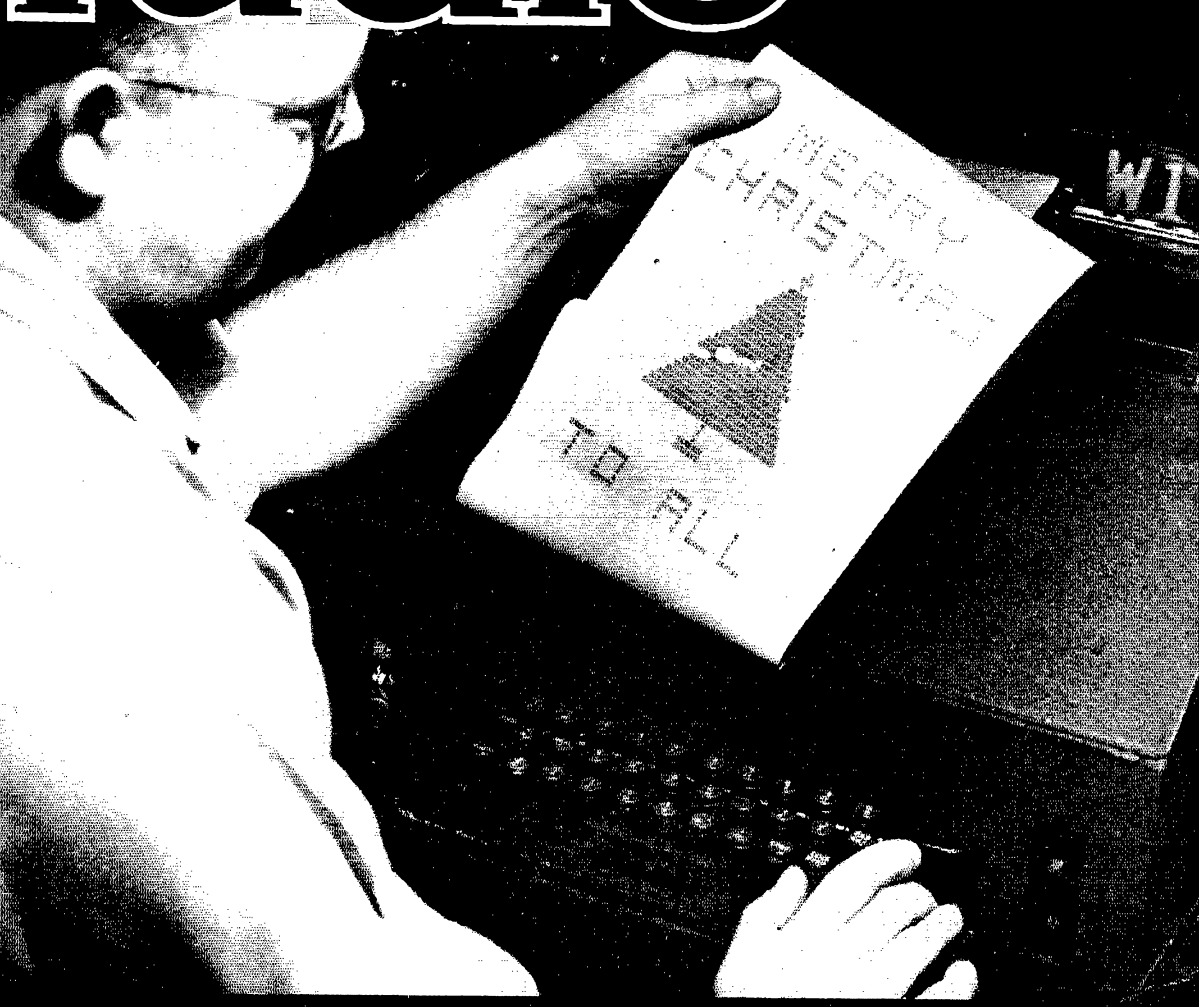
QST

December 1953
40 Cents
45c in Canada

devoted entirely to

amateur radio



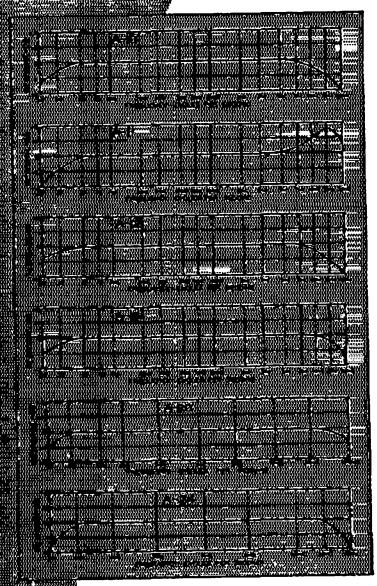
PUBLISHED BY THE AMERICAN RADIO RELAY LEAGUE

ULTRA COMPACT UNITS...OUNCER UNITS

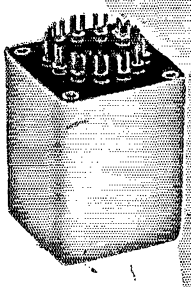
HIGH FIDELITY . . . . SMALL SIZE . . . . FROM STOCK

UTC Ultra compact audio units are small and light in weight, ideally suited to remote amplifier and similar compact equipment. High fidelity is obtainable in all individual units, the frequency response being ± 2 DB from 30 to 20,000 cycles.

True hum balancing coil structure combined with a high conductivity die cast outer case, effects good inductive shielding.



Type No.	Application	Primary Impedance	Secondary Impedance	List Price
A-10	Low impedance mike, pickup, or multiple line to grid	50, 125/150, 200/250, 333, 500/600 ohms	50 ohms	$16.00
A-11	Low impedance mike, pickup, or line to 1 or 2 grids (multiple alloy shields for low hum pickup)	50, 200, 500	50,000 ohms	18.00
A-12	Low impedance mike, pickup, or multiple line to grids	50, 125/150, 200/250, 333, 500/600 ohms	80,000 ohms overall, in two sections	16.00
A-14	Dynamic microphone to one or two grids	30 ohms	50,000 ohms overall, in two sections	17.00
A-20	Mixing, mike, pickup, or multiple line to line	50, 125/150, 200/250, 333, 500/600 ohms	50, 125/150, 200/250, 333, 500/600 ohms	16.00
A-21	mixing, low impedance mike, pickup, or line to line (multiple alloy shields for low hum pickup)	50, 200/250, 500/600	50, 200/250, 500/600	18.00
A-16	Single plate to single grid	15,000 ohms	60,000 ohms, 2:1 ratio	15.00
A-17	Single plate to single grid 8 MA unbalanced D.C.	As above	As above	17.00
A-18	Single plate to two grids. Split primary	15,000 ohms	80,000 ohms overall, 2.3:1 turn ratio	16.00
A-19	Single plate to two grids 8 MA unbalanced D.C.	15,000 ohms	80,000 ohms overall, 2.3:1 turn ratio	19.00
A-24	Single plate to multiple line	15,000 ohms	50, 125/150, 200/250, 333, 500/600 ohms	16.00
A-25	Single plate to multiple line 8 MA unbalanced D.C.	15,000 ohms	50, 125/150, 200/250, 333, 500/600 ohms	17.00
A-26	Push pull low level plates to multiple line	30,000 ohms plate to plate	50, 125/150, 200/250, 333, 500/600 ohms	16.00
A-27	Crystal microphone to multiple line	100,000 ohms	50, 125/150, 200/250, 333, 500/600 ohms	16.00
A-30	Audio choke, 250 henrys @ 5 MA 6000 ohms D.C.. 65 henrys @ 10 MA 1500 ohms D.C.			12.00
A-32	Filter choke 60 henrys @ 15 MA 2000 ohms D.C.. 15 henrys @ 30 MA 500 ohms D.C.			10.00

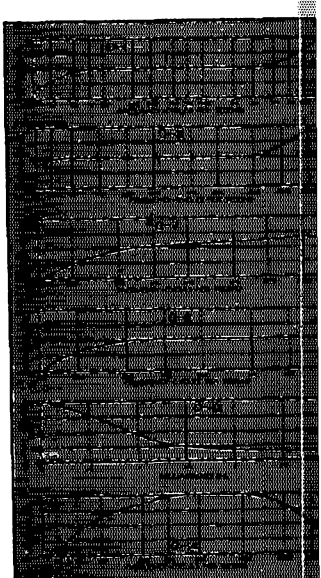


TYPE A CASE
1½" x 1½" x 2" high

UTC OUNCER components represent the acme in compact quality transformers. These units, which weigh one ounce, are fully impregnated and sealed in a drawn aluminum housing ⅞" diameter... mounting opposite terminal board. High fidelity characteristics are provided, uniform from 40 to 15,000 cycles, except for 0-14, 0-15, and units carrying DC which are intended for voice frequencies from 150 to 4,000 cycles. Maximum level 0 DB.

OUNCER CASE
⅞" Dia. x 1⅛" high

Type No.	Application	Pri. Imp.	Sec. Imp.	List Price
0-1	Mike, pickup or line to 1 grid	50, 200/250 500/600	50,000	$14.00
0-2	Mike, pickup or line to 2 grids	50, 200/250 500/600	50,000	14.00
0-3	Dynamic mike to 1 grid	7.5/30	50,000	13.00
0-4	Single plate to 1 grid	15,000	60,000	11.00
0-5	Plate to grid, D.C. in Pri.	15,000	60,000	11.00
0-6	Single plate to 2 grids	15,000	95,000	13.00
0-7	Plate to 2 grids, D.C. in Pri.	15,000	95,000	13.00
0-8	Single plate to line	15,000	50, 200/250, 500/600	14.00
0-9	Plate to line, D.C. in Pri.	15,000	50, 200/250, 500/600	14.00
0-10	Push pull plates to line	30,000 ohms plate to plate	50, 200/250, 500/600	14.00
0-11	Crystal mike to line	50,000	50, 200/250, 500/600	14.00
0-12	Mixing and matching	50, 200/250	50, 200/250, 500/600	13.00
0-13	Reactor, 300 Hys.—no D.C.; 50 Hys.—3 MA. D.C.,		6000 ohms	10.00
0-14	50:1 mike or line to grid	200	½ megohm	14.00
0-15	10:1 single plate to grid	15,000	1 megohm	14.00



United Transformer Co.
150 VARICK STREET • NEW YORK 13, N. Y.
EXPORT DIVISION: 13 EAST 40th STREET, NEW YORK 16, N. Y., CABLES: "ARLAB"

CQ!

Before Jan. 3, nominate your candidate for the

1953 EDISON RADIO AMATEUR AWARD!

NOMINATING letters for this year's Edison Award must be postmarked not later than January 3, 1954, in order for a candidate to receive consideration by the judges.

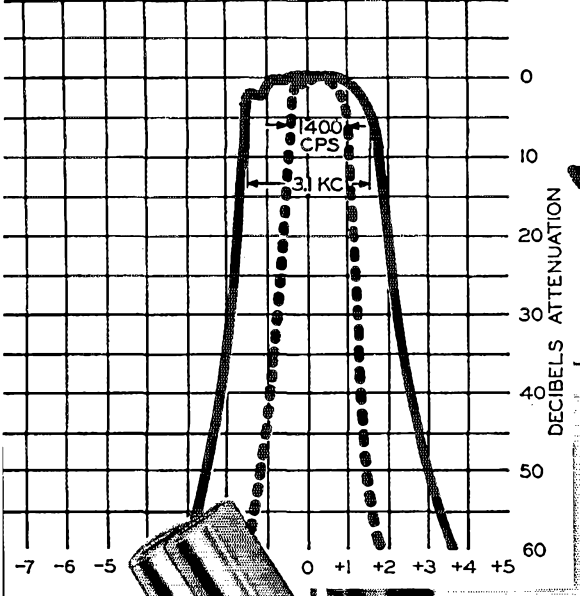
If you have not yet nominated an amateur for the Award, and for the trophy, gift, and national acclaim that go with it—please do so now!

Terms of the 1953 Edison Award . . . the benefits it brings to the winner, also the person nominating him . . . what facts your letter should contain . . . all may be found in the announcement by General Electric that appeared on this page in September.

