Tunis, Tunisia.
4S7YL——Via W5EFC.

Thanks to SWL Steve Terry, West Gulf Bulletin, F9RS, FOC Bulletin and W1PST.

Here and There

W3EKK/2, Bernie, now keys from new QTH in Blackwood, N. J. . . . W9SIV is now W3ZAO. . . . Mike, G3JFF, visited Tortola in March, aboard the carrier TRIUMPH and did some keying from VP2VA. . . . From W6AOA we hear that the Mt. Wilson observatory reports that the minimum of the present sun-spot cycle was definitely reached in April 1954 and that the climb towards the maximum has now begun. . . . Old TI2EXO now may be heard as KT1EXO. . . . VK6MK will be in G-land from May to December. . . . We hear that SV1SP is now QSL Manager for Greece and KTH is: George N. Zarifis, 10 St. Famourion Street, Pangrati, Athens. . . . KV4AA logged visits from K2BZK, KN4ARS, W4TGL, WØJHY and W1EDA. . . . W2UKS has his appointment as Chief Radio op aboard the S.S. North American and will be active from May 15th to September 15th on the Great Lakes on all bands /MM. . . . Seems like Ned, W1RAN, is army bound. . . . ex-KZ5BS/KZ5NJ, Bob, can now be heard as W6PGA. . . .

160 Meters

Via W1BB: The big thrill on February 20th was the appearance of TI9MHB on Cocos Island who worked a good number of W's including W1BB, W2QHH, W2EQS, W3EIS, W3KLA, W4KFC, W8ANO, W9NH, W9FIM, W6KIP/6 and W6VBY. On February 27th, DX contest

[*Continued on next page*]

BETHPAGE HAMFEST

The NEW YORK RADIO CLUB is holding its third annual picnic and transmitter hunt at Bethpage State Park, at Bethpage, Long Island, N. Y., on Sunday, May 22nd, starting at 11 a.m. Women and children free; OM's $1.00. All hams are welcome and a good time is assured.

[*from page 78*]

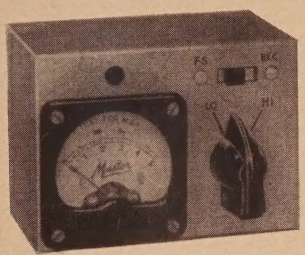
weekend, conditions were fair with G3RI, G5JU, KV4AA, TI2BX and YV5DE putting in good signals (KV4AA was happy to contact all W districts that morning, between 0600 and 0800 GMT as follows: W1BB, W2EQS, W3BVN, W4KFC, W5ENE, W6KIP/6, W7KVU, W8ANO, W9CVQ and WØNWX, plus, VE2NI and VE3LZ. . . . W9PNE nabbed VP4LZ on March 1st for his No. 19. . . . The first WAS on 160 seems to have been accomplished by W9NH when Sam hooked W5VMB in Miss. on 2/19/53.

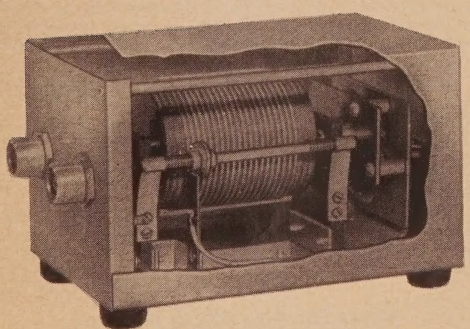
This report seems to wind up a very successful and interesting 160 season this year. Don't go away, however, as May holds good possibilities for ZL contacts and, barring extremely high static levels, there is no reason why this band shouldn't be operative for overseas contacts on a year round basis.

73, KV4AA.

Master Mobile Remote Tuned Coil

One of the most frustrating things about mobile operation is that trip to the back of the car to change the tap when you want to move up or down the band too far for good loading. This used to get my goat on 75M phone particularly for there were about three different taps to be used for different parts of the band. As you browse through this issue you will notice that this mobile misery has struck others. One solution was the use of a speedometer cable driving a dial cord to change the tap on the coil. Another used a motor driven system

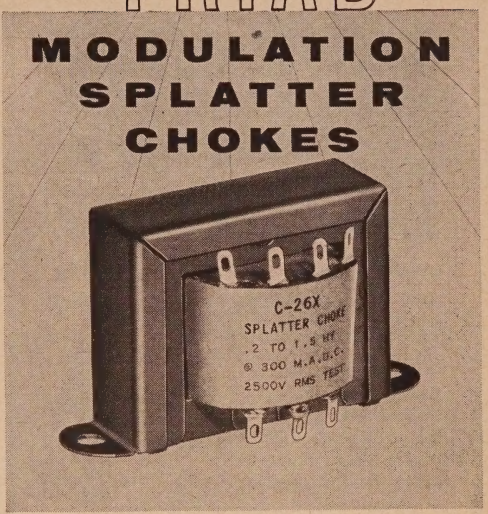




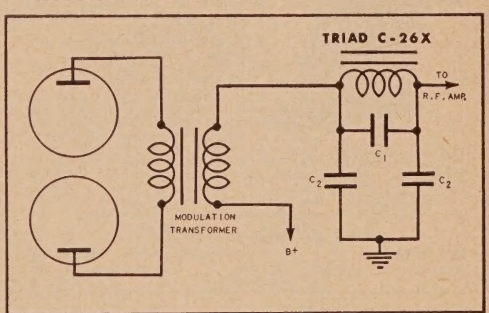
Master Mobile Mounts, Inc., has a small motor driven loading coil which is controlled from the driver's seat. A field strength meter is built into the motor control unit so the antenna can be exactly tuned quickly. The coil does not replace the regular antenna loading coil, it merely acts as a vernier so that you can QSY anywhere within a particular band. The field strength meter uses the regular BC car antenna for pickup. A switch on the unit allows the car radio to connect to its antenna when the field strength meter is not in use. The coil unit is designed to be mounted near the base of your whip and is fitted with standard coaxial connectors. There has been a strong need for such a unit and its appearance is welcome.

TRIAD

MODULATION SPLATTER CHOKES



The new Triad 100 mil Splatter Choke minimizes splatter caused by over-driven modulators and audio distortion. Ideal for mobile operation or other low power applications. Multiple taps provide various inductance values. Small, lightweight, insulated for high voltages, "Climatite" treated and ruggedly built for long, trouble-free use.



Typical Circuit for Mobile Operation

C-26X SPLATTER CHOKE

List Price $5.65 — 0.2h to 1.5h @ 100 ma.

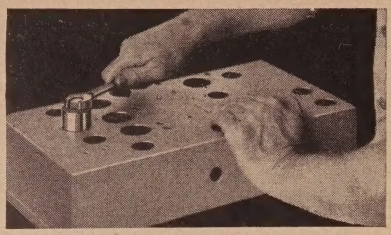
H	W	D	MW
1-15/16	3-1/4	2-1/8	2-13/16

Write for catalog TR-55E

TRIAD TRANSFORMER CORP.

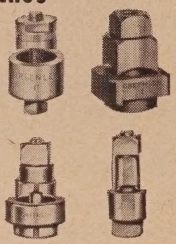
4055 Redwood Ave. • Venice, Calif.

SAVE HOURS OF WORK

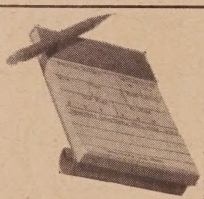


quickly make round, square, key and "D" openings with Greenlee Radio Chassis Punches

In 1½ minutes or less you can make a smooth, accurate hole in metal, bakelite or hard rubber with a GREENLEE Punch. Easy to operate ... simply turn with an ordinary wrench. Wide range of sizes. Write for details. Greenlee Tool Co., 2365 Columbia Ave., Rockford, Ill.



TOOLS FOR CRAFTSMEN
GREENLEE



MOBILE QSO PAD
With Magnetic Pencil

- **Forms for recording all data pertaining to QSO—Perforated for easy removal.**
- **Magnetic pencil—sticks to pad holder or auto panel.**
- **Pad holder—clips on sun visor or glove compartment door.**

Why struggle to keep a neat log book while operating mobile or portable? MOBILE QSO PAD has a supply of forms for recording all pertinent data. Use one sheet per QSO, and transcribe data into log book when you return to your home QTH. All standard log entries plus space for remarks, messages, etc. Pad size, 8 x 4 inches.

MOBILE QSO PAD with extra refill—$1.20 Postpaid
Your call engraved on magnetic pencil—30¢ extra.

THE RADIO STATIONERS
Box L-147 **Brandywine, Maryland**
Printed and Engraved Supplies for the Amateur Station and Workshop

OPPORTUNITY!

Progressive midwest electronics business looking for practical radio amateur or electronics engineer to assist in creating & developing new products! Possibilities unlimited for the right man. Please send full resumé of education, employment, salary requirements, etc. Detail past experience if any in designing amateur equipment. Address inquiries to **Box W55, CQ Magazine, 67 West 44 Street, New York 36, N. Y.**

SELECT SURPLUS

Dynamotor—PE-101-C for 6 or 12 volt operation. Brand new, original carton, with conversion and connecting plug—only $5.95.

T-23 UHF ARC-5 100-156 MC, with tubes and xtals, good cond.—$19.95.

Closeout, xmtr, ARC5 4-5.3 MC. Xmtr—ARC5 5.3-7 MC. Pair in good cond. For $10.00 w/tubes.

Include postage

REX RADIO, 88 Cortlandt St., New York 7, N. Y.

NOVICE SHACK

(from page 58)

Checking The Variable-Frequency Transmitter

After obtaining their General Class licenses, many amateurs add a variable-frequency oscillator (VFO) to their transmitters, so that they can scoot around in the amateur bands. Often this is when their troubles begin.

VFO's are fine, but they can ruin the signal emitted by any transmitter unless used with care. The reason is that they are variable-frequency oscillators, and many things besides turning their dials will vary their frequencies. They are sensitive to vibration and to load, temperature, and voltage variations. They are also very susceptable to modulation from an inadequately-filtered power supply and from radio-frequency feedback. In addition, they are often touchy to key. Consequently, it is necessary to check a VFO-controlled transmitter very carefully to be certain that the signal it emits is satisfactory.

The signals from most VFO's alone sound fine but become rough or unsteady when connected to a transmitter. Usually, the output of the VFO is fed into the control grid of the former crystal oscillator, often via the crystal socket. When the crystal oscillator uses the grid-plate circuit, with an r-f choke in its cathode circuit to promote feedback, it is important to short out the choke for VFO operation. Otherwise, the stage may be regenerative. Even though it may not actually oscillate, the variable load reflected back to the VFO can degrade stability and tone.

Where other types of oscillator circuits are encountered, connect the VFO output into the control grid of the tube and remove any expedient introduced to cause oscillation. For example, in the "modified-Pierce" crystal oscillator, the crystal is connected between the control grid and the screen grid of the oscillator tube, and the screen is only lightly bypassed. When a VFO is coupled to the tube, increase the screen-grid bypass capacity to about .005 μfd.

For maximum stability, no other stage of a transmitter should be tuned to the same frequency as the VFO. Operate the VFO at least one band lower in frequency and multiply its output to the desired output frequency in subsequent stages. The inability to do this in "Command" transmitters is one reason that it is difficult to obtain T9X from them, especially when they are keyed.

When the power to operate a VFO is borrowed from the transmitter power supply, additional filtering is sometimes required, because of the VFO's sensitivity to ripple. An additional capacitor, of 8 μfd or more, between the point where the VFO B+ voltage is tapped off and ground will often smooth out the signal.

Many VFO's chirp when keyed directly, and transferring keying to the next stage may be little better. Keying this stage presents a varying load to the oscillator, causing its frequency to shift. Much cleaner keying is usually obtained by allowing the oscillator and the first tube following it to run continuously during a transmission and keying a later stage.

The bibliography at the end of this *Novice Shack* lists several articles on the subject of obtaining a good signal from a VFO-controlled transmitter. They are well worth reading.

News For And About Novices

Effective April 12, 1955, the Federal Communications Commission authorized Technician Class licensees to operate in the 50-54 Mc amateur band. In the same action, the Commission denied the petition to permit Technician licensees to operate in the 144-148 Mc band.

Elbert Goss, Jr., KN2ISZ, 75 South Fourth Ave., Ilion, N. Y., writes, "My transmitter is now a 6V6-6L6 running 35 to 40 watts. My first one was the single-tube job designed by W8NAF, which was described in the November, 1953, *Novice Shack*. Until quite recently, my receiver was a *Zenith* without bandspread or a beat oscillator, but now

(Continued on page 82)

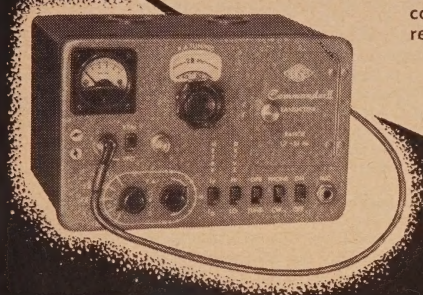
"COMMANDER" Power inputs up to 60 watts A.M. .....
Continuous coverage from 160 .... including 6 meters



COMMANDER

. . . . . an extremely compact and versatile transmitter, advanced in design, modern in circuitry. It covers a continuous frequency range from 1.7 to 54 mcs and may be operated xtal control as-is or with the Gonset VFO. A 6146 output tube and two 7C5's as modulators permit plate voltages of 400 to 500 volts—inputs, (modulated) to 50 watts. Two high Q coils provide coverage of 75-40-20-15-11 and 10 meter amateur bands and are readily changed from front of housing. The output circuit eliminates loading problems frequently present with pi networks where the load is a short, loaded mobile antenna. Circuit also couples into balanced or unbalanced lines, can be quickly converted to "Pi" or "L" networks by simple wiring change. Driver is bandswitched. The Commander uses any standard carbon or PA-type dynamic or crystal microphone. No preamp required.