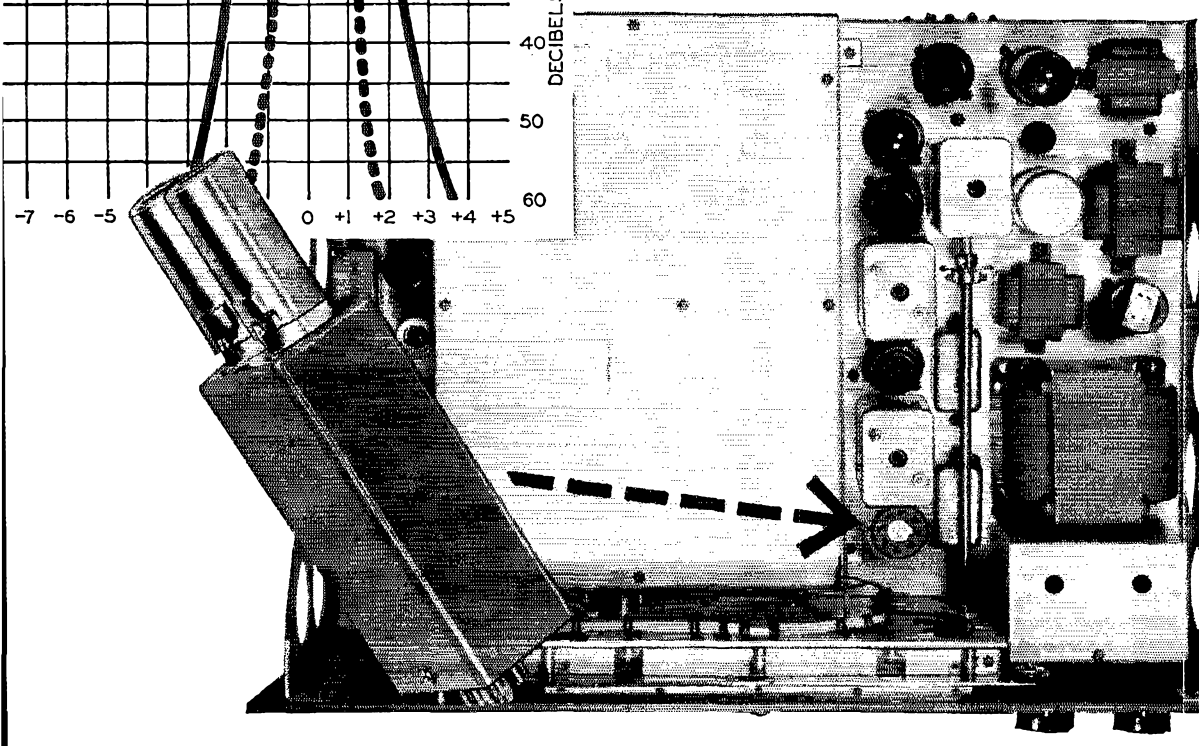
Mail your letter to *Edison Award Committee, Tube Department, General Electric Company, Schenectady 5, New York.*

GENERAL ELECTRIC

166-1B12



Just plug it in



A Mechanical Filter for Your 75A-1!

IN A MATTER OF SECONDS your 75A-1 can be converted to incorporate the revolutionary new Collins mechanical filter! Just unplug the first 500 kc IF tube and plug in your choice of either the 1400 cycle or 3.1 kc unit. The 353C series plug-in adapter units for your 75A-1 will be available at your Collins distributor soon — contact him now for early delivery.

75A-2 OWNERS: Your Collins dealer now has 75A-2 mechanical filter conversion kits in stock. The 75A-2 kits are designed to be permanently wired into the set and include sockets for two plug-in mechanical filters. A type F455B-31 3.1 kc filter is included with each kit and a type F455B-08 800 cycle filter may be added at any time.

Type 353C-14 Plug-in Adapter, complete with 1400 cycle filter for 75A-1.....$ 75.00
Type 353C-31 Plug-in Adapter, complete with 3.1 kc filter, for 75A-1.....$ 75.00

Mechanical Filter Conversion Kit for 75A-2, complete with F455B-31 3.1 kc Filter....$ 80.00
Factory conversion of 75A-2, including installation of mechanical filter kit, minor repairs, and realignment.....$105.00

Plug-in filters for converted 75A-2's and new 75A-3's:

F455B-08, 800 cycle.....$ 55.00
F455B-31, 3.1 kc.....$ 55.00
F455B-60, 6.0 kc (available now).....$ 55.00

Solder Terminal Filters:

F455A-08, 800 cycle.....$ 55.00
F455A-31, 3.1 kc.....$ 55.00
F455A-60, 6.0 kc.....$ 55.00

NOTE: 353C-14 and 353C-31 Adapters incorporate 500 kc solder terminal filters; they are designed for the 75A-1 receiver and will not operate in the 75A-2 or 75A-3.

COLLINS RADIO COMPANY, Cedar Rapids, Iowa

11 W. 42nd St.
NEW YORK 36

1930 Hi-Line Drive
DALLAS 2

2700 W. Olive Ave.
BURBANK

COLLINS

QST

DECEMBER 1953

VOLUME XXXVII • NUMBER 12

PUBLISHED, MONTHLY, AS ITS OFFICIAL ORGAN, BY THE AMERICAN RADIO RELAY LEAGUE, INC., AT WEST HARTFORD, CONN., U. S. A.; OFFICIAL ORGAN OF THE INTERNATIONAL AMATEUR RADIO UNION

OFFICES

38 La Salle Road
West Hartford 7, Connecticut

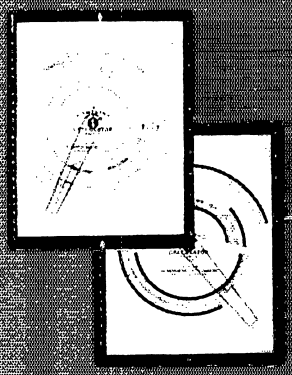
TEL.: 3-6268 TWX: HF 88

Subscription rate in United States and Possessions, $4.00 per year, postpaid; $4.25 in the Dominion of Canada, $5.00 in all other countries. Single copies, 40 cents. Foreign remittances should be by International postal or express money order or bank draft negotiable in the U. S. and for an equivalent amount in U. S. funds.

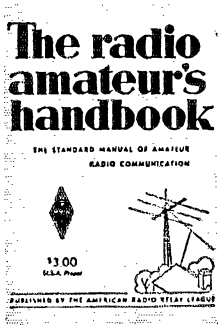
Entered as second-class matter May 29, 1919, at the post office at Hartford, Connecticut, under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1102, Act of October 3, 1917, authorized September 9, 1922. Additional entry at Concord, N. H., authorized February 21, 1929, under the Act of February 28, 1925.

INDEXED BY
INDUSTRIAL ARTS INDEX

—CONTENTS—

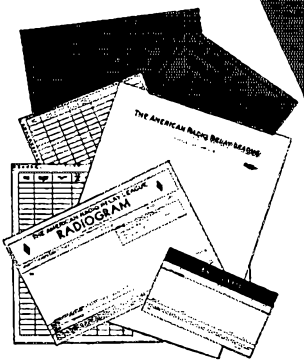


Quick and accurate answers with ARRL Lightning Calculators! Type A for problems involving frequency, inductance, capacity. Type B for resistance, voltage, current and power. *$1.25 each postpaid anywhere.*



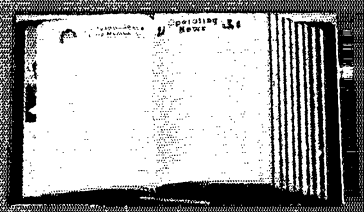
Internationally recognized, universally consulted. The all-purpose volume of radio. Packed with information useful to the amateur and professional alike. Written in a clear, concise manner, contains hundreds of photos, diagrams, charts and tables. *$3 U.S.A., $3.50 U.S. Poss. and Canada, $4 elsewhere*

Tells what amateur radio is and how to get started in this fascinating hobby. Special emphasis is given to the needs of the Novice licensee, with three complete simple amateur stations featured. *50¢ everywhere*



Active amateurs need these supplies: *ARRL Logbook*, 50¢ U.S.A., 60¢ elsewhere. *Minilog*, 30¢ U.S.A., 35¢ elsewhere. Radiogram blanks, 35¢ per pad postpaid. Message delivery cards, 4¢ each stamped, 2¢ each unstamped. Members' stationery, 100 sheets $1.25, 250 sheets $1.50, 500 sheets $2.50 *postpaid.*

No need to let your copies of *QST* reat in a disordered pile. A *QST* binder will keep them neat and orderly. Each holds a one-year file. *$2.50 (available in U.S. and Possessions only).*



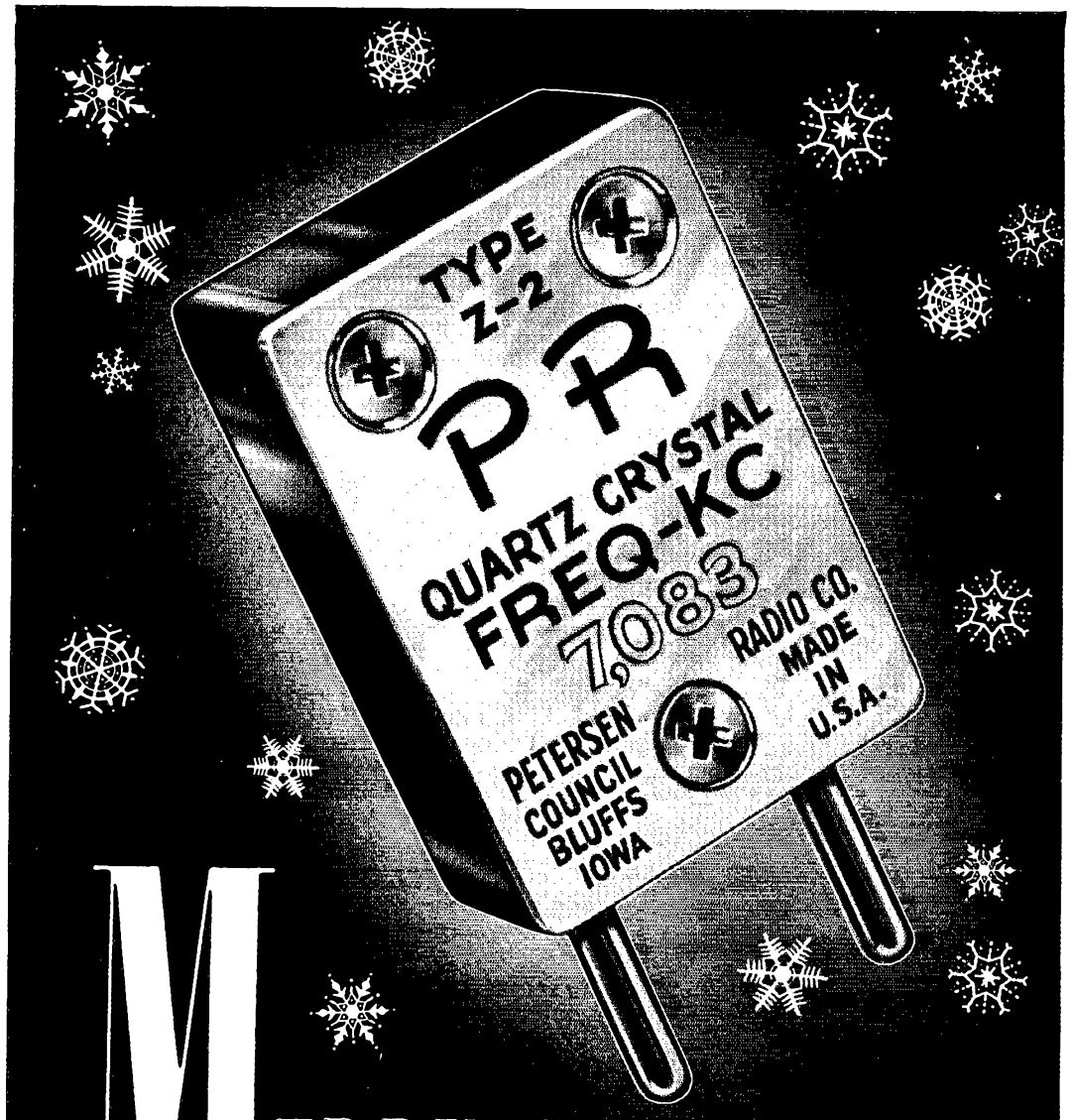
If you build equipment and operate an amateur radio station, you'll find this a mighty valuable book in your shack and workshop. More than 200 practical ideas plus a surplus conversion section. *$1.00 U.S.A. proper, $1.25 elsewhere*

Section Communications Managers of the ARRL Communications Department

Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio club reports are also desired by SCMs for inclusion in *QST*. **All ARRL Field Organization appointments** are now available to qualified League members. These include ORS, OES, OPS, OO and OBS. Also, where vacancies exist SCMs desire applications for SEC, EC, RM, and PAM. In addition to station and leadership appointments for Members, *all amateurs* in the United States and Canada are invited to join the Amateur Radio Emergency Corps (ask for Form 7).