SIZE: 5⅜" high, 8½" wide, 7⅛" deep.



An excellent VFO is available as a companion unit for the Commander. This is an extremely stable, low drift unit and uses no tubes—requires no operating voltage—coax cable, (furnished) plugs into fitting on Commander panel. Unit covers 75-40-20-15-11-10 meter amateur bands. Very rugged and compact—can mount next to transmitter or on steering column.

COMMANDER (with tubes) . . . Net 124.50

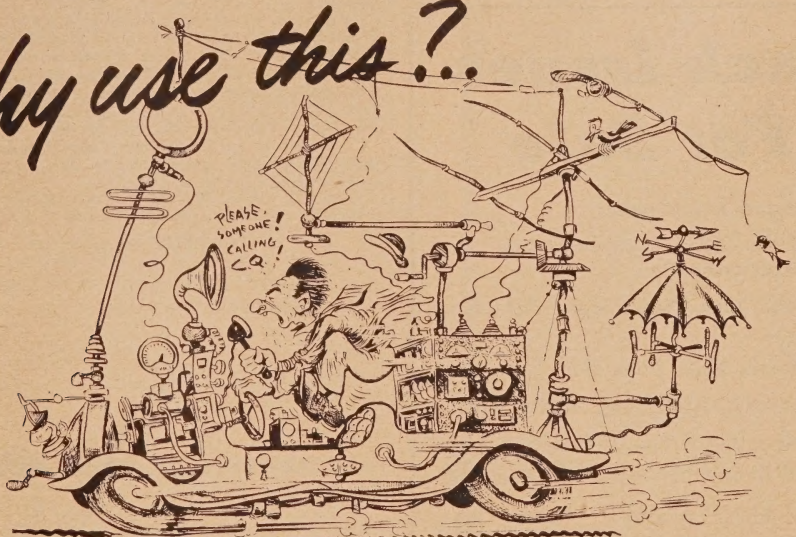
VFO . . . . Net 29.95

FIRST WITH THE FINEST!!

GONSET

801 SOUTH MAIN ST. BURBANK, CALIF.

Why use this?..



For More Contacts... use the best!
Master Mobile Antennas and Mounts

Master Mobile Mounts, Inc.
1306 BOND STREET · LOS ANGELES 36, CALIFORNIA

AT LEADING RADIO JOBBERS EVERYWHERE

LAST CHANCE – CLOSING OUT ARMY SURPLUS EQUIPMENT!

PROP PITCH MOTOR: Heavy duty with 3 ton thrust bearing to support the heaviest beam. Other features include 7000:1 Gear Ratio and reversible 20-35 volt motor either AC or DC with approx. 1 RPM. Pipe Mounts into top of unit and comes complete with simple conversion instructions.

Your Cost $15. Crating Charge $2

VIBRAPACK: Mallory G346 R synchronous pack. Requires no rectifier. Input 12 vdc-output is 275 v at 80 ma. Complete with vibrator.

Your cost $8.95

HEADSET: Exceptional durability-sensitivity to meet your most exacting demands. (8000 ohm Impedance) Comes complete with rubber ear cups and genuine leather band.

Your Cost $3.50—Slightly Soiled $2

STEATITE STANDOFF INSULATORS: Cast metal ends with tapped holes for mounting. Ideal for heavy duty beam supports, etc. Available sizes 3", 5" x 1", 5" x 1½", and 7".

Your Choice 59¢ ea.

SURPLUS RADIO INC.

P.O. Box 651 **Bayville, New York**

Back Issues For Sale

1945—August & September

1946—March, April, May, June, July, Aug., Sept., Oct., Dec.

1947—Feb., June, Aug., Sept., Oct., Nov., Dec.

1948—March, May, June, Oct., Nov., Dec.

1949—January, April, May, August, Dec.

1950—Feb., July, Oct., Nov., Dec.

1951—All Except November & December.

1952—All Except August.

1953—All Issues. 1954—All Issues.

50c per copy

CQ Magazine

67 West 44 St. **New York 36, N. Y.**

(from page 80)

I am using an S-40, lent to me by W2RKU. My antenna is a doublet.

"I have worked 34 states, with 18 confirmed. I wish to thank all who have sent me cards. I have been a little slow with my own, but I will QSL as soon as my cards arrive. 73."

Douglas McClain, W9UKG, P. O. Box 127, Delphi, Indiana, comments, "I read your March column (on working DX) with much interest. I am an ex-WN and a DX hound. In the nearly two years since I have had my "General," I have worked 123 countries. 110 confirmed. I have DXCC, WAS, WAC, WAC-F, DUF*, DUF**, KZ5-25, WASM, RCC, and CP-20 certificates. As a Novice I had 39 states, VE2, VE3, and XE2. I've come a long way!

"I think it takes one of three things to work DX. 1, Be a good operator. 2, Have a better signal than anybody else. 3, Be there first. I am the latter, because I have lots of time. 73."

Don Wolford, WN4ERJ, 6333 N.W. Miami Place, Miami, Fla., says, "I wanted to let you know that there is DX in the 7-Mc Novice band that can be worked. I have worked 40 states. VE1, VE3, KZ5, CT1, WP4, CM5, and CM7. My station is a *Viking II* transmitter, an S-40B receiver, and a 40-meter doublet antenna.

"I am 15 years old. 73."

Bob Weisman, WN3ZQG, 516 Washington St., Cumberland, Md., writes, "Thought I would let you know about the unlucky ones. I think I have the worst record of any Novice. Five months, 17 contacts. I owe this record to an antenna that could not be bent any more and a poor receiver.

"I also believe that I have the smallest operating table. It is 3 x 4 feet, with everything on it.

"Anyone wanting to start the worst-Novice club with me, please write. I am 12 years old. 73."

William Breitfield, KN2IWG, 123 Lewis Street, Geneva, N. Y., reports, "I always dreamed of becoming a ham, but I never thought that I could make the grade. I did about seven months ago. Since then, I have worked 17 states and Canada.

"My rig is a 6AG7-6L6, running 25 watts to a 136-foot Windom antenna, and my receiver is an S-40B. I work on 7178 Kc mostly, but I get on 3.7 Mc occasionally. I work as a motion-picture projectionist from 7:00 p.m. to 11:30 p.m. So I do most of my operating in the afternoon or after 11:30. I'd be more than happy to sked anyone needing New York, especially W5, W6, or W7.

"I expect to go up for my 'General' soon, depending upon how my code speed comes up. When I get it, I plan on operating 10-meter mobile. 73."

Ronald G. Caudle, W4CFB, Box 63, Glencoe, Ala., tells of a thrilling experience. "Back about six months ago, when

(Continued on page 84)



CHOO CHOO MOBILE

[*from page 47*]

position, etc. Figure on batteries for power because only the new streamlined cars have 110 vac. The older cars, which will no doubt be your lot, provide 32 vdc. The railroad folks might provide an inverter. You have to ask . . . maybe you'll be lucky. It would be nice to have a low frequency rig along too, preferably 75-meter phone, for long hop contacts when you get out of range with 2 meters. However, antenna problems become big ones once you leave 2 meters. We tried whips inside the coach but the results were extremely poor. You need an outdoor antenna for big results and it MUST be carefully installed in advance. You must know the limitations on safe antenna usage on a train. There are the problems of tunnel clearances, methods of support and problems of bringing in the lead-in. Many things can happen when a train is doing 90 miles per hour.

Excursion trains carry first class diners and lounge cars. Sometimes they include baggage cars with opened door, boarded half way for safety. This is for picture takers. Quite often an old type observation car is added for the camera fans. You'll make a lot of friends before your trip is over, especially youngsters.

Advise hams at home and along the way to be looking for you if you want to assure plenty of contacts and good results. Most hams would like to work a railroad mobile for the fun of it. Announce a souvenir QSL will be sent to all QSO's . . . and then SEND IT! We had a terrific pickup in 2 meter interest in the entire area throughout the day. This is healthy for any ham band.

Concluding . . . there's something very thrilling and exciting about working fellow hams from a mighty giant of the rails as it speeds along scenic byways. You have no idea how fascinating this is until you try it. For something interesting and different in your chosen hobby . . . try choo choo mobile.

ALBUQUERQUE HAMFEST

NEW MEXICO—The Amateur Radio Caravan Club of New Mexico, Albuquerque Chapter, will sponsor the 5th Annual New Mexico State Hamfest on Saturday and Sunday, June 4th and 5th, in Albuquerque. Stations will be on 29.6 mc. and 3838 kc. for contests and to direct the mobiles into Albuquerque. Registration will begin Saturday, June 4th. $2.50 in advance and $3.00 at the gate. For further information contact the club at 107 Washington St., S.E., Albuqurque, New Mexico.

A COMPLETE MOBILE ANTENNA SYSTEM

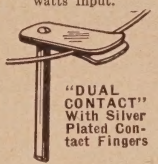
by VAARO-DAVIS



WITH THREE OUTSTANDING NEW ITEMS JUST ADDED:

ORIGINAL VARIABLE SINGLE UNIT COIL WITH NEW "DUAL CONTACT."

FOR USE IN THE 75-40-20-15-11 AND 10 METER BANDS the VAARO VARIABLE COIL is the ORIGINAL SINGLE UNIT COIL. It can be INSTANTLY TUNED to ANY DESIRED BAND or FREQUENCY by loosening the SHAFT LOCK, turning the Tuning Shaft to the left, sliding (up or down) to the desired frequency, then turning to the right to lock. This places the contact between the coil windings and provides a greater, more positive contact. (Arrow shows tuning contact in locked position.) The VAARO COIL is FACTORY PRETUNED, NO GRID DIPPING—NO LOOSE CONNECTIONS—CONTINUOUS COVERAGE FROM 3750 kcs to 30,000 kcs—HIGHEST "Q" AVAILABLE—WILL FIT ALL WHIPS AND BASES. TWO CAPACITIES: Model V-102-B for rigs developing from 0 to 500 watts input.
Model V-103-B for rigs developing from 0 to 1000 watts input.

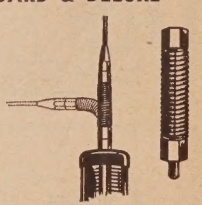


"DUAL CONTACT" With Silver Plated Contact Fingers

THE VAARO VARIABLE SINGLE UNIT COILS POSSESS MAJOR AND ESSENTIAL QUALITIES WHICH ARE ABSOLUTELY UNOBTAINABLE IN ANY SIMILAR PRODUCT OR DEVICE ON THE MARKET TODAY.

Model V-102-B $14.95 **Model V-103-B $16.95**

VAARO—The ORIGINAL "WHIP FLEXOR" STANDARD & DELUXE

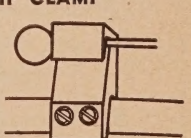


Since 75 meters and other low frequencies began, a new problem has arisen. Any change of antenna (voltage portion) in relation to car body, changes loading and therefore changes output tremendously. This problem has been overcome by the "WHIP FLEXOR" which serves a dual purpose. . . . It is designed to keep the whip perpendicular at extremely high speeds while allowing the whip to be brought down in a horizontal plane for garage storage, etc. This elimination of a base section spring prevents bad "QSB" action on the receiver end. . . . Don't be mislead by inferior imitations.

Standard Model V110-S **$1.95**

DeLuxe Heavy Duty Model V110-D **$3.95**

VAARO "WHIP CLAMP"



ANOTHER VAARO FIRST! The Vaaro "Whip Clamp" securely fastens to the roof water drain of any make car without damage to the paint or metal. Allows the whip to be fastened down to car roof level for garage storage, heavy low wooded areas, etc., etc.
Brass construction, Chrome plated.

Model V-109 Price: $1.79

ADDITIONAL QUALITY PRODUCTS IN THE VAARO-DAVIS LINE INCLUDE:

BUMPER MOUNT (with Tailored Inset to fit exactly), FIBREGLAS WHIPS:—6'—$8.50, 7'—$8.75 and 8'—$8.95. Also BASE SECTIONS (Solid Hex): 12"—$3.75, 24"—$3.95 and 36"—$4.95.

WRITE FOR CATALOG INFORMATION and REQUEST NAME OF NEAREST AMATEUR JOBBER

DAVIS ELECTRONICS
VAARO ELECTRONICS DIVISION
4002 W. Burbank Blvd. Burbank, California

MOBILE

ANTENNA RELAYS

R - 846—Allied 75 Watt Coax Relay 6 VDC Receptical Takes Std. Coax Fittings. $6.95

R-1896—Advance 2000 Ceramic 6 VDC—DPDT 3.75

R-1367—General Electric Ceramic 10 VDC—DPDT 2.50

R - 277—General Electric Ceramic 12 VDC—DPDT 2.50

R - 300—Guardian Micalix 12 VDC DPDT & SPST (NO) 2.80

R-1148—Clare Midget Telephone Type 6 VDC SPDT Micalex Indulation for Antenna Keying and Pair of Normally Open Contacts to B+ Key and Pair of Normally Closed Contacts for Receiver Disabling. 2.75

R-1148 M-12—Same as Above Except for 12 VDC Operation 2.75

6 VDC—Dynamotor Contactors—12 VDC 1.90

Relay Sales carries the world's largest stock of relays of all types. Each relay is new, individually inspected and unconditionally guaranteed. 24 Hour Delivery.

Write for Catalog H-4

Relay Sales

SEeley 8-4146
4719 W. MADISON STREET
CHICAGO 44, ILLINOIS

Keep your Shack Neat

with a

BOUND VOLUME

$7.95

in U. S., Canada and Pan-American Union. Others, $1.00 more.

You'll appreciate the handy convenience of this compact volume of the 1954 issues of CQ magazine handsomely bookbound in tan colored cloth . . . distinctive gold foil lettering embossed in a black panel strip . . . available NOW!

Limited quantity of 1953 volumes available.

Immediate delivery on all orders.

CQ MAGAZINE

67 West 44th Street, New York 36, N. Y.

(from page 82)

I was signing WN4CFB, I heard someone calling me to beat 60. Naturally, I politely sent 'QRZ?' And I was nearly floored to hear WH6BGE, Hilo, Hawaii, calling me! ! ! This occurred in the 3.7-Mc band at 5:01 a.m. Equipment was 70 watts to an 807, an S-19R receiver and a Fuch's antenna (like the Windom), 40 feet off the ground.

"As a result of my experience, I think that I can safely say, that if the boys will listen more carefully, they can work some juicy DX. 73."

Don Macdonald, K2GKK, 100 W. Fairmount Ave., Lakewood, N. Y., has a problem. "Instead of ITV or TVI, I have IYB—interference from a younger brother. You see I operate in the bedroom. When I operate at night, the light and the clicking of the key keeps him awake. How can I cure IYB? 73."

Tony Rogers (14), WN3BFW, 7007 Glenbrook Road, Bethesda 14, Md., wrote twice in the last month. Combining his remarks, we get the following information: "In five weeks on the air, I have worked 22 states, best DX being Oregon, which I have worked twice. My antenna is 120 feet long and is fed with an AT-1 transmitter. My receiver is an S-53A, and all my work has been on 80 meters.

"W3URV and W3TN helped me get my license, with WN3ZGP lending moral support and some help with the theory. I'd be glad to help anyone get his license and to hear from other hams, especially in this area. My telephone number is OL 4-5770. 73."

Ben L. Walker, KNØAEU, 10621 E. 87th, Hickman Mills, Mo., reports that the Heart Of America Radio Club, Inc., has instituted a program to help Novices to obtain their General Class licenses. The first session was held March 11, 1955. Any Novice, whether a member of the club or not, is invited to attend the classes. Ben is the treasurer of the club, and he operates on 7188 Kc.

Tom, W7WHY, somewhere in Oregon, reports, "I dropped the 'N' from my call yesterday. But I will still operate in the 7-Mc Novice band for a while. As a Novice, I worked 13 states, Alaska, Hawaii, and Canada. My best DX was KN2HRB, Lancaster, N Y. I made 130 contacts and have received 86 cards.

"I had an AT-1 transmitter and now have a TR-75TV. Receiver is an S-40B. 73."

Dick Jump, WN9HYV, Cameron, Wisconsin, reports, "It was through reading the *Novice Shack* that I finally decided to try amateur radio after being interested in radio since about 1935. I have been a Novice for almost ten months and have worked 36 states, 34 confirmed. I hope to work them all before I get my General Class license or my Novice expires.

"You see, I have a nasty situation. I drive the school bus and cannot get a day off to take the examination from the FCC. And Cameron is just a shade less than 75 miles from the FCC office; therefore, I am not eligible to get a Conditional Class license. Otherwise, I'd have had it months ago.

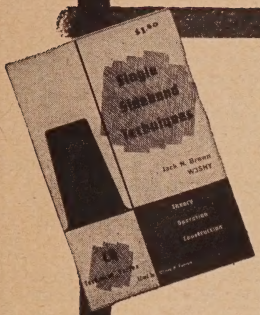
"My station consists of a TBS-50 which feeds a 125-foot, end-fed antenna that is bent hither and thither. But it works both coasts. The receiver is an SX-25. 73."

Ty A. Kearney, WN7WFP, and Marianna S. Kearney, WN7WFO, 11807 N. E. Prescott, Portland, Oregon, a husband and wife Novice Team, give us a doubleheader to finish this month's column. They write: "We enjoy your *Novice Shack* every month. We enjoyed it especially while waiting 4½ months for our tickets to come through. They got lost in the mail, and we finally got on the air by filing for duplicate licenses. We wonder if anybody else had to wait that long.

"Our shack in the rear closet of our 25-foot house trailer is really a 'ham shack in a nut shell.' It includes an S-53A receiver and an AT-1 transmitter. The antenna is ½-wave zepp. We operate on 3.712 Mc and 3.731 Mc and will be glad to schedule anyone needing an Oregon contact. 73 from us both."

My suggestion that readers send in pictures of their shacks and themselves has resulted in a number of fine ones being sent. Keep sending them, please. As always, I

(Continued on page 86)

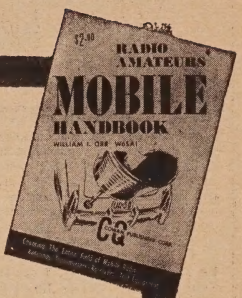


$1.50

Single Sideband Techniques

by Jack N. Brown, W3SHY

Wish we could say that we suddenly thought we'd better put something out on this subject—but, sorry—we just can't. Carefully written, prepared and edited, this book required six months to assemble. Regardless of whether you know quite a lot about SSB, or absolutely nothing—this is the text that covers it all—from start to finish. Half of the book is devoted to pieces of SSB equipment that you can build.



$2.00

Radio Amateurs' MOBILE HANDBOOK

by William I. Orr, W6SAI

The only practical handbook on the market today on the subject of Ham mobile installation, operation and maintenance. Not just talk and theory, but complete text and schematics on converters, receivers, power supplies, antennas and transmitters. Thousands have already been sold and are in the hands of the mobile operators that really "get out." Just about at the point where we can say, "only a few copies left." Get yours today.

CQ Yearly Binders

Stamped or Plain

Wondering what to do with your loose copies of CQ? That's easy. Get a CQ binder at a ridiculously cheap price and have them at your fingerstips. Why dig around under the desk, or in some old box to find an important CQ schematic? Put your CQ issues immediately in a steel reinforced red fabricord binder and keep them orderly and handy. When ordering be sure to specify whether you want yours stamped for a particular year, or just plain.



$3.50

each

CQ-3

CQ Magazine
67 West 44th Street, New York 36, N. Y.

I enclose $_____ for which please send me:

_____ copies of your "Mobile Handbook" at $2.00/copy.

_____ copies of your "SSB Techniques" at $1.50/copy.

_____ CQ Yearly Binders. Years to be stamped _____, _____, _____, or plain ☐.

All New York City purchasers please add 3% sales tax to above items.

My correct address is: (Please Print)

_____
(name) (call)

_____
(street or avenue)

_____
(city (zone) (state)



WORK THE WORLD

ON A GOTHAM BEAM

We guarantee DX performance with any Gotham beam, which uses any standard transmission line. All GOTHAM beams cost a small fraction of other beams, yet give maximum efficiency. All beams assemble quickly, are adjustable over the entire band, and can easily be stacked on a single mast. Every beam complete with all hardware, fittings and castings. Full data supplied with each beam. All aluminum tubing is 61ST6 alloy, with wall thickness of .049".

S202T—Std. 20m 2-El. T match, $24.95. 1—12' Boom. 1" Alum. Tubing; 2—12' Center Elements, 1" Alum. Tubing; 4—12' End Inserts, ⅞" Alum. Tubing; 1—T Match (8'), Polystyrene Tubing; 1—Beam Mount.

D103T—DeLuxe 10m 3-El. T match, $25.95. 1—8' Boom, 1" Alum. Tubing; 3—6' Center Elements, 1" Alum. Tubing; 6—6' End Inserts, ⅞" Alum. Tubing; 1—T Match (4'), Polystyrene Tubing; 1—Beam Mount.

D203T—DeLuxe 20m 3-El, T match, $49.95. 2—12' Booms, 1" Alum. Tubing; 3—12' Center Elements, 1" Alum. Tubing; 6—12' End Inserts, ⅞" Alum. Tubing; 1—T Match (8'), Polystyrene Tubing; 1—Beam Mount.

HOW TO ORDER: Remit by check or money-order. We ship immediately by Railway Express, charges collect; foreign shipments cheapest way. 10 day unconditional money-back guarantee. FREE! Write for complete detailed list of 36 engineered beams by Gotham. Includes model numbers, prices and contents of 6, 10, 15 and 20 meter beams.

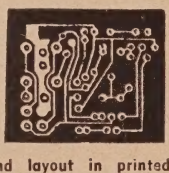
IN CALIFORNIA:
Offenbach & Reimus Co., 1564 Market St., San Francisco.

GOTHAM HOBBY 107 E. 126 Street New York 35, N. Y.

FREE BOOKLET ON HOW TO
MAKE-YOUR-OWN
PRINTED CIRCUITS

Complete Kit..... $19.55 ppd.

- Use Modern Techniques
- Make Circuit Boards to your own design
- Contains all materials needed to make several boards
- Complete, step-by-step instructions
- Simple, easy procedure for layout



Make your newest design idea and layout in printed circuit techniques. Build complete, lightweight circuitry with professional appearance and finish. Kit contains complete materials and equipment—nothing else to buy. Low price replenishable materials.

MONEY BACK GUARANTEE

SEND CHECK OR MONEY ORDER TO DEPT. C-2

TELE-DIAGNOSIS CO.
155 West 72nd Street • N. Y. C. 23, N. Y.

PE-101-C DYNAMOTOR
Unused — Good Condition

6 or 12 v conversion unit is easily adapted to supply 625 v at 152 ma and 325 v at 125 ma or 300 v at 90 ma and 160 v at 110 ma.

Write for complete information or send check or money order. $4.95 plus postage

PIONEER SURPLUS CO.
331 Canal St., New York 13, N. Y.

(from page 84)

am looking for letters and Novice news. If your state is not mentioned as often as you think that it should, it is probably because you did not write. Until next month. 73, Herb, W9EGQ

Help Wanted

Gary Huff, 920 Sumner Ave., Box 55, **Carlinville, Ill.** Phone 739. (Wants pen pals, too.)

Mike McNeely, 2818 Oakley Street, **Evansville, Ind.** Phone 4-6520.

Tom Kuhns (15), 413½ Fifth St., **Irwin, Pa.**

John K. Nagel, 8104 N. E. Plain Road, **Vancouver, Wash.** Phone Oxford 5-5338. (Needs help with code.)

Tony Hill (14), C/O English Car Service, **Saskatoon, Saskatchewan, Canada.**

James P. Burke (12), 7 Granite St., **Hogansville, Ga.**

Bill Walty, 5019-46 NE, **Seattle, Washington.**

Floyd W. Russell, WN5ICZ, (34) 6281 East Marshal Place, **Tulsa, Okla.** Phone 8-3602. (Needs help in theory.)

Ollie Pilkenton, 9068 Eglise Ave., **Rivera, Calif.** Phone Topaz 2-6963.

Sandy Sandry (13), 135 Stevens, Highland Park 3, **Detroit, Michigan.** Phone TO 7-7506.

Robert L. Plouffle, 45 Howard Terrace, **Cherry Valley, Mass.** Phone **Leicester, Mass.**, Twinoaks 2-3122. (Just outside of Worcester.)

Chuck Murrell, **Edina, Missouri.**

Willis Holt (13), Box 103, **Randall, Iowa.** Phone 6303.

Curt Roseman (14), 2120 12 St., **Moline, Ill.** Phone 2-1692. (Needs help on code. Wants advice on equipment to get.)

Alvin M. Steingold (12), KN4AOO, 1082 Algonquin Rd., **Norfolk 5, Virginia.** (Needs help in theory.)

Jack Roade (13), **Lawrence, Mass.** (I doubt whether this is a sufficient address for mail to reach Jack, but it is all he gave. I am very anxious that he gets help, as he had to quit studying for his license for a while, because of an attack of Polio. Jack, please write again and give me your street address.)

Eugene Kearney, **Bakersfield, Calif.**, also forgot to include his address with his request to be listed in this department.

Nat Oberstein, 1685 Boston Road, **Bronx 60, N. Y.** Phone LU 9-4502. (Ex-AACS man. Now TV serviceman. Has wanted to become a ham for years.)

Bill McCane (13), 2963 So. 42nd St., **Kansas City, Kansas.** Phone Fi 3452.

Ronald Vollmann (18), R. R. #1, **Arlington Heights, Illinois.** (Will answer all letters received.)

Each month CQ lists the names of those requesting help in obtaining an amateur license. To have your request listed, send your name and address to Herb Brier, W9EGQ, 385 Johnson Street, Gary 3, Indiana. Requests received by May 15, 1955, will appear in the July issue.

Bibliography of Recent CQ articles on Keying And VFO's

"Break-in Keying For The 274N," by Frank A. Mohler, W2IAZ, *CQ*, August, 1954. Page 13.

"Deluxe Break-in Keying System," by Miro Voznjak, YU1AD, *CQ*, April, 1954. Page 20.

"The Command-Set Round Up," by Herb Brier, W9EGQ, *CQ*, February, 1954. Page 13.

"Keying The Kilowatt," by R. W. Johnson, W6MUR, *CQ*, September, 1953. Page 33.

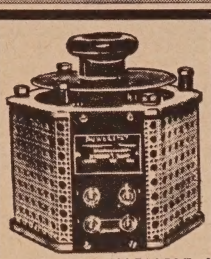
IT'S V & H FOR VERY HOT BUYS IN ELECTRONICS

POWER SUPPLY KITS

No. 1: 400-0-400 VAC @ 200 mils, 6.3 VCT @ 6 A, 5 V. @ 3 A TRANSFORMER 2-15 Hy 200 MA CHOKES, 1 elect. COND. 8x8x8 MFD 450 VDC **$7.95**

No. 2: 2350-0-2350 @ 350 MA TRANSFORMER. 1-12 Hy 300 MA 80 ohm 5 Kv CHOKE. 1-8-25 Hy 80 ohm 5 Kv. CHOKE. 2x8 MFD 2500 VDC OIL CONDENSERS **$44.95**

PHOTO FLASH KIT: 100 W. secs. Completely wired. Leather case. Will run on 110 VAC or from 2 VDC radio rechargeable battery. Has internal provisions for recharging. Contains 1B3 rectifier & 30 mfd. 2,000 V. photo flash condenser with neon light charge indicator & 2 V vibrator. Complete except for 2000 V, @ 10 ma. Xfmr. which must be installed. Like new..... **$14.95**



METERS! NEW REDUCTIONS!