ATLANTIC DIVISION				
Eastern Pennsylvania	W3BIP	W. H. Wiand	P.O. Box 143	Pottstown
Maryland-Delaware-D. C.	W3EQK	Arthur W. Plummer	3804 Rexmere Road	Baltimore 18, Md.
Southern New Jersey	K2BG	Herbert C. Brooks	800 Lincoln Ave.	Palmyra
Western New York	W2SJV	Edward Graf	81 King St.	Tonawanda
Western Pennsylvania	W3NCD	R. M. Heck	RFD 1	Sharpsville
CENTRAL DIVISION				
Illinois*	W9VIX	George Schreiber	239 S. Scoville Ave.	Oak Park
Indiana	W9BKJ	George H. Grave	824 Home Ave.	Fort Wayne 6
Wisconsin	W9RQM	Reno W. Goetsch	929 S. 7th Ave.	Wausau
DAKOTA DIVISION				
North Dakota	WØVKP	Everett E. Hill	1527 Fifth Ave., So.	Fargo
South Dakota	WØRRN	J. W. Sikorski	1900 South Menlo Ave.	Sioux Falls
Minnesota	WØMXC	Charles M. Bove	1611½ E. Lake St.	Minneapolis 7
DELTA DIVISION				
Arkansas	W5LUX	Fred Ward	520 South Maple St.	Harrison
Louisiana	W5GHF	Robert E. Barr	Box 446	Springhill
Mississippi	W5OTD	Dr. A. R. Cortese	Box 326	Crystal Springs
Tennessee	W4CXY/WLG	Mark M. Bowelle	109 Dixie Lane	Oak Ridge
GREAT LAKES DIVISION				
Kentucky	W4TUT	Ivan C. Kelly	415 E. Mt. Vernon St.	Somerset
Michigan	W8HKT	Fabian T. McAllister	RFD 1, Box 368	Bridgman
Ohio	W8AJW	John E. Siringer	2972 Clague Rd.	Cleveland 16
HUDSON DIVISION				
Eastern New York	W2ILI	Stephen J. Neason	794 River St.	Troy
N. Y. C. & Long Island	W2VBT	Carleton L. Coleman	117 Harvard St.	Williston Park, L. I.
Northern New Jersey	W2VQR	Lloyd H. Manamon	410½ Fifth Ave.	Asbury Park
MIDWEST DIVISION				
Iowa	WØPP	William G. Davis	3rd St.	Mitchellville
Kansas	WØICV	Earl N. Johnston	624 Roosevelt	Topeka
Missouri	WØGBJ	Clarence L. Arundale	1048 South Jefferson Ave.	Springfield 4
Nebraska	WØCBH	Floyd B. Campbell	203 W. 8th St.	North Platte
NEW ENGLAND DIVISION				
Connecticut	W1HYF	Roger C. Amundsen	RFD 4	Ridgefield
Maine	W1AFT	Bernard Seamon	73 Middle St.	Wiscasset
Eastern Massachusetts	W1ALP	Frank L. Baker, jr.	91 Atlantic St.	North Quincy 71
Western Massachusetts	W1JYH	Roger E. Corey	67 West Allen Ridge Road	Springfield
New Hampshire	W1GMH	Carroll A. Currier	1426 Belmont St.	Manchester
Rhode Island	W1JBB	Merrill D. Randall	22 Annandale Road	Newport
Vermont	W1RNA	Robert L. Scott	108 Sias Ave.	Newport
NORTHWESTERN DIVISION				
Alaska	KL7NT	Glen Jefferson	938—3rd Ave.	Anchorage
Idaho	W7IWU	Alan K. Ross	2105 Irene St.	Boise
Montana	W7KGJ	Edward G. Brown	421 Yellowstone Ave.	Billings
Oregon	W7BUS	John M. Carroll	P. O. Box 706	Pendleton
Washington	W7CZY	Laurence Sebring	Route 2, Box 384	Everett
PACIFIC DIVISION				
Hawaii	KH6KS	James E. Keeter	3459 Kahawalu Dr.	Honolulu 17
Nevada	W7JU	Ray T. Warner	539 Birch St.	Boulder City
Santa Clara Valley	W6LZL	Roy I. Couzin	16615 Englewood Ave.	Los Gatos
East Bay	W6JZ	Ray H. Cornell	909 Curtis St.	Albany 6
San Francisco	W6GGC	Walter A. Buckley	36 Colonial Way	San Francisco
Sacramento Valley	W6JDN	Harold L. Lucero	1113 Elinore Ave.	Dunsmuir
San Joaquin Valley	W6GIW	Edward L. Bewley	421 East Olive St.	Turlock
ROANOKE DIVISION				
North Carolina	W4DLX	J. C. Geaslen	1832 Logie Ave.	Charlotte
South Carolina	W4ANK	T. Hunter Wood	1702 North Rhett Ave.	North Charleston
Virginia	W4FF	H. Edgar Lindauer	Mason's Beach, Deale P. O.	Deale, Md.
West Virginia	W8PQQ	Albert H. Hix	1013 Belmont St.	Forest Hills, Charleston 4
ROCKY MOUNTAIN DIVISION				
Colorado	WØCDX	Karl Brueggeman	1945 Kearny St.	Denver
Utah	W7UTM	Floyd L. Hinshaw	165 East 4th, North	Bountiful
Wyoming	W7PKX	Wallace J. Ritter	P. O. Box 797	Sheridan
SOUTHEASTERN DIVISION				
Alabama*	W4S[illegible]S	Jack D. Gray	610 First Ave.	Opelika
Eastern Florida	W4FWZ	John W. Hollister	3809 Springfield Blvd.	Jacksonville
Western Florida	W4MS	Edward J. Collins	1003 E. Blount St.	Pensacola
Georgia	W4ZD	James P. Born, jr.	25 First Ave., N.E.	Atlanta
West Indies (Cuba-P.R.-V.I.)	KP4DJ	William Werner	563 Ramon Llovet	Urb. Truman, Rio Piedras, P. R.
Canal Zone	KZ5NM/W4QBS	Nelson W. Magner	Box 373	Margarita, C. Z.
SOUTHWESTERN DIVISION				
Los Angeles	W6YVJ	Howard C. Bellman	973 Mayo St.	Los Angeles 42
Arizona	W7LVR	Albert Steinbrecher	Maple Road, RFD 5, Box 237	Tucson
San Diego	W6FJH	Edgar M. Cameron, jr.	1450 So. Escondido Blvd.	Escondido
Santa Barbara	W6IOX	Vincent J. Haggerty	1017 Indio Muerto St.	Santa Barbara
WEST GULF DIVISION				
Northern Texas	W5JQD	T. Bruce Craig	1706 27th St.	Lubbock
Oklahoma	W5GVV	Jesse M. Langford	2005 W. Oklahoma Ct.	Enid
Southern Texas	W5FJF	Dr. Charles Fermaglich	618 Medical Arts Bldg.	Houston 2
New Mexico	W5ZU	G. Merton Sayre	Box 625	New Mexico Military Institute, Roswell
CANADIAN DIVISION				
Maritime	VE1DQ	A. M. Crowell	69 Dublin St.	Halifax, N. S.
Ontario	VE3IA	G. Eric Farquhar	16 Emerald Crescent	Burlington, Ont.
Quebec	VE2GL	Gordon A. Lynn	R.R. No. 1	Ste. Genevieve de Pierrefonds, P. Q.
Alberta	VE6MJ	Sydney T. Jones	10706–57th Ave.	Edmonton, Alta.
British Columbia	VE7JT	Peter McIntyre	981 West 26th Ave.	Vancouver, B. C.
Yukon	———	———	———	———
Manitoba	VE4LC	Leonard E. Cuff	286 Rutland St.	St. James
Saskatchewan	VE5HR	Harold R. Horn	1044 King St.	Saskatoon

* Officials appointed to act temporarily in the absence of a regular official.



MERRY CHRISTMAS

BILL PETERSEN, WØJRY

PR CRYSTALS

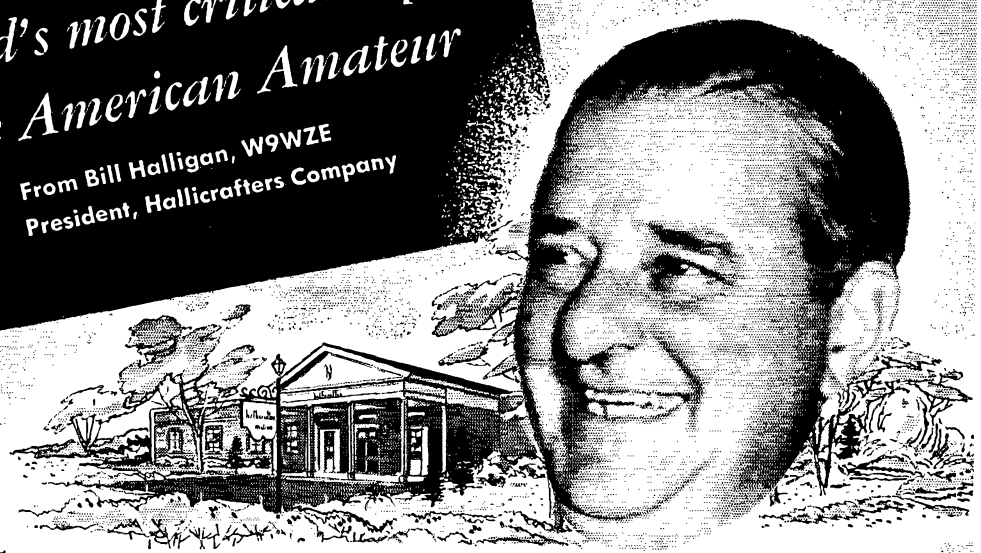
PETERSEN RADIO COMPANY, Inc.

2800 WEST BROADWAY, COUNCIL BLUFFS, IOWA

20 years of precision short wave peak

A message to the world's most critical expert ...the American Amateur

From Bill Halligan, W9WZE
President, Hallicrafters Company



This receiver, the new Hallicrafters SX-88, is the finest amateur communications receiver we have ever built.

Before the war, we came close to it with our popular SX-28 which proved to be a favorite with more than 50,000 hams. The SX-28 was widely used as well by the military. During the war and in the years that followed, we learned how to improve it.

All of these improvements, plus years of experience and know-how in communications have gone into the SX-88. As a result, this set has the highest degree of usable variable selectivity which has ever been commercially available. It incorporates a new audio system which provides for standard broadcast reception with near Hi-Fi quality, so it's equally adaptable for ham or home radio use. Further, it's engineered with built-in features for single side band exhalted carrier reception.

Our very first customer was a ham. Hams are and always have been our most important customers. It gives me the greatest of pleasure then, in this our twentieth anniversary year, to offer you the SX-88, a ham's dream receiver.

You owe it to yourself to have a look at it soon. See for yourself the features and engineering which make the SX-88 the biggest communications news of the year. We're proud of it. You will be too.

Sincerely,

Bill Halligan W9WZE
PRESIDENT

experience to reach this...

# of perfection!

hallicrafters NEW SX-88

communications receiver

Here is the set you've dreamed of—the set that has everything—the new Hallicrafters SX-88. On the next pages are listed some of the outstanding features that make this set what it is. But before you look at them, think. What do *you* want most in a communications receiver?

Selectivity? Here, for the first time, is selectivity from 10 Kc to 250 cycles in six steps. See what we mean when we say this receiver is the biggest news in ham radio in years!