0-1.5 A. RF 2" rd.....$2.95
0-130 VAC 60 cyc. 2" rd.....$2.95
0-1 MA Basic Mvmt. 3" Rd.....$3.49
Buy Now! Pocket yer savings!

BC-1031 PAN ADAPTER. Used, tested. 455 Kc. input. 110 VAC 60 cycle output **$89.50**

BC-733 RECEIVER

Freq. 108-110 MC. Less 90 and 150 cyc. filters and less volume control. With 10 tubes and 6 crystals..... **$4.95**

VARIABLE VOLTAGE TRANSFORMER POWERSTAT TYPE NO. 1126 NEW!

Input 115 V. AC, 50/60 cycles. Output voltage 0-135 volts AC. Maximum amps output, 15 amps. 2 KVA. Overall size 8-3/16" x 8-1/16". Complete with knob and scale. Send 30% deposit with order. Open accounts to rated firms. **$33.95**

APPROX. 20 LB. ASSORTMENT of new, surplus component parts: resistors, condensers, terminal boards, tubes, wire, sockets, pilot lights, coils, switches, etc. Ideal for Rube Goldberg experimentation. **$3.95**

NOBODY—BUT NOBODY!—BEATS V. & H. ON TUBES!

NOTE: These tubes are not re-branded or seconds! ALL TUBES are standard brands, individually boxed and guaranteed to operate! Stock up now!

INDIVIDUAL TUBE SPECIALS!

1P30	$ .59	RKR-73	$1.00	809	1.50
1R5	.60	VT127A	1.95	811	2.75
1S5	.55	211/VT4C	.50	815	2.25
1T4	.45	249B	3.00	826	.45
2C39	7.50	250TL	7.50	829	5.00
2C39A	12.00	274B	1.50	829B	8.95
2C40	9.00	316A	.35	832	4.00
2C43	10.00	403B/6AK5W	2.50	832A	6.95
2D21	1.00	417A/5842	11.00	837	1.25
4-65A	15.00	417A(Klyst)	5.00	872A	1.65
4C36	30.00	446A	.75	954	.20
4D32	22.50	446B	.95	955	.30
4X150A	27.50	464A	1.50	956	.30
4X500A	70.00	471A	1.50	957	.35
5U4G	.40	705A	.50	958A	.50
5Y3GT	.45	717A	.85	1625	.25
6AS7G	3.00	723A/B	10.00	1629	.20
6C21	10.00	724B	.95	2050	1.00
RX21	5.00	800	.75	2051	.75
35TG	4.00	801A	.25	5691	3.00
RKR-72	1.00	803	2.50	5692	5.50
		805	$2.25	5693	4.50

VARIAC NO. 200-C

7 5 A. MAXIMUM 0-130 V.A.C. 60 cyc. OUTPUT Excellent cond. With pointer knob and scale. **$14.95**

WRITE FOR NEW FREE CATALOGUE!

ARC-5 SPECIALS! WORLD'S LOWEST PRICES! EYE 'EM! BUY 'EM!

T-22/ARC-5 7-9.1 MC XMTR..... 8.95
R-27/ARC-5 6-9.1 MC RCVR..... 5.95
4-5.3 or 5.3-7 MC XMTR..... 5.95
BC-442 ANTENNA UNIT With vacuum condensers.... 3.95

TRANSCEIVER-TRANSMITTER SPECIALS

APS-13 TRANSCEIVER. New in original carton.....$14.95
ARC-4 VHF TRANSCEIVER. Less dynamotor. Used 16.95
APN-1 TRANSCEIVER. Used. With tubes & wobulator 8.95



GOING HI POWER? THIS IS IT! 1 KW. POWER TRANSFORMER

OUTPUT: 2350-0-2350 VAC, 350 MILS. PRIMARY 110 VAC 60 CYCLES

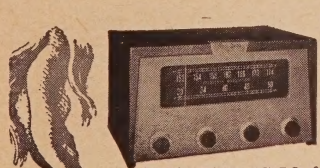
Size: 8" high x 7" deep x 9" wide. NEW. IN ORIGINAL CRATE. ONLY..... **$22.50**

400 V. POWER TRANSFORMER: 800 VCT @ 200 MA. 6.3 VCT @ 6 A. 5 V. @ 3 A. Dim.: 4⅝ x 3¾ x 3½" in standard commercial case. Fully shielded. Pri: 110 VAC 60 cy New. **$3.95**

NOTE: Send full amount with order. Unless otherwise specified, material shipped via RR Express, shipping costs COD. Californians add 3% sales tax. All items subject to prior sale. Minimum order $5.00.

V & H RADIO AND ELECTRONICS SUPPLY Dept. Q-1

2029-2047 W. VENICE BLVD. · LOS ANGELES 6, CALIF. · REpublic 0215



got enough EARS?

BE ON THE CONSTANT ALERT

All Departments Can Now Listen to Every Vital Message

MONITORADIO for a thoroughly coordinated 2-way communication system.

Now every member of every department can have radio communication for as little as $49.95

Write today for further information.

- Nation's most complete line of monitor receivers.
- Crystal controlled or tunable for any VHF FM communication system.
- Mobile or stationary receivers.
- Prices to meet any budget.
- Certified for civil defense use.

MONITORADIO RADIO APPARATUS CORPORATION

7900 Pendleton Pike, Indianapolis, Ind. Phone CHerry 2466

J. J. SPRING SPECIALS!

"HAVE YOU GOT $1.95?"

If so, you can afford to buy this MINIATURE STOREHOUSE of USEFUL PARTS, regularly valued up to $99.50! Here's what you get: over 20 lbs. of ASSORTED EQUIPMENT in EXCELLENT CONDITION! Each package GUARANTEED to contain: at least 42 ea. 7-prong miniature tube sockets, 10 phone plugs, 6 potentiometers, 134 GOLD BAND RESISTORS (½ to 1 W.), 4 ea. condensers 3X .1 MF @ 600 V., MANY OTHER tubular and electrolytic condensers @ 600 V. rating, PLUS Jones plug, transformer choke, relays, micro-switches, all mounted on ALUMINUM CHASSIS, encased in ALUMINUM BOX.
ALL for amazing low price $1.95

10,000 MC. MICROWAVE TRANSCEIVER UNITS

Consists of transceiver housing with crystal mixer and plumbing parabolic reflector. 60 MC I.F. strip. Unit part of 9300 MC APS-4 Radar. Useable with minor adjustment on 10,000 MC. Excellent cond.
Less tubes. **$19.95**

COMMAND EQUIPMENT.
3-4 MC TRANSMITTER, NEW..... $19.95
2-3 MC TRANSMITTER, NEW..... 17.95
6-9 MC RECV'R. With dyn NEW..... 7.95

0-1 3-INCH MILIAMP METER: 270° indication. By-pass shunt and add scale. Only $1.95
ARB RECEIVER: 190 KC to 9.5 MC. Good cond. $14.95

NEW! FREE CATALOGUE!
Just off the press! Get your copy!
J. J. GLASS ELECTRONICS CO.
1624 S. Main St. Los Angeles 15, Calif.



ELIMINATE GENERATOR WHINE

The most effective way, use a Hi Q tuned generator hash filter. Much more effective than a coaxial condenser, this STEBRUCE filter tunes to 30 mc. making this model, the SB-10 suitable for use on 10 meters. The SB-15-20 tunes from 14-21 mc. and is for 15 or 20 meter operation.

30 SECOND INSTALLATION. No holes to drill—mounts on the generator terminal.

MONEY BACK GUARANTEE **$2.85**

Send check or money order to

STEBRUCE, 75 Maiden Lane, New York City

GET INTO ELECTRONICS

You can enter this uncrowded, interesting field. Defense expansion, new developments demand trained specialists. Study all phases radio and electronics theory and practice: TV; FM; broadcasting; servicing; aviation, marine, police radio. 18-month course. Graduates in demand by major companies. H.S. or equivalent required. Begin January, March, June, September. Campus life. Write for Catalog.

VALPARAISO TECHNICAL INSTITUTE
Dept. A Valparaiso, Indiana

14 MC SHORTENED BEAM

Plumber delight type construction. VSWR 1.1; band width 200 kc. Feed RG8/U; 61ST aluminum. Gain 6 db-3 el, 4½ db-2 el. 3 el-11½ lb., 2 el-7 lb., boom 7' & 13'. Price complete: 3 el $52.00, 2 el $40.00. Write for literature.

ARVY ANTENNA, W3LYP,
Raubsville, Penna.

NEED PARTS?

We stock nationally advertised Ham parts

CURLE RADIO SUPPLY

439 Broad St., Chattanooga, Tennessee
406 Meridian St., Huntsville, Alabama

YL's FREQUENCY

(from page 62)

Silent Keys

With deep regret we record the death of two YLs: W6YXI, Neva (Josephine) Fredenburg, and W5KOP, Annie Lois Porter.

W6YXI, Neva, and her OM John, W6VJQ, were killed on Feb. 16 while driving home from work when an oncoming car that had gone out of control on wet pavement crashed into them. W6VJQ owned a radio and TV shop in San Diego county and Neva worked with him. W6YXI first went on the air in 1947, and became a charter member of the San Diego YL club when it was formed that same year. Neva (age 33) was very active in the club and served terms as secretary-terasurer, vice president and president.

W5KOP, Annie Lois Porter, age 70, passed away on Feb. 13 from fatal burns received two days earlier when her clothing was ignited by a radiant heater. W5KOP received her license in 1941 and, except for the war period, operated CW on 40 and 80. She kept daily skeds during this entire period with W5FAH, her son, and W5GKH, Anne, her daughter. In 1950 W5KOP's daughter-in-law, Polly, became W5RWX, and Polly's mother, Mable, became W5QPV. During the last year W5KOP operated phone for the first time and spent many happy hours working the family net with a Viking II.

Here and There

YLs continue to pile up some impressive traffic totals. W3CUL, Mae, has consistently held top place in the Brass Pounders League for many months. Others in the March BPL listing included W9JUJ, Peggy; W2KEB, Georgianna; WØKQD, Irene; W2RUF, Clara; W6QMO, Jeri; W6PHT, Cynthia; W1UKR, Eunice.

From W6WSV, Carol, we learn that K6HWB, Vivian, assisted in the search for Jim Verdin, Douglas jet test pilot, following his crash in an A4D. Only two weeks after receiving her General license (Novice received in Sept.), K6HWB was iniated by spending some 20 hours on the air without a break, Jan. 13-14, monitoring, relaying messages and keeping the 3995 CW emergency frequency clear. Others participating were Vivian's OM K6ARY K6's FCZ, GZZ, AJN, BNS; W6's EJU, OLG, DBH.

Congratulations to YLRL's editor, W3RXV, Peg, on the arrival of a baby boy. . . . To W4UDI, Mary Anne, on the arirval of a baby girl Nov. 23. . . . To KH6AFC, Hazel, who had a boy on Dec. 17.

W4WJX, Dean, is president of the Birmingham ARC. . . . W4WTJ, Betty, is treasurer of the Memphis RC. . . . W6QYL, Martha, has left the hospital; her new QTH: 14281 S. Mar-Les Dr., Santa Ana, Calif. . . . OM W9KJF points out that the call for the mother of Lenore, W9MGT, was reported erroneously in Feb. CQ. Irene's call is WN9KFJ.

After reporting in March CQ that WØRNO was on the air from Denver, Colo., we heard from Ada at Marrakech, a resort city 150 miles south of Casablanca in French Morocco. Ada sailed from New York on Dec. 22 to join her OM who is now a civilian engineer (after 13 years in uniform) with the Air Force at Ben Guerir, 40 miles from Marrakech. Ada wrote she was awaiting her furniture so she could establish "an American home in a French villa." Her rig was on the way, too, and she hoped soon to be on the air as a CN8.

Till next month, 33—*W5RZJ.*

BIRMINGHAMFEST

The Birmingham Amateur Radio Club will hold its annual Hamfest at the State Fair Grounds, Birmingham, Ala., Sunday, May 5, 1955. For further information and tickets write P. O. Box 603, Birmingham, Ala.

DO IT YOURSELF!

SAVE MONEY!

Figure it out . . .

	Newsstand Cost	Subscription Cost
1 Year	$4.20	$3.00
2 Years	8.40	5.00
3 Years	12.60	7.00
4 Years	16.80	9.00
5 Years	21.00	11.00

(The above rates apply to U.S., U.S. Possessions, APO & FPO only. All others add $1.00 per year for postage.)

Them's the facts and figures . . . you save $10.00 by sending in this handy-dandy subscription form marked up for a five year period. On a two year basis you save $3.40, not an inconsiderable amount. CQ's new editor has been chasing around for new articles and has scrounged up some dillies, guaranteed to keep your soldering iron hot for some time to come. Also on the fire are a VHF Column, more on SSB, and a list of all amateur stations running over five kilowatts. Send us money, money orders, checks, or anything else we can take down to the bank to cover our checks to the printer.



Our Circulation manager will welcome your money with enthusiasm.

MONEY BACK GUARANTEE

If, after your subscription has run its course, you decide that it wasn't worth the money just let us know and we will send you a polite reply. If you decide before your subscription runs out we will stop everything and refund the remaining issues. Fair enough?

55

CQ Magazine
67 West 44th Street
New York 36, New York

Dear OM:

Please save me the misery and pother of finding CQ on my newsstand every month. Enter my subscription for.....years. Enclosed is $.....so you can stay in business and maybe put a few more pages in the magazine.

Name .....Call .....

Address .....

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

New Subscription..... Renewal.....

SUPER SPECIAL! 3000 Volts DC—330 Ma.
BASIC COMPONENT BRIDGE KW POWER SUPPLY KIT
Contains the following new components:
- Pwr Xfmr—Primary 115 V 60 cycle. Sec. 3500 V AC @ 400 ma.
- Matched Smoothing choke—400 MA.
- 115 Volts Primary Bridge Filament for Four 866-A's.

Complete with Schematic $39.95
only
Shipped Prepaid in U.S.A., if full remittance is enclosed.

SPECIALS ON NEW, BOXED XMTG TUBES

HK24G	1.50	804	12.00	958A	.45
4E27	8.50	805	2.95	8020	1.40
VR105	.90	814	3.95	9002	.50
211	.50	815	2.95	9003	1.00
304TH/TL	8.75	866A	1.25		

GENERAL ELECTRIC MODEL DW52 RF AMMETERS $3.95
2½" ROUND—0-5.0 AMPS R.F. Built in Thermocouple.....
WESTINGHOUSE GLASS-ENCLOSED TIME-DELAY
115 volt—60 cycle relay. Handles 30 amps. Adj from 5 to 90 seconds orig. Boxed @..... **$6.75**

BUD VARIABLE XMTG CAPACITOR
Tunes 22 to 250 MMF. Handles 4200 volts peak. New **$3.95**

803 XMTG Tubes . . . New Boxed.....$1.90

Western Electric Steel Blank Panels. 10½" high, 19" wide, ⅛" thick. Brand new, individually boxed. W. E. No. 296 A & B, in commercial grey or telephone black. Special .....each **85¢**

Johnson No. 122-101, 829B, 8E29 Ceramic Sockets, only ..... 69¢

NEW 6MFD 600 VDC Oil Capacitors ..... 85¢

STANDARD BRAND TUBES

ONLY 1st QUALITY. No seconds, private label, or rewashed "bargains."

Write for Free 1955 New Air-Mail Handy-Order Blank.

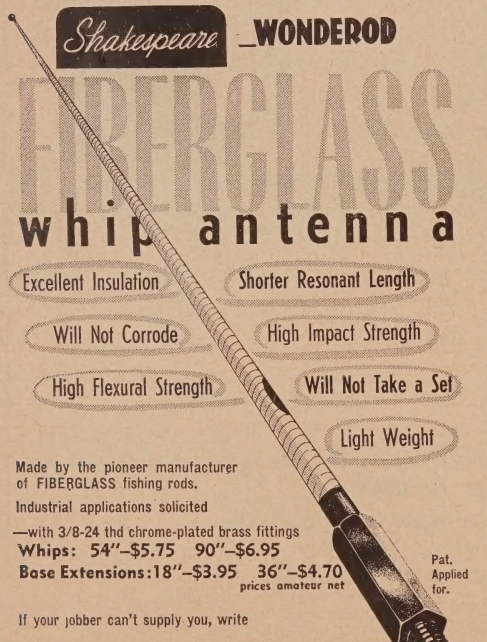
- **Lists ALL Popular TV & Radio Types.**
- **Makes Mail-Order a Pleasure.**
- **All Tube Orders Over $25.00 (with Remittance) Postpaid.**

Write For Listings of XMTG & Special-Purpose Tubes . . . Low Prices.

All merchandise guaranteed. F.O.B., N.Y.C.
New phone and address Phone: Walker 5-7000.

BARRY ELECTRONICS CORP.
512 BROADWAY DEPT. 5-C N.Y. 12, N.Y.

Shakespeare WONDEROD
FIBERGLASS
whip antenna



Excellent Insulation
Shorter Resonant Length
Will Not Corrode
High Impact Strength
High Flexural Strength
Will Not Take a Set
Light Weight

Made by the pioneer manufacturer of FIBERGLASS fishing rods.
Industrial applications solicited
—with 3/8-24 thd chrome-plated brass fittings
Whips: 54"–$5.75 90"–$6.95
Base Extensions: 18"–$3.95 36"–$4.70
prices amateur net
Pat. Applied for.
If your jobber can't supply you, write

COLUMBIA PRODUCTS CO.
P. O. Box 5207, COLUMBIA, SOUTH CAROLINA, SUBSIDIARY OF SHAKESPEARE CO.

Classified Ads

RATES: 25c per word per insertion for commercial business organizations.
5c per word per insertion for individuals on a non-commercial basis.
CLOSING DATE: 25th of the 2nd month preceding date of issue.
MAIL: Your typewritten copy with full remittenance should be sent to CQ Magazine, 67 West 44th St., New York 36, N. Y. Attention: Classified Ad Dept.
NOTE: The products and services advertised in this section are not guaranteed by the publishers of CQ.
Telephone orders not accepted.

FOR SALE

SURPLUS—RG-8/U cable, 100 ft., $5.95. 250 ft., $13.25. 500 ft., $25.00. Connectors—PL-259 or SO-239, 5 for $2.00. Postage extra. Free catalog. Lectronic Research, 717 Arch St., Philadelphia, Pa.

TUBES: 70% to 90% discount. Government, manufacturers, jobbers, etc., surplus. Guaranteed 1 yr. Free catalog on request. Cadillac Trading, Dept. B, 231-07 Linden Blvd., Jamaica 11, N.Y.

FREE LIST! New and reconditioned receivers, transmitters, etc. One hundred big bargains every month. Highest trade-in allowance. Write today! Dossett, W9BHV, 855 Burlington, Frankfort, Indiana.

BUY surplus radio receivers, transmitters, etc., from government. List, $1.00. Box AT 169, East Hartford 8, Conn.

CRYSTALS: FT-243's—3500 to 8700 KC ± 2KC, $1.00 each, .01% setting, $2.00 each. Hundley Crystal Co., 2951 North 36th, Kansas City 4, Kansas.

BARGAINS: WITH NEW GUARANTEE: R-9-er, $12.50; S-72, $59.50; SW-54, $35.00; S-38C, $35.00; S-40B, $79.00; Lysco 600S, $139.00; S-27, $99.00; SX-43, $129.00; S-76, $149.00; SX-71, $179.00; SR-75 Novice transceiver, $49.50; SX-42, $189.00; HRO-50, $275.00; Heath AT-1, $27.50; HT-17, $32.50; EX Shifter, $49.00; Globe Trotter, $49.50; Harvey Wells Deluxe, $79.00; Viking I, $209.50; Viking II, $259.00; New SS-75, $189.00; early HT-9, $139.00; Globe King 400B, $359.00; 32V1, $395.00; 32V2, $450.00; 32V3, $550.00. Free trial. Terms financed by Leo, WØGFQ. Write for catalog and best deals to World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

LAPEL PINS—Neat and professional looking—only 35¢. Your call engraved in white on black, black on white or white on red background, plastic, ⅜" x 1" W2SPV, 4309 Willis Ave., Merchantville, N.J.

FOR SALE: FB phone patch with complete instructions. Price, $10.00 W2GJP/1, 81 Summit Road, Riverside, Conn.

FOR SALE: VHF-152A, like new, $35. Cabinet 22" x 48", black crackle finish, $3. W5RZJ, Dulce, New Mexico.

FOR SALE: NC-183 D with speaker. Excellent condition, $275. Will deliver within 40 miles. Harry E. Cudney, Jr., W2KNQ, R.D. Hewitt, N. J. Phone Upper Greenwood Lake 77-2192.

SALE: Tubes, amp., xtals, earphones, 2000 ft. comm. wire, etc. Write for list. Billy Fishburne, 3507 Duncan St., Columbia, S. C.

EMERGENCY POWER for field day. Surplus 1000 volt @ 25 amps. DC generators with attached relay control box. Can be driven from car engine or with a 1½ to 4 HP gasoline engine. Flexible coupling and spare brush kit included, only $14.95. F.O.B. Elkhart, Ind. Shipping wgt. 100 lbs. Easco Communications Co., 2611 Goshen Ave., Elkhart, Indiana.

FOR SALE: Teletype model 26 & 12, some model 15 parts, Navy FRA teletype terminal unit. L. A. Walters, W6III, 310 No Rural Dr., Monterey Park, Calif.

FOR SALE: NC-125 receiver with matching speaker, year old, maritime transmitter modified for broadcast use, meters, command transmitters and receivers. W. D. Rathje, WØESM; Grand Mound, Iowa.

CRYSTALS: precision units 3500 to 8700 kc. ± 1 kc., $1.50. Exact frequency in our oscillator, $2.00. Breon Laboratories, 1520 Evergreen Road, Williamsport, Pa.

BC-348Q RECEIVER: with meter, power supply, speaker. Like new. Best offer over $55. Will consider trade on enlarger, projector or twin lens reflex camera. Gordon March, 424 Liberty, Cedar Rapids, Iowa.

FOR SALE: Hallicrafters model S-40B rec., $65.00; Heathkit VFO model VF-1 (never used), $15.00; low power phone—CW transmitter. Gary Gallupe, Riverside Ave., Fort Fairfield, Maine.

NEW: unused Telrex beams. 5E 20-15M, 6E-10M. Box 62, Brooklyn 12, N. Y.

LATEST call books, $4.00. Mrs. Earl Mead, Huntley, Montana.

DE LUXE mobile rig 3 band, VFO, automatic band switching, complete $150.00. Don M. Lidenton, 701 Poplar Street, Poplar Bluff, Mo.

DELUXE KW rig, all bands, $500.00; Deluxe exciter, $150.00. Don M. Lidenton, 701 Poplar Street, Poplar Bluff, Mo.

KWICKPATCH the one hand fone patch now in use from coast to coast. If your jobber does not stock send card for literature. Same old price, $14.95. Erv Rasmussen, Box 612, Redwood City, California.

FOR SALE: PE-103A brand new in original sealed shipping crate, $25.00. Also practically new Morrow 5 BR-1 converter, $50.00. Gerald Drake, W9RVD, 211 N. Coler, Urbana, Illinois.

SACRIFICE: Leece-Neville 5058-GA3 6 volt. 100 amp. alternator, regulator and rectifier. Used 6 months. Latest model, $60.00 (not obsolete 5024-G3 alternator). Herbert A. Zimmermann, Jr., 570 Jamaica Ave., Bklyn., N. Y. UL 2-3472.

REAL BARGAINS: New and reconditioned Collins, National, Hallicrafters, Hammarlund, Johnson, Elmac, Barker & Williamson, Gonset, Morrow, Babcock, RME, Harvey-Wells, Millen, Meissner, Lysco, Sonar, Central Electronics, all others. Reconditioned S40A, $69.00; S40B, $79.00; S76, $129.00; SX71, $159.00; NC57, $59.00; NC98, $119.00 NC125, $129.00; HRO60, $389.00; HQ-129X, $169.00; SP400X, $259.00; 32V1, $345.00; 32V2, $445.00; 75A2, 75A3, Viking I, Viking II, Viking Ranger, HT9, NC183D, many others cheap. Shipped on approval. Easy terms. Satisfaction guaranteed. Write for free list. Henry Radio, Butler, Missouri.

VIBRATORS: new replacement vibrators for Electronic Laboratories model 2606 Hampack, $4.00 each—3 for $10, postage prepaid. Limited quantity. WØBUO, Charles G. Compton, 1011 Fairmount Ave., St Paul 5, Minnesota.

2-METER BEAMS: 6 element, horizontal or vertical, all seamless aluminum, $6.95 prepaid. Wholesale Supply Co., Lunenberg 1, Mass.

FOR SALE: BC-348-R 110 VAC, $65; Hallicrafters SX-25 with matching speaker, $65. All in excellent cond. All inquiries answered. FOB W4KPU, James Johnson, 301 Crest Dr., Birmingham 9, Ala.

75 WATT CW transmitter kit with bandswitching coils, shielded case and power supply, $59.95. Hart Industries, 467 Park Avenue, Birmingham, Michigan.

FOR SALE: Q5'r, AC pwr, clean, $20; NC-46, excellent, $50; Mark II, new, $45; FL-8 filter, variable, $3.00; Gonset 2-meter converter, $25.00. W2EEJ, 821 Rutgers Rd., Franklin Sq., N. Y.

FOR SALE: Viking Ranger, new in February (1955). Not a scratch or mark. Complete with tubes, crystal mike, and key, $235. Also, HRO-Sixty with six coils ABCDEF, matching speaker. Make offer. Dick Rosenquist, WØVKI, 2558 Ida Street, Omaha, Nebraska.

10, 15 & 20 METER BEAMS, aluminum tubing, etc. Perforated aluminum sheet for shielding. Radcliff's, Fostoria, Ohio.

FOR SALE: Harvey-Wells TBS-50D & APS-50, never used, $95.00. Jack Mowry, 2164 Oakdale, Cleveland 18, Ohio.

FOR SALE: new and used Gonset mobile equipment. Also two and six meter communicators and polaroid cameras. R. T. Graham, W1KTJ, P.O. Box 23, Stoneham, Mass. ST 6-1966.

FOR SALE: NC 100X receiver, $70; Bud V.F.O.-21, $15; automatic car radio, model M-86, $20. WØHWC, Mayville, N. Dak.

SELL: POWER SUPPLY, 6 VDC input, 200 VDC, 85 MA., 420 VDC, 280 MA output, completely filtered. Thermal cut-outs, starting solenoid, waterproof steel box, brand new, commercially built, $50.00; Eicor Dynamotor, 6 VDC input, 600 VDC, 250 MA output, $20.00. W2LFJ, 101 White Road, Rt. 2, N. Syracuse, N. Y.

SELL: COLLINS 32V3, $525.00 cash and carry. Henry Schultz, W3MOQ, 1225 Lehigh St., Allentown, Penna.