Stability? Air trimmers, ceramic coil frames, double space tuning condenser section, temperature compensation, voltage and current regulators, plus crystal controlled second conversion oscillator, all assure the greatest stability you can buy!

Single Side Band Suppressed Carrier. Two beat frequency oscillator injection levels to accommodate CW and SSSC. Beat frequency oscillator slug tuned for maximum stability. Oscillator circuits compensated to eliminate frequency drift with temperature change or line voltage variation.

These are just a few features that make the SX-88 great—now, for more...

see next page...

*Advanced circuitry like this . . .**

*Second conversion oscillator

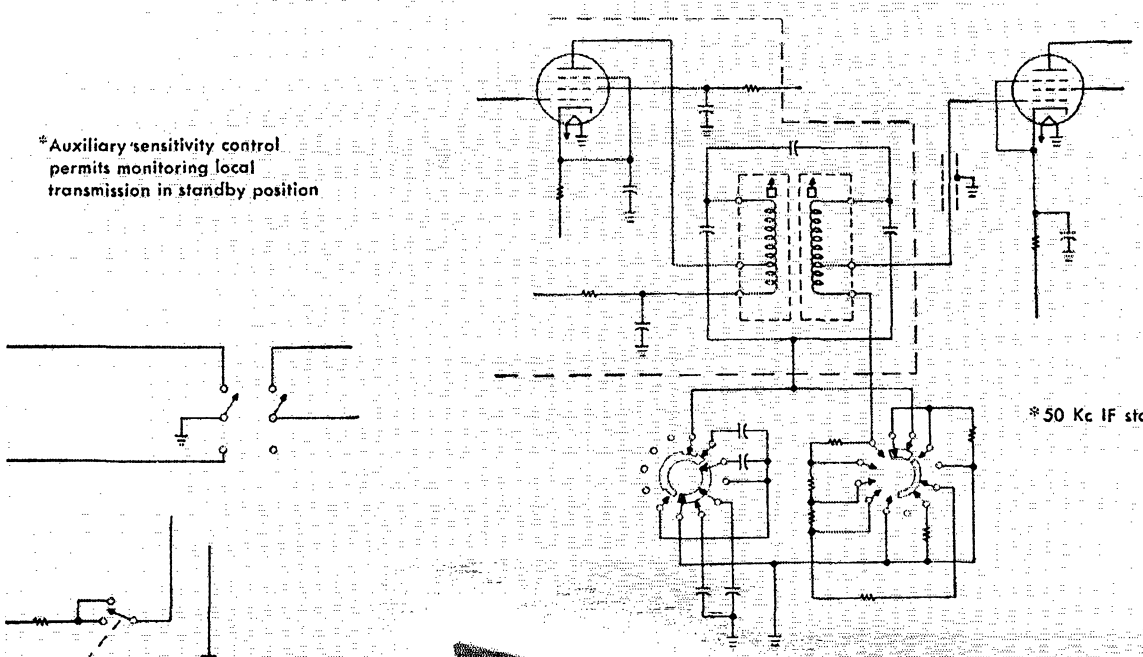
*Beat frequency oscillator

*Cathode follower IF output

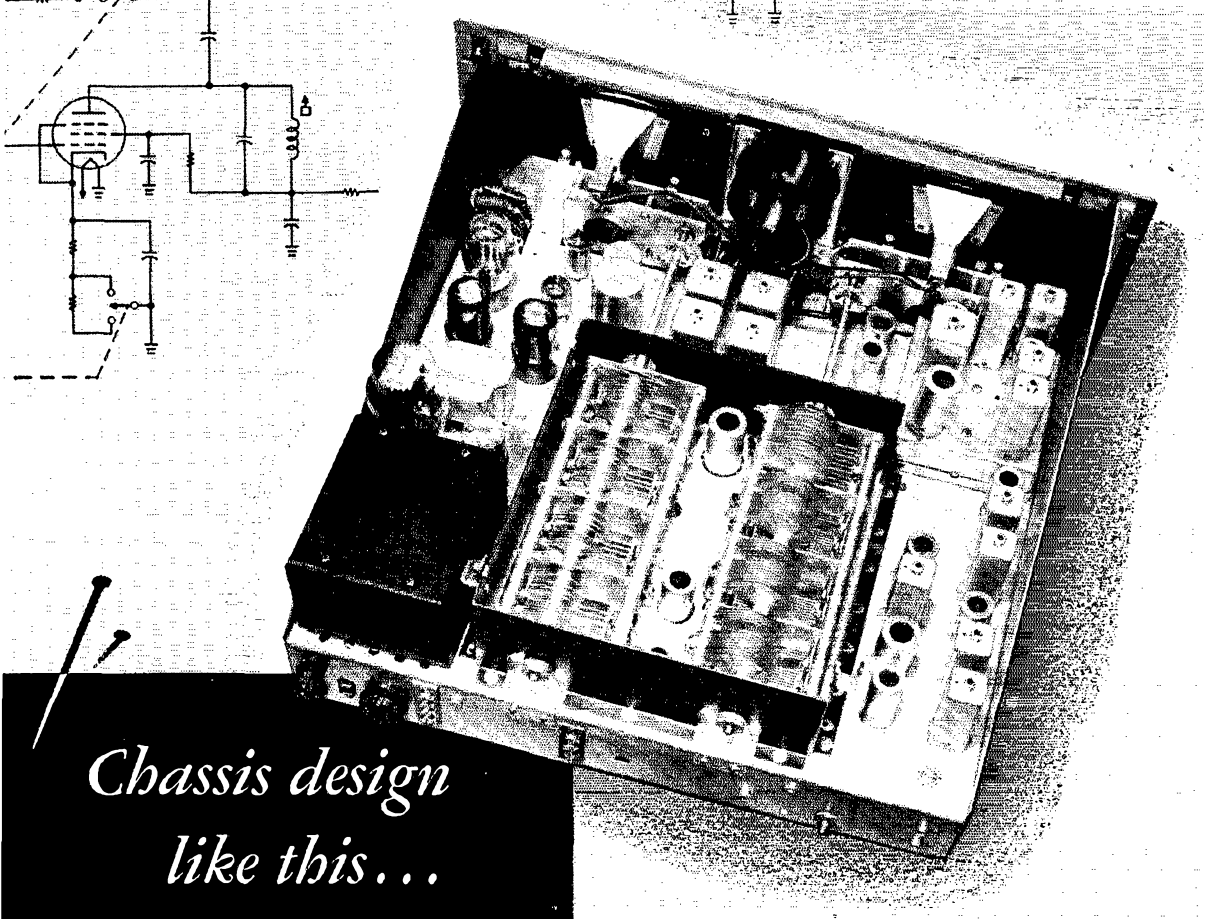
*Crystal calibrator

Make the hallicrafters **SX-88** *the finest*

*Auxiliary sensitivity control permits monitoring local transmission in standby position



*50 Kc IF stage



Chassis design like this...

amateur receiver in the world!

Only hallicrafters SX-88 *brings you all these features—everyone a necessity today!*

1. Heavy gauge steel welded chassis for mechanical stability.

2. Full precision gear drive for main and band spread tuning.

3. Six position Band Width Control (selectivity) from 250 cycles to 10 kc.

4. 10 watt inverse feed back and push-pull audio output.

5. Exhalted B.F.O. for tops in single side band reception.

6. Buffer amplifier in B.F.O. circuit.

7. Antenna trimmer.

8. Amplified and delayed A.V.C.

9. Built-in 100 kc calibration crystal.

10. Second conversion oscillators crystal controlled.

11. Inertia tuning (flywheels both dials).

12. Full frequency coverage from 535 kc to 33 mc.

13. Calibrated electrical band spread 160, 80, 40, 20, 15, 11, and 10 meters.

14. Logging scales on each tuning shaft.

15. Dial locks on each tuning shaft.

16. Tuning dial indicators resettable from front panel for maximum calibration accuracy.

17. Auxiliary A.C. socket on rear of chassis.

18. Illuminated band-in-use indicator.

19. Illuminated S meter.

20. Dual S meter calibration S units and microvolts.

21. Auxiliary power socket plus .6 amps at 6.3 volts and 10 ma at 150 volts for accessories.

22. Standard 8¾" by 19" panel for rack mounting if desired.

23. 50 kc I.f. output jack via cathode follower for teletype converter, etc.

24. Five position response control (tone control).

25. Two r.f. stages (Bands II to VI).

26. 17 tubes plus voltage regulator, ballast tube and rectifier.

27. Automatic noise limiter circuit.

28. Phono Jack

29. Audio output transformer for 3.2, 8, 500/600 ohm loads.

30. Fuse for overload protection.

31. Auxiliary sensitivity control permits monitoring of local transmissions in standby position.

Front Panel Control

Main tuning.

Band spread.

Band Selector 6 positions.

Volume: 0-10 and AC/off.

Band width in kc: 10, 5, 2½, 1¼, .5 and .250.

Pitch: (B.F.O.) +5-0-5.

Response: Bass Boost, High Fidelity, Normal, Communications. (Comm. 1, Comm. 2)

Antenna trimmer +5-0-5.

Sensitivity 0-10.

Front Panel Toggle Switches

Noise limiter on/off.

A.V.C. on/off.

Calibrator on/off.

Receive—standby.

C.W.—AM—SSSC (single side band suppressed carrier).

Chassis Rear

Speaker terminals 3.2/8/500-600 ohms.

Antenna terminals 52-600 ohms.

AC Accessory socket 117 volts at 250 watts.

Power socket—Octal for external power supply to receiver, such as batteries, and in addition, this socket supplies 6.3 volts at 600 ma and 150 dc at 10 ma for future accessories.

I-F output jack.

Audio Input—phono jack.

Fuse holder for AC power circuit.

Standby sensitivity control (access through cabinet cover).

Frequency Range

(Main tuning dial)

Band 1—535 to 1710 kc.

Band 2—1690 to 3080 kc.

Band 3—2980 to 5570 kc.

Band 4—5370 to 10,000 kc.

Band 5—9.8 to 18.3 mc.

Band 6—17.8 to 33 mc.

Sensitivity

Bands 2 to 6—1 microvolt for ½ watt output. 1 microvolt for 10 db signal to noise ratio.

Band 1—10 microvolts for ½ watt output.

Image Rejection

Not less than 80 db on frequencies lower than 20 mc.

Not less than 60 db on frequencies from 20 to 30 mc.

Spurious Responses

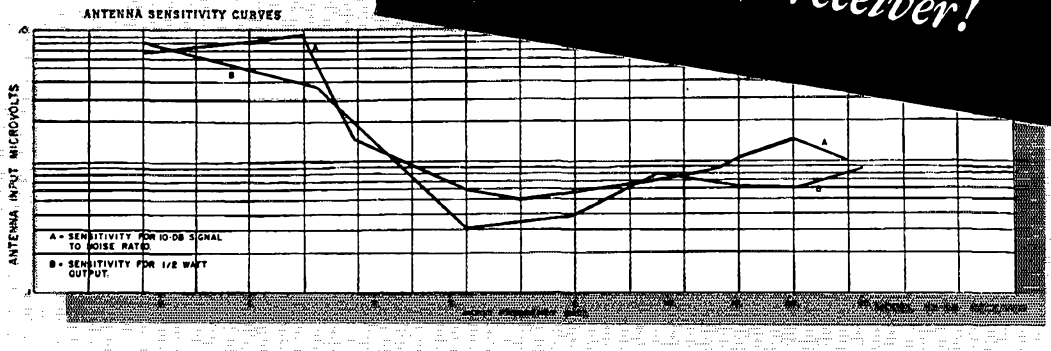
(I.F. and oscillator tweets)

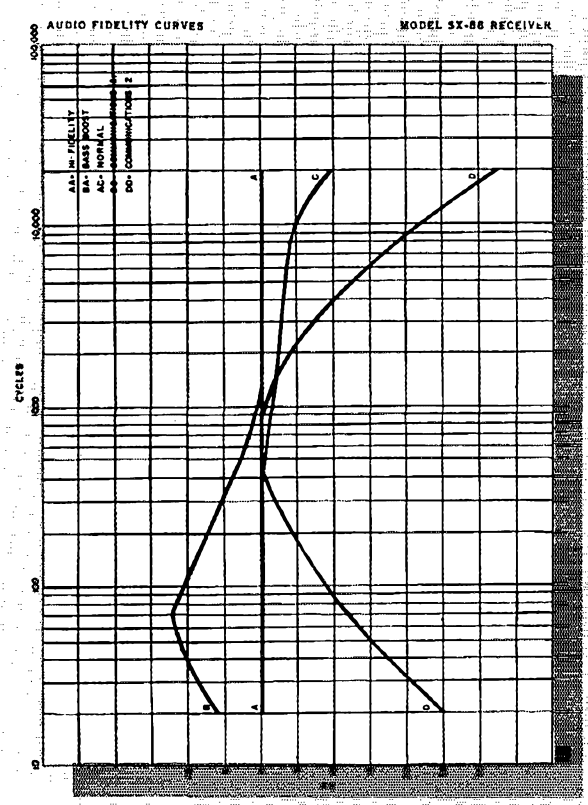
Not less than 80 db except at 1700 kc where it is not less than 50 db.

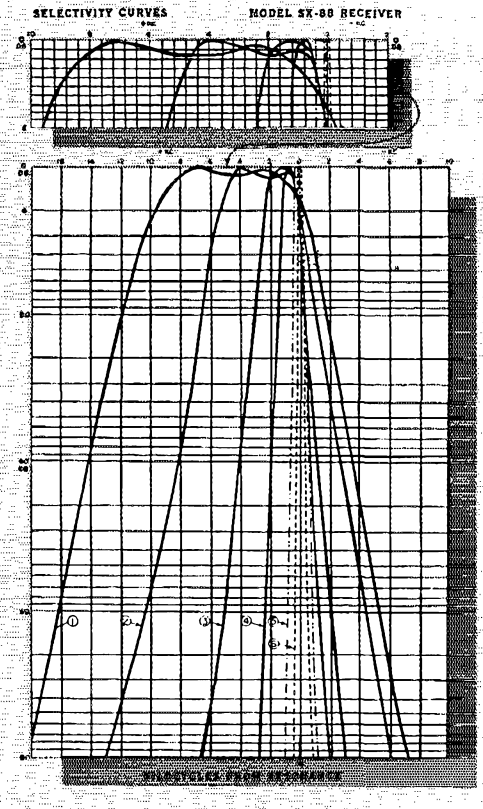
Band Width—(Selectivity)

Position	6 db (nose)	60 db (skirts)
10 kc	10 kc	30 kc
5 kc	5 kc	15. kc
2.5 kc	2.5 kc	7.5 kc
1.25 kc	1.25 kc	3.75 kc
.500 kc	500 cps	1.50 kc
.250 kc	250 cps	850 cps

These curves tell the story ... compare with any other receiver!







hallicrafters

World's Leading Exclusive Manufacturer of Communications and High Fidelity Equipment, Radio and Television

4401 West Fifth Avenue, Chicago 24, Illinois

Hallicrafters, Ltd., 51 Camden Street, Toronto, Canada

THE AMERICAN RADIO RELAY LEAGUE, *INC.*,

is a noncommercial association of radio amateurs, bonded for the promotion of interest in amateur radio communication and experimentation, for the relaying of messages by radio, for the advancement of the radio art and of the public welfare, for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial and no one commercially engaged in the manufacture, sale or rental of radio apparatus is eligible to membership on its board.

"Of, by and for the amateur," it numbers within its ranks practically every worth-while amateur in the nation and has a history of glorious achievement as the standard-bearer in amateur affairs.

Inquiries regarding membership are solicited. A bona fide interest in amateur radio is the only essential qualification; ownership of a transmitting station and knowledge of the code are not prerequisite, although full voting membership is granted only to licensed amateurs.

All general correspondence should be addressed to the administrative headquarters at West Hartford, Connecticut.

Past Presidents

HIRAM PERCY MAXIM, W1AW, 1914–1936
EUGENE C. WOODRUFF, W8CMP, 1936–1940
GEORGE W. BAILEY, W2KH, 1940–1952

Officers

President . . . . . GOODWIN L. DOSLAND, WØTSN
Moorhead, Minn.

First Vice-President . . . . . WAYLAND M. GROVES, W5NW
P.O. Box 586, Odessa, Texas

Vice-President . . . . . FRANCIS E. HANDY, W1BDI
38 La Salle Road, West Hartford, Connecticut

Secretary . . . . . A. L. BUDLONG, W1BUD
38 La Salle Road, West Hartford, Connecticut

Treasurer . . . . . DAVID H. HOUGHTON
38 La Salle Road, West Hartford, Connecticut

• • • • •

General Counsel . . . . . PAUL M. SEGAL
816 Connecticut Ave., Washington 6, D.C.

Technical Director . . . . . GEORGE GRAMMER, W1DF
38 La Salle Road, West Hartford, Connecticut

Technical Consultant . . . . . PHILIP S. RAND, W1DBM
Route 58, Redding Ridge, Conn.

Assistant Secretaries:
JOHN HUNTOON, W1LVQ JOHN E. CANN, W1RWS
38 La Salle Road, West Hartford, Connecticut

DIRECTORS

Canada

ALEX REID VE2BE
240 Logan Ave., St. Lambert, P. Q.
Vice-Director: William W. Butchart VE6LQ
5310 Ada Blvd., Edmonton, Alta.

Atlantic Division

ALFRED C. HECK W3GEG
515 Cedar Ave., Sharon, Pa.
Vice-Director: Charles O. Badgett W3LVI
725 Garden Road, Glenside, Pa.

Central Division

WESLEY E. MARRINER W9AND
844 N. Galena Ave., Dixon 7, Ill.
Vice-Director: Harry M. Matthews W9UQT
Box 1195, Springfield, Ill.

Dakota Division

ALFRED M. GOWAN . . . . . WØPHR
325 S. Menlo Ave., Sioux Falls, S. D.
Vice-Director:

Delta Division

JAMES W. WATKINS W4FLS
220 N. Howell Ave., Chattanooga, Tenn.
Vice-Director: George S. Acton W5BMM
Plain Dealing, La.

Great Lakes Division

JOHN H. BRABB W8SPF
417 Ford Bldg., Detroit 26, Mich.
Vice-Director: Harold E. Stricker W8WZ
247 W. 5th St., Marysville, Ohio

Hudson Division

GEORGE V. COOKE, JR. W2OBU
88-31 239 St., Bellerose 26, N. Y.
Vice-Director: Thomas J. Ryan, Jr W2NKD
1082 Anna St., Elizabeth 4, N. J.

Midwest Division

WILLIAM J. SCHMIDT . . . . . WØOZN
306 S. Vassar, Wichita, Kansas
Vice-Director: James E. McKim . . . . . WØMVG
1404 S. Tenth, Salina, Kansas

New England Division

PERCY C. NOBLE W1BVR
37 Broad St., Westfield, Mass.
Vice-Director: Frank L. Baker, jr. W1ALP
91 Atlantic St., North Quincy 71, Mass.

Northwestern Division

R. REX ROBERTS W7CPY
837 Park Hill Drive, Billings, Mont.
Vice-Director: Karl W. Weingarten W7BG
3219 N. 24th St., Tacoma 7, Wash.

Pacific Division

KENNETH E. HUGHES W6CIS
3105 Crest Haven Drive, Sacramento, Calif.
Vice-Director: Richard F. Czelkowitz W6ATO
243 Colon Ave., San Francisco 12, Calif.

Roanoke Division

P. LANIER ANDERSON, JR. W4MWH
428 Maple Lane, Danville, Va.
Vice-Director: Gus M. Browning W4BPD
135 Broughton St., S. E., Orangeburg, S. C.

Rocky Mountain Division

CLAUDE M. MAER, JR. . . . . WØIC
740 Lafayette St., Denver, Colo.
Vice-Director:

Southeastern Division

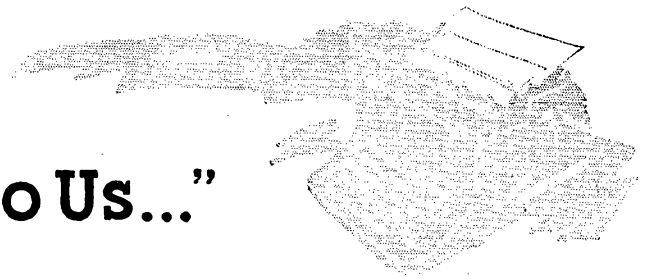
ERNEST W. BARR W4GOR
911 Rosemary Ave., SW, Atlanta, Ga.
Vice-Director:

Southwestern Division

JOHN R. GRIGGS W6KW
3661 Buckingham Rd., Los Angeles 8, Calif.
Vice-Director: Walter R. Joos W6EKM
1315 N. Overhill Drive, Inglewood 3, Calif.

West Gulf Division

A. DAVID MIDDELTON W5CA
9 Kay Road, Tijeras, N. M.
Vice-Director: Carl C. Drumeller W5EHC
5824 N.W. 58th St., Oklahoma City 12, Okla.



"It Seems to Us..."

NOVICES

The Novice license has now been available for a length of time sufficient to permit an examination of a complete two-year cycle, from July 1, 1951, to July this year. In the first twelve months, about 13,000 Novice tickets were issued; in the second twelve months, about 9400 Novice tickets were issued. Let us say immediately that the lowered figure does not necessarily mean that much of a drop in interest, because toward the end of the second year FCC was several months behind in issuing tickets for which exams had already been passed.

In all this time it has been a rare occasion to hear any amateur comment relating to the Novice license which is not complimentary and enthusiastic. We like these guys (and gals), newcomers to amateur radio, and extend them a welcome hand. We think they've established a pretty good record for themselves, operating as successfully as they do in crowded bands, sticking pretty much to c.w. to make sure they'll be up to 13 w.p.m. at least by the end of their year, and demonstrating fairly competent operating techniques and abilities. There is no question that the Novice license in principle is a good thing for amateur radio. It gets our newcomers on the air sooner than they would otherwise, and in their formative period they progress by learning from actual experience rather than solely from books or code-oscillator practice. All this, of course, is to the good.

But there is one respect in which the license has been disappointing, though no fault of the Novices themselves. In discussions prior to the establishment of the new class, there were a great many proponents who predicted that it would bring tens of thousands of new people into amateur radio — yes, that it might even double the number of amateurs in one year. In the light of the record these predictions were, to put it gently, somewhat overenthusiastic. The figures do not show that the Novice ticket has made any startling change in the steady and continued growth which has characterized amateur radio for many years.

Don't misunderstand us; it is a good, healthy figure of growth. The disappointment comes from the fact that the figure remains at an average level despite an unprecedented amount of promotion and publicity on the Novice license aimed at interesting a greater number of people in the hobby. Youth magazines, hobby and "popular mechanics" type publications, newspapers, boys' club bulletins, house organs, and Sunday school leaflets are examples of fields in which a considerable job of promotion was accomplished, using information supplied by the League, during those first two years (and still continues). Some 250,000 copies of a special promotional piece, "You Can Be There," were (and continue to be) distributed by us through schools, boys' organizations, veterans groups, affiliated clubs, hobby shows and fairs, and the industry. These activities alone are not the magic answer, at least in terms of visible results. (It can of course be argued that without the promotion the regular rate of growth would have dropped off; but that would be an endless argument since there is no proof either way.)

It may well be that the key to amateur radio's growth lies not entirely in promotion and advertising and other printed media, but rather more fully in personal interest and guidance. At least, that struck home in our own case of seven of the office gals recently obtaining their Novice tickets. They'd been pretty well exposed, obviously, to ham radio for considerable time, in one case more than 20 years. They had a latent interest. They certainly had plenty of literature at their disposal! They wanted to become hams, but there was something lacking. If the deficiency had been *only* an easier license, they would have been hamming long before this. The "something," as we look back upon it now, may well have been the personal attention and instruction and guidance that was furnished them, not only in code practice and theory study, but following through to use of tools, construction of equipment, and actually setting it up on the air after the tickets came through.

And so it seems to us that we all, as amateurs, must not make the mistake of looking upon the Novice license as an "open sesame" to amateur radio, nor of assuming that it is a simple key for mass production of our necessary growth, without further action on our part. It is indeed a tool for growth, but it

becomes a useful tool only when we as amateurs put it to work. We address ourselves particularly to clubs when we urge all amateurs to keep in mind the continuing need for personal guidance, of invitations to visit home and club stations, to keep those code and theory classes going (or initiate them), and to follow through with personal assistance of selection of equipment, its construction, and its set-up for operation. The gratitude of the newcomers you help is only part of your reward; more important is the knowledge that you are breathing new life and continued growth into the greatest of all avocations.