TV CAMERA and xmtr: RCA type CRV-59AAA, ideal for ham or closed circuit TV. Never monkeyed with, original cost, $225. Best offer accepted. R. T. Tucker, W8LVF, 2175 N. Star, Columbus, Ohio.

PRACTICALLY NEW Eldico TR-1TV xmtr—300 watts fone-CW, TVI-proof. What am I offered? All inquiries answered. Sapora, 916 West Charles, Champaign, Illinois.

HICKOK 292X signal generator, $185; Gordon heavy duty beam rotator & indicator, $125; new 6V. dynamotor, 425 V.-275 MA output, $22.50; ATR 120-C heavy duty 6 & 12 V.D.C. supply, $25; National 1-10A receiver, $35; Zeiss 8 X 24 binoculars & case, $65; 3 RCA 813's, $7.50 each. All F.O.B. R. F. Wolfe, W3HDT, 2506 E. Hoffman St., Baltimore 13, Maryland.

WILL SELL one or all. Lettine 240 xmtr, S38C rcvr., 200 watt CW xmtr with low voltages. 1400 volt supply. Donald Renkowitz, K2DUW, 3020 Yates Ave., Bronx, N. Y.

SELL: NATIONAL HRO-50 receiver, excellent condition, $235; Viking Mobile xmitter, excellent condition, $65. Wendell Kollen, W8LEO, Route 3, Holland, Michigan.

FOR SALE: Astatic JT-30 mike. Speco 3-mike mixer. Astatic FLC-33 micro groove pickup Pickering S-120-M cartridge. Pair intertalk telephones. RCA 78-rpm record-changer. Travler table radio. Fabrico vinylite plastic fishing pants and parka. Swiss chronograph wrist watch, unused. Alliance BB-2 television booster, new. Chrysler car radio. Each $7.50 plus shipping. Satisfaction guaranteed. M. L. Phillips, 311 Penfield, Rockford, Illinois.

HIGH Q, all band antenna coils for center loaded mobile antennas. 10-80 meters. Tapped on both ends for ⅜" studs. Price, $7.95. Universal Measurements Co., 44110 Heaton, Lancaster, California.

MOBILERS: Send now for your free copy of Mobile Antenna Design We cater exclusively to supplying the needs and answering the problems of the mobile ham. Write to Skyline Electronics-Ham Division, 5835 W. Chicago, Chicago 51, Illinois.

CRYSTALS: in FT-243 holders, 3500 to 8800 Kc. ± 3 Kc., 95¢ each. Exact (.01%) $1.95 each. C-W Crystals, Box 2065, El Monte, Calif.

ONE NATIONAL HFS: Eico model 315 generator, TelRad frequency standard model 18A. Robert A. Jones, W9DWD, 4232 Hampton, Western Springs, Ill.

TELETYPE, MICROWAVE and Servo parts; Wilcox CW-3 receivers for sale or trade for Servo-mechanisms, lab test gear, standards, decades, etc. Also recording polar coordinate milliammeter. T. M. Dale, W1TWP, Box 868, Portsmouth, N. H.

CLEANING HOUSE: Meters, relays, sideband and other audio filters, electronic timers, phone patches, facsimile and printing telegraph machines, plus scads of electronic devices. Write for list: Box 55J, CQ Magazine, 67 W. 44th St., N. Y. 36.

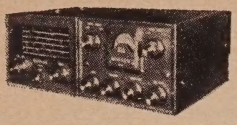
INSTRUCTION

PORT ARTHUR COLLEGE, Port Arthur, Texas, provides training in Radio, Radar, Television necessary to pass FCC examinations for Phone and Tel licenses. 12 to 14 months. Advanced TV 6 months. Start at any level. Progress at own rate. Work toward standard. Low tuition. Board & Room at cost in dormitory. Advanced students receive on-the-job-training at KPAC, 5000 watt radio station, owned & operated by the college. New courses start every 5 weeks. Approved for Veterans. Write Registrar for catalog & information.

INCREASE CODE SPEED. New method. Free particulars. D. H. Rogers, Gough Ave., Ivyland, Pa.

PASS AMATEUR THEORY exams Check yourself with sample FCC-type questions & novice & general class examinations. All for only 50¢. American Electronics, 1203 Bryant Ave., New York 59, N. Y.

CHECK *with* ARROW *for a* BETTER BUY!



MORROW FTR

A fixed tuned receiver of excellent selectivity and stability. Features the NEW MORROW Noise Balanced Squelch Circuit: Xtal controlled osc. 3 kc selectivity at 6 db. down.

FTR Receiver: with separate power supply.....$128.40
5BR-1: with built-in noise limiter.....$ 74.95
5BLN-1: Less noise limiter.....$ 69.95
5BRF: Designed specifically for FTR.....$ 67.95

The 5BR series converters tune the 75, 40, 20, 15 and 10 meter bands. Recognized everywhere as the standard of converters.

Westinghouse 807 Tubes



Brand New JAN Specs
Shipping wt. 1 lb.
Special Price $1.27

F1 Carbon Chest Mike

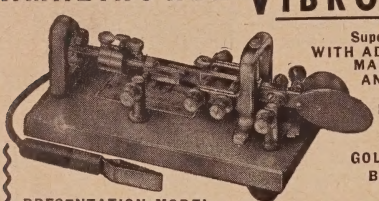


With switch. FB for mobile use. Complete with straps. Shpg. wt. 2 lbs.
Special Price $1.98

Please include sufficient postage for shipping. Any overpayment will be refunded.

ARROW ELECTRONICS INC
65 Cortlandt Street, N. Y. 7, N. Y.
Digby 9-4714
Arrow Hempstead – 215 Front Street
IVanhoe 1-1826

AMAZING NEW VIBROPLEX



Super DeLuxe WITH ADJUSTABLE MAIN SPRING AND OTHER GREAT FEATURES

24-K GOLD-PLATED BASE TOP

PRESENTATION MODEL $29.95

Vibroplex presents the first really speed control key. An adjustable main spring permits operator to send slower or faster as desired. No more muddy signals . . . no sacrifice of signal quality. Suits any hand or any style of sending. Free of arm tension. Sends easily as pressing a button. Praised by operators and beginners alike. Try this new Vibroplex key! You'll be delighted. Other new popular Vibroplex keys from $12.95 up. At your dealer or
THE VIBROPLEX CO., INC. 833 Broadway, N. Y. 3, N. Y.

FACTORY REPAIRS
ON ALL MAKES AND TYPES OF TEST EQUIPMENT

Send units via parcel post—
Free quote after inspection.
WRITE FOR NEW FREE CATALOGUE
GENERAL ELECTRONIC DIST. CO. DEPT. Q5
100 PARK PLACE, NEW YORK 7, N. Y.



Groth

TURN COUNT DIAL
Registers Fractions to 99.9 Turns

FOR roller inductances, **INDUCTUNERS**, fine tuning gear reducers, vacuum and other multiturn variable condensers. One hole mounting. Handy logging space. Case: 2" x 4". Shaft: ¼" x 3". TC 2 has 2⅛" dial—1⅝" knob. TC 3 has 3" dial—2⅝" knob. Black bakelite.
TC 2 $3.90— TC 3 $4.20—Spinner Handle 75c extra
Parcel Post Orders: Add 8¢ for dial

R. W. GROTH MFG. CO.
10009 Franklin Ave. Franklin Pk., Illinois

SWAP OR SELL

TRADE: Viking 1 and VFO for Varmiter rifle and scope. Will sell. D. E. Bush, 2314 Burnett Rd., Topeka, Kansas.

SWAP: Remington Rand Portagraph Printer for receiver or (?) 24" Lott Rotary Print Dryer, Carter Magnamotor. Want antenna tuner or (?) W. T. Clark, Frances Dr., Greenwood Hills, Harrisburg, Pa.

SELL OR TRADE: 75A-3, 72V-3, teletype equipment; 12,000 ohm dpbt relays; NC-100, RAK, RAX, Boehme automatic keyer. Want ART-13, ARC-1, APR-4, TN-19, TN-54, TN-16, TN-17, TN-18, ARN-7, APN-9. Tom Howard, W1AFN, 46 Mt. Vernon St., Boston 8, Mass. Richmond 2-0916.

HAVE: 6 ft. Bud rack 2500 to 3000 volt DC 300 MA supply; 1500 volt DC 500 MA transformer; BC645 with conversion data; 2-0-200 MA and 2-0-500 MA Simpson meters; 2-JAN 810's; 2-JAN 872's; 3-866A's; homade modulator, 300 watts less mod. transformer. Trade for low power phone, CW rig or make offer. Carlton V. Huitt, WØJCA, c/o Evans Cafe, P. O. Box 311, Noel, Mo.

WILL TRADE: new $125.00 gold Benrus gent's wrist watch or $71.00 gent's or lady's 21 jewel Bulova for used xmtr/rcvr kit or S-38D or S-53A Hallicrafters, Meissner 2CW or similar. Fruman Jewelry, 509 South St., Phila., Pa.

HAMFESTS

1955 NORTH DAKOTA STATE ARRL Convention and Hamboree Banquet, Saturday, June 11th starting at 7 PM with all the chicken you can eat followed by dancing and the Wouff Hong initiation. Ladies, $2.50; Stags, $3.00. Place, Bismarck Municipal Country Club. Sunday—the main event, a full program starting at 9:00 AM continuing until 5 PM, $2.50 per family, food smorgasbord style at "share the cost prices". Place, St. Mary's Central High School Gym. Lots of prizes and fun for all the family. Sponsored by Central Dakota Radio Association.

THE NORTH FORK Amateur Radio Club of Western Okla., will hold its third annual Hamfest and picnic at the Quartz Mountain State Park and Lugert Lake on May 21 and 22. Registration fees will be $2.50 and will include overnight bunkhouse privileges as well as eligibility for a swell list of prizes. All registrations prior to May 15 will also be eligible for the extra prize consisting of a completely wired and tested Johnson Adventurer. For further details contact Jay Thompson, W5ZZP, Sayre, Okla.

HAM PICNIC: Sunday, May 15th, Clifty Falls State Park, Madison, Indiana. Free registration. Bring the family and picnic basket and meet the gang. Only a short drive from Cincinnati, Louisville or Indianapolis. Plenty of shelter, come rain or shine.

HAMFEST: Come to 898 Buffalo Road, Rochester, New York, May 21, for the annual "Western New York Hamfest". Registration 1 to 5 P.M. Banquet 7 P.M., $3.75 per person. R.A.R.A., P. O. Box 1388, Rochester 3, New York.

BREEZE SHOOTER'S Net Hamfest, May 22, 1955, at the Lodge North Park, Pittsburgh, Pa. Prizes—swap and shop—activities. Contact W3SJK, 565 Parker St., Verona, Pa.

GREATER ST. LOUIS Radio Amateur's Annual Hamfest May 22nd. Prizes, games, entertainment for adults and children. Refreshments obtainable on grounds. Admission, adults, $1.00, children, free. Creve Coeur Farmer's Club. WONDERFUL: Wyoming in July 15-16, Sheridan—Wyo. Rodeo, Yellowstone Park, 23-24, Annual Wyoming Hamfest, 25-30, Cheyenne Frontier Days. Write W7QPP for information.

MISCELLANEOUS

TEST EQUIPMENT repaired and calibrated by factory staff. All makes: Hickok, Simpson, Triplett, Heath, etc. Prompt service. Low factory prices. Our nineteenth year. Douglas Instrument Laboratory, Norfolk Avenue & Shetland, Boston 19, Mass.

BENCH MODEL rotary small parts bin, $9.50. P.O. Box 34, Larchmont, N. Y.

CALL LETTERS: two inch, weatherproof red Scotchlite. Apply to auto bumpers, signs, chassis. 60¢ set. No stamps. R. Boyce, 201 Concord Road, Bedford, Mass.

QSL'S

QSL's—America's finest! ! ! ! Samples, 10¢. C. Fritz, 1213 Briargate, Joliet, Illinois.

QSL's: two colors, $2.00 hundred. Samples for stamps. Rosedale Press, Box 164 Asher Station, Little Rock, Arkansas.

FINE QSL's—100, $2.75; additional 100s, $1.00. Craig Print, Newark, Arkansas.

QSL SAMPLES: 10¢; catalog, 25¢. World Printing, 166 Barclay Avenue, Clifton, N.J.

QSL's—"Brownie" W3CJI, 3110 Lehigh, Allentown, Pa. Samples, 10¢, with catalogue, 25¢.

QSL's: Samples, ten cents. Printer, Corwith, Iowa.

QSL's—SWL's! Quality cards and reasonable prices. Samples, 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

QSL samples? Sackers, W8DED, Holland, Michigan.

QSL's! Modern designs and craftsmanship. Samples 10¢. Tooker Press, Lakehurst, New Jersey.

QSL SAMPLES: dime, refunded. Gale, W1BD, Waterford, Conn.

QSL's — SWL's! Varicolored specials, samples, 10¢. W9HIU, 113 Harrison, Jeffersonville, Indiana.

QSL's: two color, $1.00 per 100. W6HTN.

WANTED

WE WANT your used gear. Highest trade-in allowance on National, Hallicrafters, RME, Hammarlund, Gonset, Morrow, Johnson, etc. Write or call: C&G Radio Supply Company, 2502-6 Jefferson Avenue, Tacoma 2, Washington. Br. 3181.

AN/APR-4 receivers and tuning units urgently needed! Engineering Associates, 434 Patterson Road, Dayton 9, O.

KILOWATT modulation transformer needed. Prefer multi-match. Box 35W, CQ Magazine, 67 West 44th Street, New York 36, N. Y.

WANTED: 160-meter coil set for Meissner Signal Shifter. Write: W7TYC-Ø, Bob Dyson, Box 403, Lemmon, South Dakota.

PAY CASH for Collins 75A1, 2 or 3, 70E8, VFO, HRO 50 or 60. Personal pickup. Zihler, HB9IZ/HL, Swiss NNSC, WAPO 6500, San Francisco, Calif.

WILL PAY $150.00 for AN/ARC-1 in good clean condition, 20-channel preferred. Also need BC-610-E xmtrs., BC-614-E speech amplifier, BC-939 or 729 ant. tuning units; also BC-221 freq. meters, TCS and others. Amber Co., 393 Greenwich St., New York 13, N. Y.

TECHNICAL MANUALS WANTED: we need Sig. Corps, Navy and Air Force stock catalogs; Maintenance and Instruction TM's for war surplus equipment. Amber Co., 393 Greenwich St., New York 13, N. Y.

WANTED: PE-103A dynamotor. W8RQQ, Box 65, Dalton, Ohio.

WANTED: for cash . . . old wireless spark equipment, battery radios, crystal detectors, crystal sets, transmitters and receivers made from kits, old parts, anything before 1928. W6MEA, 2341 Ivyland, Arcadia, California.

WANTED: amateur and other transmitters, receivers, especially want 75A, 32V, ART-13, ARC-1, ARN-7, TDQ, BC-610, BC-614, BC-348, BC-312, BC-342, BC-221, TDQ, ART-13 dynamotors DY-11, DY-12, ATC; teletype equipment, test equipment, manuals, APN-9, APR-4, APR-5, etc. Cash or trade for new Johnson Viking, Ranger, Barker & Williamson, Central Electronics, Elmac, Gonset, Hammarlund, Hallicrafters, National, Harvey-Wells, Telrex, Fisher Hi-Fi, Pentron, Bell, Stephens, etc. Write: Alltronics, Box 19, Boston 1, Mass. Richmond 2-0048. (Stores: 44 Canal St., Boston, 60 Spring St., Newport, Rhode Island.)

DESIGNED BY "BILL" SCHERER for the Mobile Operator

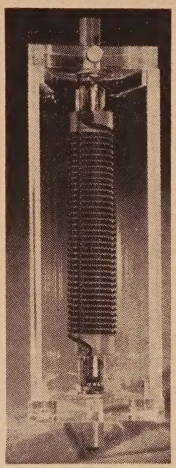
MOBILE ANTENNA BANDSWITCHING

"As easy as changing a fuse."

Rapid and simple antenna loading coil switching is now possible using the Sherrick Products' Antenna Loading Coil Mount—Just Slide up door, pull out one coil, snap in another, close the door, and the antenna is all set for another band.

At the same time, the separate low loss coils for each band provide a higher radiation efficiency than that found with many other bandchanging arrangements. No excess winding at ends, and no shorted turns to lower Q and impair efficiency.

Other features of the Antenna Loading Coil Mount include the following:



1. May be used with either center or base loaded whips.
2. Made of 3/16" lucite—8¼" long, shaped to lower wind resistance and minimize side sway.
3. Will stand up under the stresses and strains of constant whipping when used in either position.
4. Mounting studs tapped for standard ⅜-24 thread.
5. Has terrific eye appeal.
6. Weatherproofed.
7. Coil clips made of silver plated spring copper.
8. Uses high efficiency coils wound on low loss forms.
9. Coil forms for 20 and 40 meters are grooved to prevent unravelling of wire and to maintain spacing between turns when coils are pruned.
10. Shorting bar, used in place of coil on 10 meters, may be used to tune antenna exactly to band.
11. Adapters available for use with existing coils of other manufacturers.

AMATEUR NET PRICES

Available at Your Favorite Supplier

1. Coil Mount with one coil $15.00
2. Coil Mount with six adapters & shorting bar 15.00
3. Coil Mount with coils for 20-40-75 and shorting bar for 10 ..... 22.50
4. Extra coils—any band 4.00

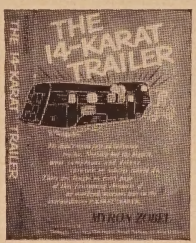
The following kits were introduced in May 1953 and have been widely acclaimed by the hundreds of Hams who have purchased them.

CONVERTER-ETTES: Highly sensitive and stable two-tube converter-preselector for any one band. Broadcast receiver is used to tune amateur bands. Chassis size 4"x2⅛"x1⅝". For either 6 or 12 volts. Complete kit with tubes. $15.00

TWIN NOISE SQUELCHER: Most effective noise silencer available. Does not distort audio. Variable squelch to quiet background hash. Chassis size 2¾"x2¼"x1⅝". For either 6 or 12 volts. Complete kit with tubes $10.00.

SHERRICK PRODUCTS 86-11 SANCHO ST., HOLLIS 23, N. Y.

GO MOBILE WITH ZOBEL !



There's a laugh on every one of the 180 pages of "The 14-Karat Trailer". Myron Zobel, W6NMC ("No More Cash"), globe trotting writer, lecturer, movie & TV producer tells the hilarious story of the Zobels' Hamventures in the fabulous Continental Clipper. When you've read it you'll want to keep a copy in the shack to quote these side-splitting escapades to your friends. Use the attached coupon to obtain an autographed copy with your name and call letters and Zobel's King-size World Safari QSL.

To: MYRON ZOBEL, W6NMC, 912 Glen Oaks, Pasadena 2, Cal.
Please send me an autographed copy of **The 14-K Trailer.**

Name ..... Call .....

Address .....

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

I enclose $3 (Cash, check, money order or stamps).

MOBILE DYNAMOTORS

Made by PIONEER GEN-E-MOTOR

Compact, efficient, dynamotors designed for commercial services. Filter boxes attached to bottom of dynamotors contain A and B filters, oil condensers and RF filters. Dynamotors have internal cooling fans. Ideal for taxi, aircraft, marine and amateur services. Fully guaranteed.

5.5 TO 6 VOLT DC INPUT

Output	ICAS*	CCS*	Filter	Price
400 VDC	300 ma	175 ma	with	$19.97
500 VDC	325 ma	200 ma	with	22.97
500 VDC	300 ma	200 ma	less	19.97
250 VDC	100 ma	65 ma	with	11.97

11.5 TO 12 VOLT DC INPUT

400 VDC	300 ma	175 ma	with	17.97
500 VDC	325 ma	200 ma	with	21.97
500 VDC	300 ma	200 ma	less	18.97
400 VDC	175 ma	——	less	9.97
210 VDC	——	40 ma	less	4.97

*ICAS—Inter Duty *CCS—Cont. Duty

MOBILE RELAY

6 VDC Coil SPST, 30 amp contact for Dynamotor starting plus extra contacts for silencing receiver, SPST normally closed. Made by Struthers Dunn. Specially priced at..... 87¢ ea.

OIL CONDENSER SPECIALS

Brand New. Ceramic Ins.

.1 MFD 3000 VDC	$1.87
.6 MFD 1500 VDC	2.27
.2 MFD 2000 VDC	1.57
10 MFD 600 VDC	$1.17 [6 for $5.97]

PANEL METERS

GOV'T SURPLUS, G.E., WESTINGHOUSE, WESTERN ELECTRIC, SIMPSON, ETC.

2" METERS		3" METERS	
0-4 amp RF	$2.97	0-500 Microamps	$5.97
0-15 ma DC	2.97	0-50 Mill.	3.97
0-10 amps RF	2.97	0-80 Mill.	4.57
0-10 amps DC	2.97	0-150 Volts AC	4.97
100-0-100 microamps	4.97	0-15 Volts DC	4.97
		0-1.5 Mill.	3.97
		0-1 amp RF	4.97
3" METERS		0-10 VDC	4.97
0-200 Microamps	$6.97	0-50 amps DC	4.57
0-500 Microamps	5.97	0-10 Mills DC	3.97
0-200 Milliamp	4.57	50-0-50 amps DC	3.97
0-3 Milliamp	3.97	0-15 amps DC	3.97

Min. Order $3.00—25% with Order—F.O.B. New York.

PEAK ELECTRONICS CO.

66 WEST BROADWAY, NEW YORK 7, N. Y.
PHONE WORTH 2-5439

EASY TO LEARN CODE

It is easy and pleasant to learn or increase speed the modern way — with an **Instructograph Code Teacher.** Excellent for the beginner or advanced student. A quick, practical and dependable method Available tapes from beginner's alphabet to typical messages on all subjects. Speed range 5 to 40 WPM. Always ready, no QRM, beats having someone send to you.



ENDORSED BY THOUSANDS!

The Instructograph Code Teacher literally takes the place of an operator-instructor and enables anyone to learn and master code without further assistance. Thousands of successful operators have "acquired the code" with the **Instructograph System.** Write today for full particulars and convenient rental plans.

INSTRUCTOGRAPH COMPANY

Dept. C., 4701 SHERIDAN RD., CHICAGO 40, ILL.

LEARN WITH AMECO COURSES

BECOME A RADIO AMATEUR

Simple, Low Cost, Home-Study Courses prepare you to pass F.C.C. Code and Theory Examinations for Amateur license and Code for Commercial license.

Sold at leading distributors or write for information to

AMERICAN ELECTRONICS CO.
1203 BRYANT AVE. (Dept. C-5) NEW YORK 59, N.Y.

WANTED: TUNING UNITS

FOR RECEIVER AN/APR-4, and AN/APR-9

ENGINEERING ASSOCIATES

434 Patterson Road Dayton 9, Ohio

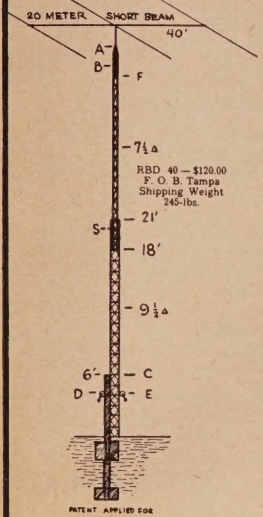
DX Flashes

George, PJ2MA, left St. Martin on March 16th after a total of 310 contacts. His stay was shortened due to the fact that he had no assurance of transportation back to Aruba before his leave expired. . . . Via W1PST we understand that both Dutch and French sides of the Island of St. Martin will be recognized as separate countries and probably will have been announced, as such, by now. . . . Great and Little Corn Islands will NOT be given separate status. While these islands have been leased by the U.S. there is a Nicaraguan Governor there and a U.S. prefix would not be granted to avoid possible diplomatic embarrassment. . . . Some Venezuelan hams have been contacted regarding an expedition to Aves (Bird) Island which lies some 350 miles north of YV and 135 miles west of Dominica. Should a landing be possible, or space permit, this spot seems a "natural" for a YVØ call. . . . Dave Laing (VK4DL, VK2DE, ZC3AB) advises that he is now at the Radio Station, Port Vila, New Hebrides, and should be on now with a YJ1 call. He will run 100 watts and his stay at YJ1 will possibly be of six years duration. Dave says that there are a couple of hams there but they are mainly interested in working their own countrymen (French) but he will do his best to add YJ1 to everyones list. . . . W2BBK states that all FP8AK/VP2 cards have gone forward. . . . ZD3A, Box 285, Bathurst, same as ZD3BFC. . . . W8TMA heard LB1RC who claimed to be on South Georgia and said QSL via NRRL. (7 Mcs.). . . . A recap on some TI9MHB "firsts" follows: First ten contacts, 7 Mcs., CW: W1DDF, KV4AA, W1CWX, W9FJY, W2WZ, W9APY/5, W2SAW, W8LDH, W2BBK and W8TMA. Firsts in each W district on CW: W1DDF, W2WZ, W3AXT, W4QCL, W9APY/5 (W5MSH), W6YMD, W6GAL/7, W8LKH, W9FJY, WØELA. First contacts on phone: W5ASG, W4DQH, W8DAW, W4ANE, WØSBE, WØDSO, W8UAS, W8BKP, W8DMD and W5ADZ. Firsts in each W district on phone: W1FH, W2SKE, W3JNN, W4DQH, W5ASG, W6UZX, W7RBU, W8DAW, W9EU and WØSBE. First VE, VE3YT. First G, G4CP.

THE ANSWER TO A HAM's DREAM!

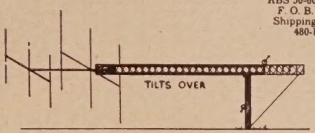
E·Z WAY TOWERS

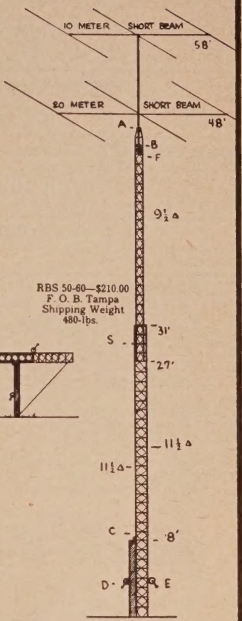
CRANK UP AND DOWN•TILT OVER



SPECIFICATIONS: All steel construction. Electric arc welded. Continuous diagonal bracing on two sides and climbable ladder-type horizontal bracing of ⅜" rod on third side. 1038 extra hard steel 7½" △ has legs of ½" rod, diagonals ¼" rod. 9½" △ legs ½" structural pipe, diagonals ¼" rod. 11¼" △ — Legs ¾" structural pipe, diagonals 5/16" rod. Rotor mounting valve drilled for Vee DX VB Rotor.

Be one of the first in your area with an E-Z Way Rotary Beam Tower. Simple to install, easy to adjust antennas. Sturdiest, most versatile tower in the industry. No guy wires required.





KEY

A-Radial Bearing	E-Crank To Raise and Lower
B-Thrust Bearing	F-Rotor
C-Hinge	S-Safety
D-Crank To Tilt	

ANTENNA AND ROTOR NOT INCLUDED IN PRICE
VEE DX VB ROTOR $25.77

E-Z WAY TOWERS, INC.