OUR COVER

Chief Op "mp" puts the W1AW Model 12 teletype printer to the pleasant duty of bringing warm Season's Greetings from all of us at Hq. to all of you out there.

SINCE the war many countries of the world have set up currency restrictions which either prohibit the sending of money outside their boundaries or make it practically impossible. This has meant that hundreds of amateurs in other lands do not normally have the opportunity to renew their ARRL memberships and receive *QST* regularly. The situation is made more acute by the devaluation of many foreign currencies, for many of those who formerly were just barely able to get together the necessary American dollars now find it utterly impossible to do so.

At the end of the war ARRL did in numerous instances grant membership and *QST* to prewar members overseas on a credit basis, but of course we couldn't carry membership-subscriptions on that basis indefinitely and, in practically all cases, we have been regretfully obliged to discontinue these arrangements. It occurs to us that perhaps American amateurs and club groups might wish this year to make a "care" package gift in the form of *QST* for Christmas, as many did last year. If it's something you'd like to do, we'll be glad to make necessary arrangements. The foreign membership dues are $5. If you have a particular DX buddy in mind, give us his name — *and complete address*. If you have no special name, we can arrange to apply your remittance to a membership-subscription for a foreign amateur who cannot send his own money but wishes to renew. We'll let you know what amateur we select. And of course we'll send the recipient of your gift an appropriate note to tell him who his American patron is. Address ARRL, 38 La Salle Road, West Hartford 7, Connecticut.

Strays

W2AOC, who has a first-floor apartment, tells W1HDQ he finally solved the third-floor TVI problem. He's marrying the complainant.

—•••—

After an exceptionally heavy deluge of shack visitors, W5ELE came to the inevitable conclusion that every ham ought to have *two* stations — one that works and one that looks good.

—•••—

You've got to be ready for *anything* these days. W3ULR cranked up his rig on 75 'phone recently and contacted W8JPJ (a.m.), W3UIL (c.w.) and W3ALE (s.s.b.) within a half hour. No spark stations were heard.

—•••—

If you call CQ at the right time, on the right frequency and under the right conditions, it might actually come back to you. W1WPO has a QSL from the place, a card confirming QSO with WN7UBC of *Sekiu*, Washington.

—•••—

W2CUD and W1TJU had a 9-watt 75-meter 'phone rig along on a Massachusetts vacation last summer. They took it on a fishing trip and sought to dent the 3.8-Mc. QRM with the aid of a kite-supported antenna over water. The kite was of box design and nearby townsfolk, viewing the set-up from shore, had it figured out for everything from signals of distress to "flying cubes." The story later made quite a splash in the Cape's *Vineyard Gazette*.

—•••—

When 17-year-old Dick Phillips, W4SKE, was stricken by polio over a year ago, dozens of amateurs in the Kentucky area hastened to help speed his recovery. The hospital-bed station they installed for Dick's enjoyment was undoubtedly of much therapeutic benefit while the lad's condition improved from iron lung to chest respirator to rocking-bed and finally to independent breathing. W4JXF and W4TUT, ARRL's Kentucky SCM, helped coördinate rehabilitation assistance by a group whose number eventually swelled to include 150 amateurs. Dick is now further recuperating in a New York City medical center. His doctor is VE5TH/W2.

—•••—

This month's Silent Keys discloses the sad fact that another of amateur radio's eminent stalwarts of other days has passed on. J. O. Smith, ex-2LK-2ZL, was a member of ARRL's Board of Direction at its inception before the first World War. He was serving as Atlantic Division Manager at that war's outset, later to assume duties as the League's Traffic Manager in 1919 at the lifting of the ban. Under Mr. Smith's management, the Operating Department thrived and its scope of activities expanded manifold. Upon his resignation from this position in 1920, November *QST* of that year recorded: "For this [work] his name will ever stand in ARRL history, and he has the gratitude of every ARRL man."

A De Luxe 5-Band Mobile Transmitter

VFO- or Crystal-Controlled 30 Watts on 'Phone or C.W.

BY ROBERT D. LELAND,* W8GBT

• Here is a clean-looking and well-designed mobile rig that should give you a few ideas worth kicking around for that next transmitter you plan to build. It uses a 2E26 final for VFO- or crystal-controlled 'phone or c.w. on five bands.

THE transmitter to be described is the outcome of two years' work and three other transmitters. It is a compact and versatile rig designed for under-the-dash mounting. The unit is only 9 inches wide and 5 inches deep, so there is still plenty of leg room for a third passenger in the front seat. Physically, the layout of the front panel provides maximum convenience in mobile operation. The VFO dial is large and directly calibrated on all bands. A slide-rule type dial was used because it requires less room and is easier to read than a curved dial. The crystal is plugged in at the front panel to permit easy changing, but the socket is recessed to prevent damaging of the crystal pins by accidental bumping. The transmitter operates on five amateur bands without coil changing; the driver coils are broad-banded and require no adjustment during operation. There is no necessity to meter the grid circuit, which further simplifies the operation. The meter used in the transmitter reads the final-amplifier current only, and the final incorporates a pi network for rapid loading on all bands.

The transmitter operates with reasonably low battery drain, and there are two ranges of power that can be selected directly from the front panel. The author has used 6 watts on 10 meters with excellent results, but the 30 watts is handy for the crowded bands. Plate power requirements are 500 volts at 150 ma. maximum for an input power to the final of about 30 watts. The transmitter keys well for c.w. work and uses high-level plate modulation for 'phone operation. An internal relay mutes the receiver, controls the dynamotor, and switches the antenna. This provides push-to-talk operation with a remotely-located power supply.

* 118 Cambridge St., Pleasant Ridge, Mich.

The Circuit

The circuit diagram, Fig. 1, of the transmitter shows a 6AU6 as a combination crystal oscillator and VFO. Switch S_2 selects either the VFO or the crystal oscillator. A Hartley oscillator is used on VFO, and a modified Pierce oscillator is used in the crystal position because of its ability to oscillate with almost any crystal. Any frequency crystal may be used in the transmitter, provided the subsequent frequency multiplication does not exceed four. An 0A2 regulator tube is used to stabilize the voltage to the oscillator. The fundamental frequency of the oscillator is 80 meters on the 80- and 40-meter bands (L_2), and 40 meters on the 20-, 11-, and 10-meter bands (L_1). The bandswitch sections S_{1A}, S_{1B}, S_{1C} and S_{1D} are used to select the correct grid coils for each band and the trimmer condensers C_1, C_2, C_3 and C_4 which spread each band on the dial. This may look complicated in the circuit diagram, but it is relatively simple and will be discussed later. Bandswitch section S_{1E} switches the output coils of the VFO (L_3, L_4, L_5), and these

This 5-band mobile transmitter looks quite "commercial" but even the chassis and cabinet are homemade. VFO coverage of each band is available, and crystals can be plugged in at the front for rock-bound operation.

The 27-Mc. band scale is near the right-hand edge of the 14-Mc. band scale.

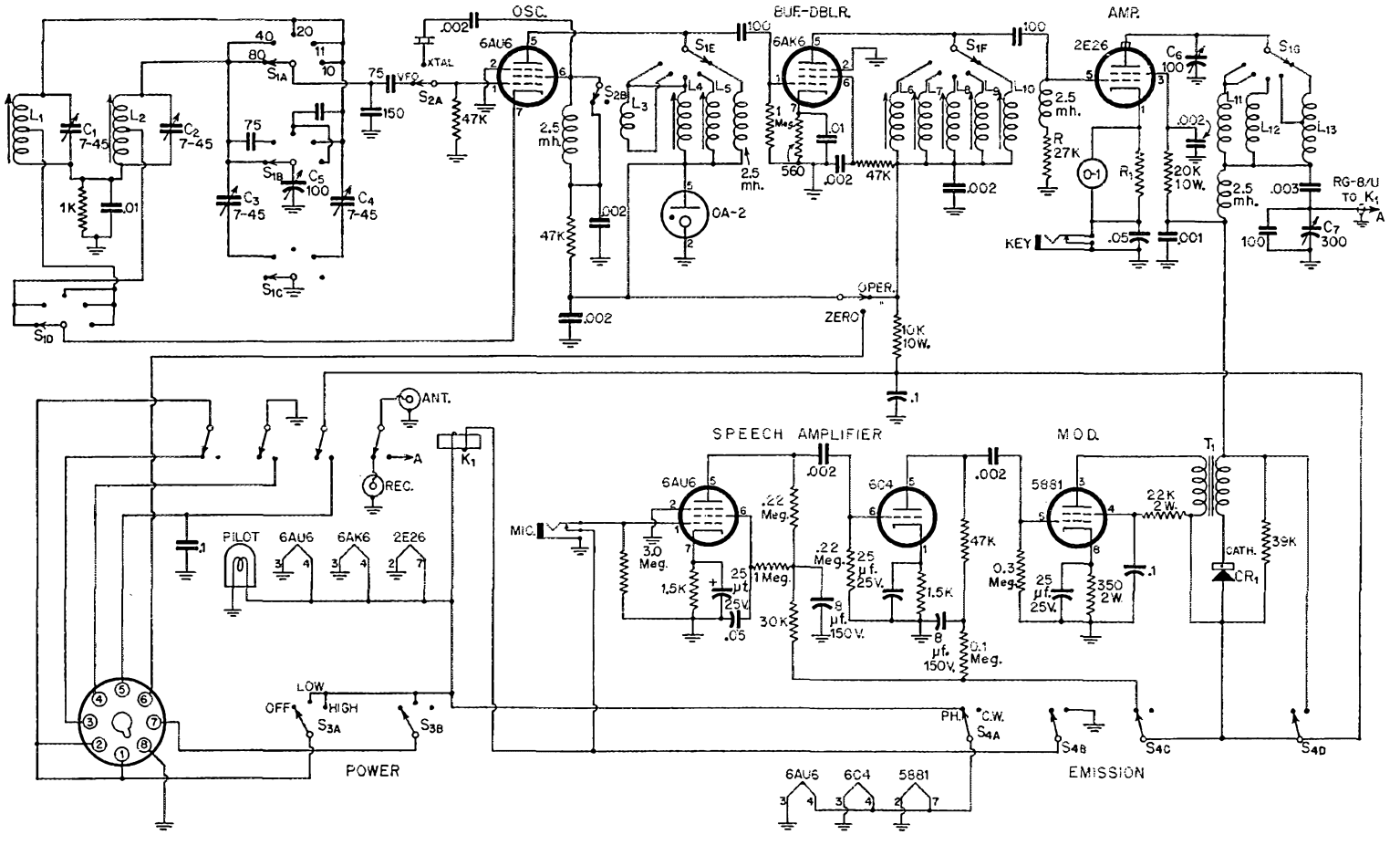


Fig. 1 — Wiring diagram of the 5-band mobile transmitter.

C_1, C_2, C_3, C_4 — 7–45 $\mu\mu$f. zero-temp. coefficient ceramic trimmers.
C_5, C_6 — 100-$\mu\mu$f. midget variable (Hammarlund MC-100-M).
C_7 — 300-$\mu\mu$f. midget variable (Hammarlund MC-300-M).
R_1 — Meter shunt. See text.
K_1 — 4-pole double-throw 6-volt relay (Potter-Brumfield KR-14-D).
S_1 — Ceramic selector switch, 2-pole 5-position sections (Centralab 2505).
S_3 — Double-pole 3-position rotary (Centralab 1407).
S_4 — 4-pole double-throw rotary (Centralab 1409).
CR_1 — 100-ma. selenium rectifier.
T_1 — 10-watt modulation transformer, 4500-ohm primary, 8500-ohm secondary (Stancor A-3871).
All capacitors 600-v. unless otherwise specified.
All resistors 1-watt composition unless otherwise specified.
Unmarked condenser below S_{1A} is 75 $\mu\mu$f.

coils are all slug-tuned with the exception of L_3, which is a small air-wound coil. Any two sections of the VFO portion of the bandswitch can be placed on any one wafer, and there are three wafers used. These wafers should preferably be ceramic, but phenolic wafers will be satisfactory.