5901 E. BROADWAY, TAMPA, FLORIDA • P. O. BOX 5491 • PHONE 4-3916

HERE IS AN EFFECTIVE HIGH PASS FILTER
TO SUPPRESS TELEVISION INTERFERENCE!

The Regency Model HP-45 High Pass Filter is a constant "K" type filter with a cut-off frequency of approximately 45 mc. in a 300 ohm balanced line.
Attenuation at 29 mc. is approximately 20db. At frequencies of 14mc. and below, the attenuation is 40db. or more.
Signals above 55mc. are passed through the filter without loss.
Simple to install--full instructions included with each unit.

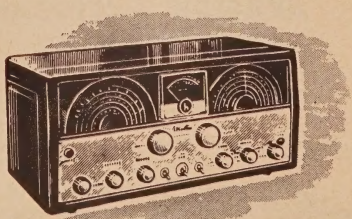
Regency
MODEL HP-45

REGENCY Division of I.D.E.A., Inc., Indianapolis 26, Ind.

AMATEUR NET, ONLY 99c

NEW HAM FAVORITE

Hallicrafters model SX-99 with smart new styling is feature packed to make this model outstanding in its price range. COVERAGE: Broadcast Band 540 - 1680 kc plus three short wave bands covers 1680 kc - 34 Mc. FEATURES: Over 1000° of calibrated bandspread over the 10, 11, 15, 20, 40 and 80 meter amateur bands on easy to read dial. Separate bandspread tuning condenser, crystal filter, antenna trimmer, "S" Meter, one r-f, two i-f stages, plus all new styling.



CONTACT ROY W 4 NVF

MODEL SX-99 (Less speaker) . . . $149.95
MODEL R-46A Speaker 19.95

All prices F.O.B. Miami

WALDER RADIO & APPLIANCE CO.

PHONE 9-4794 1809 N.E. 2nd AVE. • MIAMI 32, FLORIDA

HARJO'S ON THE GO! New location! New low prices!

TN-65/APQ-15 FOR A 2-METER XMTR. Tunes into "2". Little rewiring and adding modulation xfrm. Push-pull 6C4's oscillator driving S32 in parallel. MO tuning from front panel. With 6J6, 2—6C4's, less 832. With schematics and conversion sheet. Ship. wt. 6 lbs. **$7.95**

NEW 24 V TRANSFORMER & RECTIFIER COMB a basic 24V. DC power supply of 110V AC primary. 24V secondary and Rectox Rectifier. Operates intermittently up to 1 or 2 amps. Ship. wt. 3 lbs. **$2.95**

CONVERTED APS-13—Brand New—For 420 MC Use! Completely converted and ready to operate. Complete with built-in power supply, mike. Just hook up to antenna, plug into any 110V., 60 cy. and you're on the air! Regular value up to $150.00! **$49.50**

W.E. TELEPHONE HAND SET Complete with units and cord. Perfect for mobile and phone use. Postpaid. Only **$2.95**

AUTOMATIC DIRECTION FINDER RECEIVER Model CAATC-980. Mark I mfg. by Sperry Gyroscope. Self-contained, 12 V. vibrator supply. This unit was used by major airlines. Freq. range 200-500 Kc. AND 550-1500 Kc. Complete with all tubes. Used, good cond. Ship. wt. 65 lbs. **$24.95**

GN-39 DUAL OUTPUT D.C. GENERATOR Puts out 1,000 V. @ 350 ma. 12 V. @ 25 amps. Generator may be driven from fan belt of car, an auxiliary pulley on rear wheel, or by a direct coupled gasoline engine. Great unit for Field Day! BRAND NEW! Ship. wt. 100 lbs. **$12.95**

WRITE FOR NEW FREE CATALOG! Send check or M.O. At least 25% deposit required. Balance C.O.D. All items F.O.B. Whse.

Harjo Sales Co.

Note Our New Address!

Mailing Address: Box 1187-C, MAGNOLIA PARK STATION, BURBANK, CALIF.
Office-Warehouse: Dept. C, 503 N. VICTORY BLVD., BURBANK, CALIF.

RADIO, VHF TECHNICIANS

Minimum 5 years' experience maintaining and installing standard commercial radio and VHF communication equipment.

For work in Saudi Arabia.

Write giving full particulars regarding personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 5

ARABIAN AMERICAN OIL COMPANY

505 PARK AVENUE
NEW YORK 22, NEW YORK



for everything in Electronics!

1440 page MASTER

- Detailed specs
- 8,500 illus.
- 85,000 items
- Fully indexed
- Full descriptions
- Wgt. 6 lbs.

List $6.50

As low as $1.95 at distributors
United Catalog Publishers, Inc.,
110 Lafayette St., N. Y. C. 13

CQ Ad Index

Allied Radio Corp. 65
American Electronics Co. 94
Arabian-American Oil Co. 96
Arrow Electronics 92
Arrow Sales, Inc. 67
Arvy Antenna 88

Barry Electronics 90
Bliley Electric Co. 66
Bud Radio, Inc. 8

Cannon Electric Co. 55
Capcon, Inc. 76
Central Electronics, Inc. 7
Centralab 10
Collins Radio Company ..... Cover 2
Columbia Electronics Sales 70
Columbia Products Co. 90
Curle Radio Supply 88

Drake, R. L. Co. 68
DX Hound Products 78

Economy Cap Works 76
Eitel-McCullough, Inc. 12
Electrend Products Corp. 77
Electronic Supply 74
Engineering Associates 94
Esse Radio Company 61
E-Z Way Towers, Inc. 95

General Electric Co. 1
General Electronic Dist. Co. 92
Glass, J. J. Co. 88
Gonset Company 81
Gotham Hobby Corp. 86
Greenlee Tool Co. 80
Groth, R. W. Mfg. Co. 92

Hallicrafters Company 2
Harjo Sales Company 96
Harvey Radio Company, Inc. 72
Harvey-Wells Electronics, Inc. 9
Heath Company 4, 5
Henry Radio Stores 59
Hughes Research & Dev. Labs. 63

Instructograph Company 94

Johnson, E. F. Co. 11

Knight Radio & Electric Co. 76

Lakeshore Industries 75

Master Mobile Mounts, Inc. 81
Millen, James Mfg. Co. 6

National Company, Inc. ..... Cover 3
North Electronic Supply 78

Peak Electronics Co. 94
Petersen Radio Company 15
Pierson Holt Electronics Co. 69

Radio Apparatus Corp. 87
Radio Stationers 80
RCA Tube Dept. ..... Cover 4
Regency 95
Relay Sales, Inc. 84
Rex Radio Supply Co. 80

Sam's Surplus 71
Sherrick Products 93
Stebruce 88
Surplus Radio, Inc. 82

Tele-Diagnosis Co. 86
Transitron 73
Triad Transformer Corp. 79

United Catalog Publishers 96
U. S. Crystals, Inc. 57

Vaaro Electronic Engineering Co. 83
Valparaiso Technical Institute 88
V & H Radio Supply Co. 87
Vibroplex Co., Inc. 92

Walder Radio & Appliance Co. 95
World Radio Laboratories, Inc. 53

Zobel, Myron 93

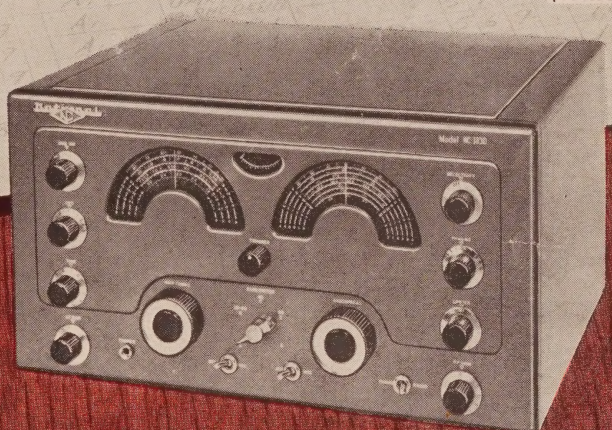
you can't log 'em if you can't hear 'em!

No matter what else a receiver does, it must pull 'em in! And that's just what the NC-183D does! Compare its **luv.** sensitivity (on 6 meters) and extremely low noise level with the highest-priced amateur receivers made ($150 higher!) and you'll see why you'll hear more, log more on an NC-183D!

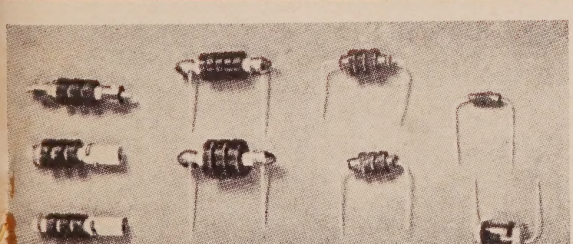
COVERAGE: Continuous from 540 kcs. to 31 mcs. plus 48 to 56 mcs. for 6-meter reception.

FEATURES: Two tuned R.F. stages. 3 stages of I.F. Voltage regulated osc. and BFO. Main tuning dial covers range in five bands. Bandspread dial calibrated for amateur 80, 40, 20, 15, 11-10 and 6-meter bands. Bandspread usable over entire range. Six-position crystal filter. New-type noise limiter. High fidelity push-pull audio. Accessory socket for NFM adaptor or other unit, such as crystal calibrator.

$399.50



NC-183D



PRECISION-WOUND RF CHOKES

National makes a complete line of quality RF chokes, covering virtually every frequency range and every electronic need. In addition, National's engineering staff and production facilities are capable of winding chokes to any specifications for commercial or military applications. Write for complete information.

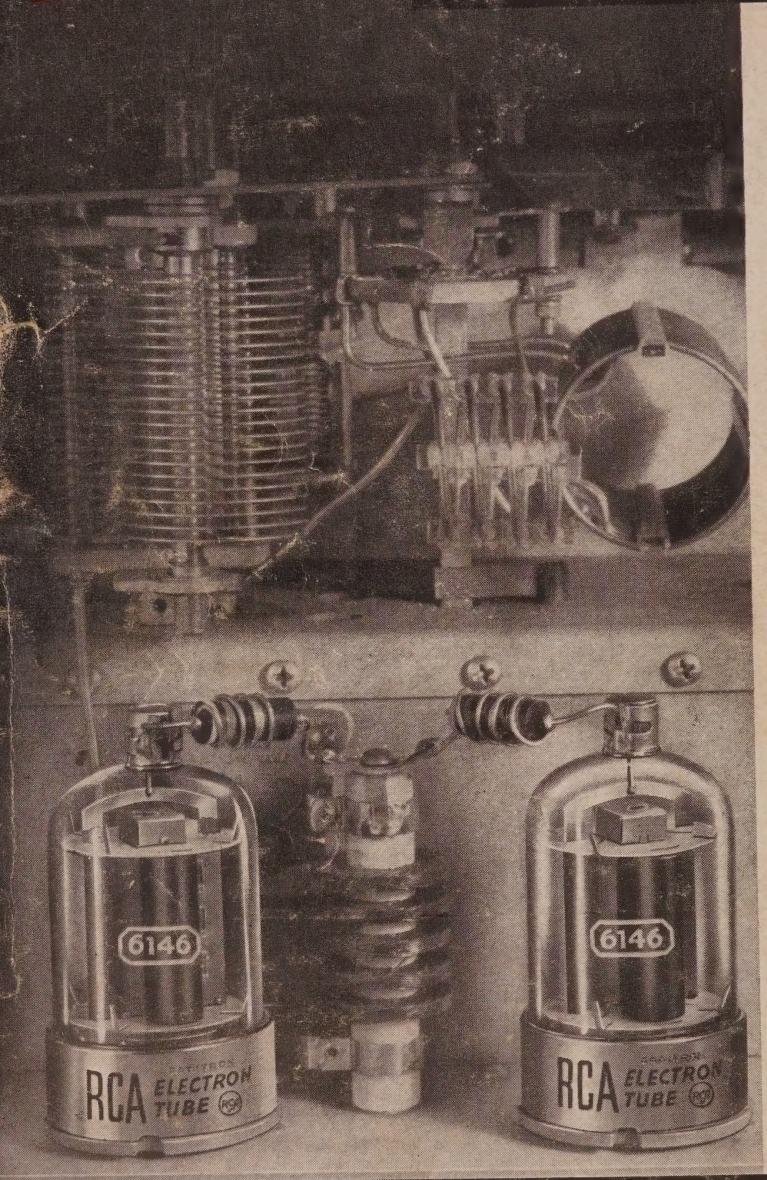
tuned to tomorrow

National NC

NATIONAL COMPANY, INC.
61 SHERMAN ST., MALDEN 48, MASS.

Leading Amateur Designs

—USE RCA TUBES



For instance, look at the Barker & Williamson "5100" in this picture.

Known throughout the bands for the authoritative signal it packs, this transmitter uses two RCA-6146's in parallel in the "final"—and two more RCA-6146's in the class AB modulator.

Here are basic reasons why leading amateurs—and commercial designers like B&W—specify "RCA."

RCA power tubes make it practicable to get any power you want—at relatively low plate voltage. RCA power tubes are built to handle peak plate loads with ease—have tremendous reserve emission. RCA power tubes are economical *in service!*

You can get RCA high-perveance power tubes—beam power types and triodes—from any RCA Tube Distributor. You can get technical data on any particular type from RCA, Commercial Engineering, Section E15M, Harrison, New Jersey.

◀ **Final amplifier of the B&W 5100, using two beam power RCA-6146's in parallel.**

90 watts ICAS input on CW; 67.5 watts on 'phone. In class AB modulator service, two RCA-6146's can deliver 120-130 watts ICAS. ▶



RCA

RADIO CORPORATION of AMERICA

ELECTRON TUBES

HARRISON, N.J.