With the oscillator being well-shielded and sufficiently stable, an isolator tube is not necessary and its use would result in a higher battery drain. The driver used in the transmitter is a 6AK6, but a 6AH6 can be directly substituted for a little more grid drive and a little more money. The driver is a frequency multiplier on all bands except 80 meters and uses fixed-tuned coils tuned to the center of each band. The 80- and 40-meter driver plate coils are pi-wound, but single-layer coils may be used. The driver final grid current runs 3 ma. on all bands except 10 meters, where it is about 2.5 ma. at 29.0 Mc. and 1.5 at each end of the band. This is lower than the ratings of the tube, but is sufficient drive to get good upward modulation with a stable final.

The final amplifier is a 2E26 with the meter in the cathode circuit. This reads the total of plate, screen and grid current, which runs around 75 ma. maximum. The 1-inch meter in the transmitter is from army surplus, but commercial meters of this size are available. The meter movement is a 0–1 ma. with an external shunt wound on a high-resistance 1-watt resistor.

It should be noted that only the final is keyed on c.w. This is done to prevent any chirp, and the signal is clean on all bands. The driver and VFO are shielded well enough so that radiation from them is quite weak when monitoring the c.w. signal. The plate circuit of the final is a conventional pi network. The value of the loading condenser, C_7, should be at least 300 $\mu\mu$f. and preferably a little higher. The condenser is almost at maximum capacity for the best loading at 75 and 40 meters. The 100-$\mu\mu$f. fixed condenser in parallel with C_7 was added to reduce the loading a little on all bands. The wafer section S_{1G} is used for switching the final plate coils, and it should be a ceramic section. In some cases, it may be found that the 80-meter coil when open will resonate at 20 meters and absorb a large amount of energy. In this case, the unused section of the wafer (S_{1G}) can be used to short out the 80-meter coil on the interfering bands.

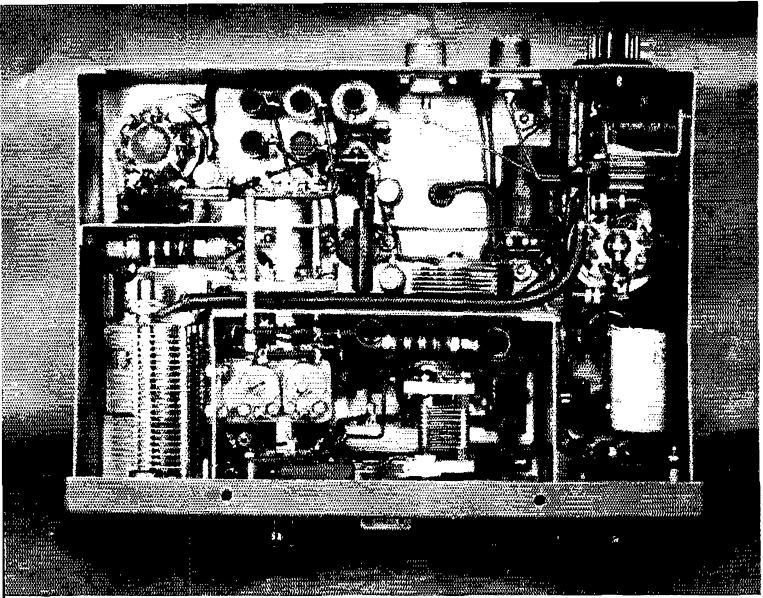
The modulator uses a 6AU6 as a speech amplifier for a high-impedance microphone, but it could be changed to a grounded-grid amplifier with a carbon microphone if it is desired. The second speech amplifier is a 6C4 that supplies audio to the 5881 modulator tube. The 5881 is a relatively new tube on the market, and it is merely a husky 6L6. Its plate dissipation is 23 watts, and the tube operates very nicely with 500 volts on the plate. This modulator supplies well over the necessary amount of audio to modulate the carrier 100 per cent with negligible distortion, but the selenium rectifier in the secondary of the modulator prevents overmodulation on negative peaks.[1] The emission switch is a four-pole double-throw switch that shorts out the secondary of the modulation transformer, turns off the filaments and plate voltage to the modulator and actuates the dynamotor on c.w. The relay is a four-pole double-throw affair that switches the antenna from the receiver to the transmitter, mutes the receiver by removing the 6 volts from the receiver vibrator pack, breaks the plate voltage from the dynamotor so that the transmitter goes dead instantaneously with the transmit-receive button released, and also controls the 6 volts to the dynamotor solenoid. The latter could also be done by paralleling the relay coil and the solenoid. However, the author used a coiled microphone cord made of tinsel copper wire, and it will not handle the current. The "Zero-Operate" switch, a s.p.s.t. toggle, is used to turn the VFO on while receiving in order to zero-beat a desired frequency. The voltage to the oscillator can be taken from the receiver pack, and the extra load of about 15 ma. is not enough to damage the receiver supply. Incidentally, the VFO is stable enough to be used to copy s.s.b. while driving down the road.

[1] The circuit is shown as W8GBT uses it, but it is pointed out in the 1953 *Handbook* (p. 248) and elsewhere that a low-pass filter is the important part of a limiting circuit that prevents splatter. — *Ed.*

COIL CHART

Coil	*Frequency*	*Turns*	*Wire Size*
L_1	40 meters, tap 5 turns from cold end	15	23 enam.
L_2	80 meters, tap 10 turns from cold end	30	29 enam.
L_3	11 meters, air-wound, ⅜-inch diam.	18	20 enam.
L_4	20 meters	28	22 enam.
L_5	40 meters	40	30 d.s.c. pi-wound
L_6	10 meters	10	20 enam.
L_7	11 meters	11	20 enam.
L_8	20 meters	20	22 enam.
L_9	40 meters	30	30 d.s.c. pi-wound
L_{10}	80 meters	70	30 d.s.c. pi-wound
L_{11}	10 turns (8 turns per inch, 3014)		
L_{12}	4 turns (4 turns per inch, 3013)		
L_{13}	42 turns (32 turns per inch, 3016)		

L_1, L_2
Cambridge Thermionic ceramic coil forms (LS-5)
L_4–L_{10}
Cambridge Thermionic phenolic coil forms (LS-3)
L_{11-13}
B & W Miniductors, 1-inch diam. coils



The separate VFO chassis has clearance holes for the bandswitch (just left of center). The antenna change-over relay can be seen at the upper right.

The coils used in the transmitter are all slug-tuned, with the exception of L_3, L_{11}, L_{12} and L_{13}. L_1 and L_2 are Cambridge Thermionic ceramic forms, and L_4 through L_{10} are Cambridge Thermionic phenolic forms. (See coil chart for data.) These coil forms run into money, and duplicates can be found in either surplus gear or in the junk box. The final tank coils are B & W Miniductors.

Construction

The construction requires a considerable amount of metal work, although most of the work can be done with common shop tools. The author used a hammer, chisel and file to cut the meter hole and the VFO dial hole in the front panel. All sheet metal is 0.064-inch aluminum, and the construction is divided into three stages. The VFO chassis measures 5 by 3 inches by 2½ deep, and each corner is fastened with two bolts or rivets. Naturally, a well-made VFO chassis will contribute to the stability of the unit. All parts in the VFO should be solidly mounted, especially the tuning condenser. Two gears are used on the VFO condenser, one spring-loaded and mounted directly on the condenser shaft, and the second on the control-knob shaft. The gear ratio should be about 7 to 1. If it is undesirable to use gears, a conventional National Company vernier has about the same ratio. A half-inch pulley is mounted on the control-knob shaft for the dial cord for the slide-rule dial, Fig. 2.

The 6½ × 9 × 2-inch deep main chassis is made in somewhat the same fashion as the VFO chassis. Cut the metal to size, drill all holes, break corners and secure corners with two bolts or rivets. The main chassis bolts to the VFO with three bolts and is bolted to the front panel with the control nuts on the switches and condensers. No extra support bolts are necessary because of the small size of the front panel.

The front panel can be drilled after being cut to size, and then comes the work! The meter hole and the dial hole should first be laid out in pencil. The small curved extremities of the meter hole can be drilled to size and then a series of small holes, using about a No. 30 drill, can be drilled close to the pencil line. After removing the excess metal the hole can be filed smooth. The large rectangular hole for the dial can be cut with a chisel and then filed smooth. If some care is exercised in cutting and filing the half-inch squares from the corners of the front panel, the edge joints will be almost undetectable after being bent and sanded. If one does not care to do the metal work, a commercial chassis of similar size can be obtained.

Adjustment

A standard a.c. power supply delivering about 500 volts at 150 ma. and 6.3 volts at 6 amperes may be used for bench-testing the transmitter. A 25-watt light bulb will serve as a dummy antenna, and a 0–5 ma. meter should be inserted in series with the gridleak R, Fig. 1. While checking the VFO and driver, the "Emission" switch should be placed in the c.w. position. The voltage should also be removed from the plate and screen of the 2E26. With the bandswitch in the 80-meter

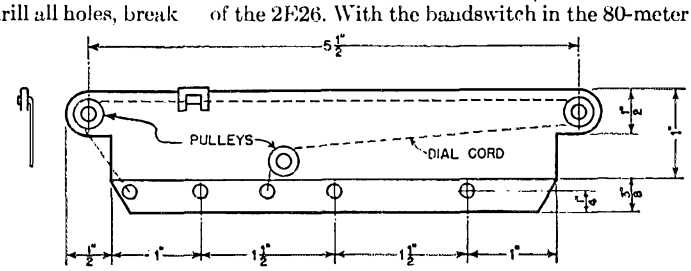


Fig. 2 — Dimensions of the slide-rule dial.

position, and the VFO dial at the 3.5-Mc. end, L_2 should be adjusted so it can be heard in a receiver set at 3.5 Mc. Now set the receiver and VFO at 4.0 Mc. The signal from the transmitter may be either above or below 4.0 Mc. at this time. With this setting, adjust C_2 until a beat is heard at 4.0 Mc. This procedure may have to be repeated several times, each time bringing the calibration closer to the desired spot on the dial. Anyone familiar with tracking of receivers will find this an easy job. Next, place the bandswitch in the 40-meter position and the VFO dial and the receiver at 7.0 Mc., and adjust C_3 until

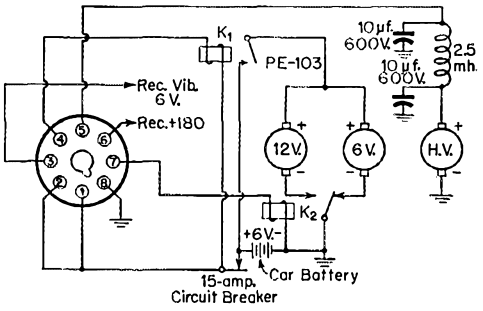


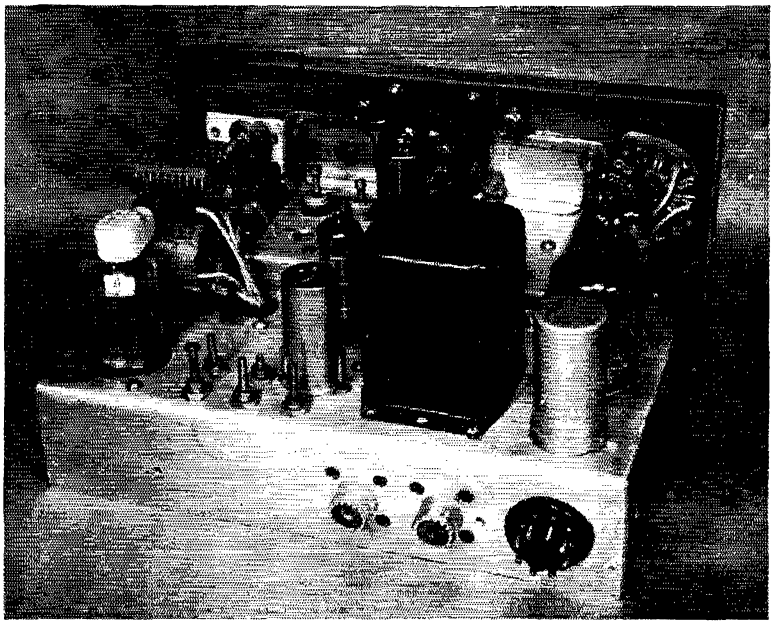
Fig. 3 — The power-supply wiring diagram.
K_1 — 6-volt solenoid contractor.
K_2 — Heavy-duty 6-volt relay.

a beat is heard. With the bandswitch in the 10-meter position the same procedure as for 80 meters is followed, using L_1 to set at 28.0 Mc., and C_1 at 29.7 Mc. With 10 meters tuned correctly, 20 meters is automatically set. With the bandswitch in the 11-meter position and the VFO and receiver tuned to 27.0 Mc., adjust C_4 to a beat note. After rechecking these calibrations the VFO calibration is complete.

In adjusting the driver coils, the meter should be left in the 2E26 grid circuit and the bandswitch set in the 80-meter position. Set the VFO at 3.8 Mc. and adjust L_{10} for maximum grid drive, about 3.5 ma. Set the bandswitch on 40 meters, adjust the VFO to 7.2 Mc., and adjust L_9 for a peak. Set the VFO at 7.0 Mc. and adjust L_5 for maximum grid current. Set the bandswitch at 20 meters, VFO at 14.4 Mc. and adjust L_8 for maximum grid current. L_4 should be left for later. Set the band switch for 10 meters and adjust L_6 for maximum grid drive at 29.2 Mc. and L_4 for maximum at 28.6 Mc. For 11 meters, adjust L_7 for a peak at 27.0 Mc. If 20 meters was lacking drive, it should be OK now, because L_7 is used for both 20 and 10 meters. This takes care of the complete alignment of the r.f., although some repeaking may have to be done with the final turned on. With the final turned on and the dummy antenna (light bulb) connected, each band should be checked for resonance. The light bulb may not load to very much brilliance on 80 meters, but with an actual antenna the loading will be sufficient. The pi network as designed for 50-ohm antennas won't load a 400-ohm light bulb efficiently on the lower bands.

In checking the modulation, place the emission switch on a.m. and insert the microphone. The modulation percentage should be checked with a 'scope, but it is not altogether necessary. A careful listening check for splatter or distortion should be sufficient in most cases.

Although an individual might not desire to construct this unit as described, careful study of the circuit will show many points that can be adapted to other transmitters. The VFO can be used as a separate unit for use with existing transmitters, or the entire r.f. unit could be used as an exciter for a higher-powered rig. The transmitter as a whole makes an ideal unit for efficient bandhopping in the family jalopy.



This view shows some of the construction details of the homemade dial and the location of many of the parts. The r.f. section is to the left, audio to the right.

Operating the BC-696 in TV Fringe Areas

Harmonic Reduction and Improved Stability for Command Rigs

BY JOHN D. TICEN,* W9UUV

• **Faced with the problem of eliminating TVI in a weak-signal fringe area, W9UUV tells how he worked over W9MRB's Command transmitter so that it would not interfere with reception from TV stations over 100 miles away. In the process, he also improved the frequency stability, avoiding f.m., a common fault with units of this type.**

THE Channel 6 signal from Indianapolis, some 50 miles away, until recently was the most consistent received in Lafayette. (A u.h.f. station is now in operation.) Then, too, the locals insist on fishing for other channels in Chicago, over 100 miles away, so boosters and high-gain antennas are the rule here, rather than the exception. To make matters worse, the QTH is in a university housing area, with several apartments per barracks-type structure. Naturally, TV receivers and antennas are numerous and both apartments adjacent to W9MRB are so equipped.

It became apparent that low power alone wasn't the solution when complaints of TVI from a 25-watt 807 rig finally forced him off the air. The transmitter didn't merit a complete debugging and shielding, so a BC-696 was recalled to active duty. However, considerable revamping of the circuit was necessary before TVI was eliminated on all channels. Those who possess one of these units may be interested in the details of the revision made not only to eliminate TVI, but also to provide better isolation for the oscillator. The latter is highly desirable, especially if the rig is to be modulated, since, in its original form, considerable f.m. was unavoidable.

* 272 Mill St., New Palestine, Ind.

Revisions

The major revisions made in this model are as follows: (1) the output circuit was revamped to

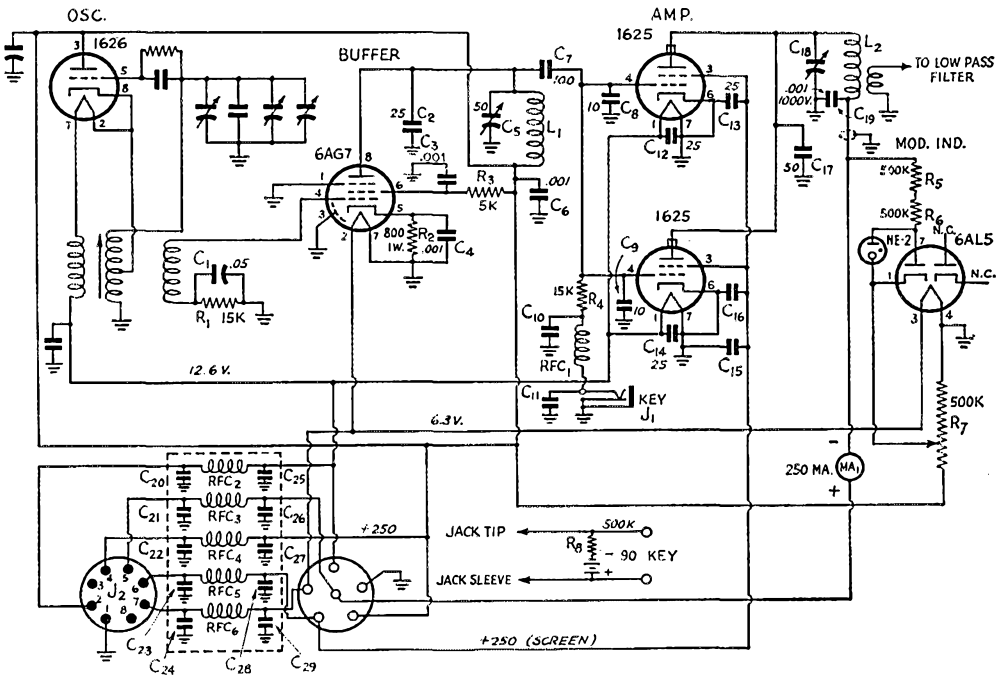
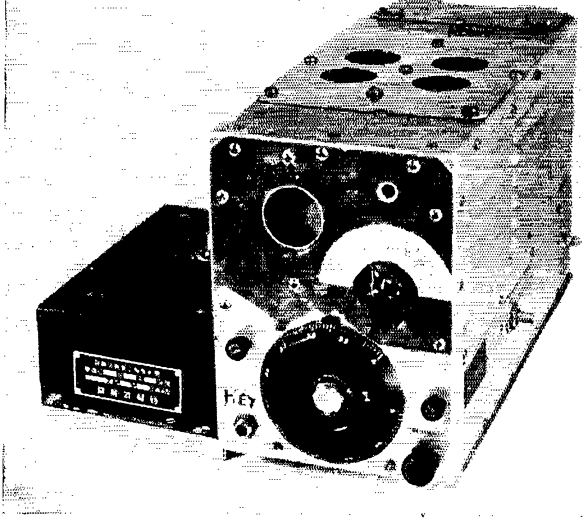


Fig. 1 — Modified circuit of the BC-696.

C2, C6, C7, C8, C9, C12, C13, C14, C15, C16, C19 — mica.
C10, C11, and C20 through C29 — 25 to 500-$\mu\mu$f. mica, value not critical.
C3, C4 — Disk ceramic.
C5 — Midget variable.
C17, C18 — See text.
L1 — 20 turns No. 22 enam., 1¼-inch diam. (wound on bakelite octal tube base).
L2 — Original tank coil with 2 turns removed.
MA1 — 2 inch.
NE-2 — 1/25-watt neon bulb.
RFC1 through RFC6 — 40 turns No. 22 enam., wound on ½-inch polystyrene rod.
Values not marked are the original.



The revamped BC-696. The original controls in the upper portion of the panel have been replaced with a separate tuning control for the 1625 amplifier, a plate milliammeter and a neon-bulb overmodulation indicator. A key jack has been added in the lower left corner. The controls along the side of the chassis are for adjusting the overmodulation indicator and tuning the buffer amplifier. In the box to the left is a low-pass filter.

♦

eliminate resonances in the TV range (a grid-dip oscillator showed two of these in the original arrangement); (2) a 6AG7 buffer was inserted between the oscillator and amplifier; (3) blocked-grid keying was provided for the amplifier to eliminate chirps and clicks; (4) v.h.f. filters were provided for the power leads, and a low-pass filter for coax output added; (5) an overmodulation indicator was included;[1] (6) the original 24-volt filament connections were changed over for 12-volt operation; (7) a milliammeter for reading amplifier plate current was added.

Since there may be some slight variation in original details from unit to unit (especially between the BC-696 and its counterpart, the T-19/ARC5), the revision will be generalized as much as possible. The unit should first be stripped of all unnecessary parts and wiring. On top of the chassis, remove everything forward of the 1625s, including the coupling and loading-coil mechanisms, and the antenna relay and its wiring. Dismount the tank coil temporarily, removing the trimmer slug and two turns from the coil itself.

Reconstruction

Clear the panel of everything above the dial and cut a patch plate of aluminum to cover the upper portion of the panel. Attach the patch plate to the panel with self-tapping screws and cut a hole for observing the milliammeter, and a smaller one for checking the neon-bulb overmodulation indicator, as shown in the front-view photograph. These holes are cut through both the patch plate and original panel, of course. Remove the patch plate and cut a piece of copper or bronze screening of the same size to back up the plate. Mount a key jack in the lower left-hand corner of the panel.

Underneath the chassis, remove the amplifier tank padding condenser. The amplifier tank tuning condenser will not be used, but its removal would upset the cable control to the oscillator tuning condenser, so it is left in. Remove the keying relay and its wiring, and also the neutralizing condenser. Strip the magic-eye socket, except for the wire leads going to Pins 2 and 7, and discard the large resistor mounted immediately below this socket. Unsolder the wire going to Pin 7 and connect it, along with the other wire already going to Pin 2. This shifts the 1626 heater connection for 12-volt operation. The magic-eye socket will be used for the plug-in tank coil of the 6AG7 buffer stage.

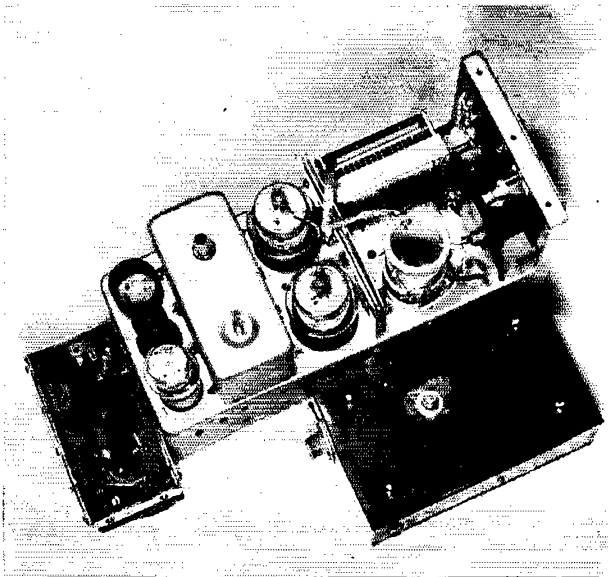
Adding the Buffer Stage

Now strip the crystal socket of everything except the strap between Pins 1 and 7, that is connected to ground. This socket will be used for the 6AG7 buffer tube. Removal of the relay wiring should leave a vacant pin on the power plug. Use this pin for running in the hot side of a 6.3-volt line for the heaters of the 6AG7 and 6AL5. So, run a wire from Pin 2 on the crystal socket to this vacant pin on the plug. Pin 3 should be grounded by connecting to Pin 1 or Pin 7.

Now rewire the remainder of the crystal socket to take the 6AG7, as shown in Fig. 1. The wire from the oscillator-coil terminal strip that goes to the grids (Pins 4) of the 1625s should be transferred to Pin 4 of the 6AG7 socket, while the oscillator-coil terminal that formerly went to the

[1] Lucas and Peters, "A Duo-Diode Modulation Monitor," *Radio & TV News*, Dec., 1952.

♦



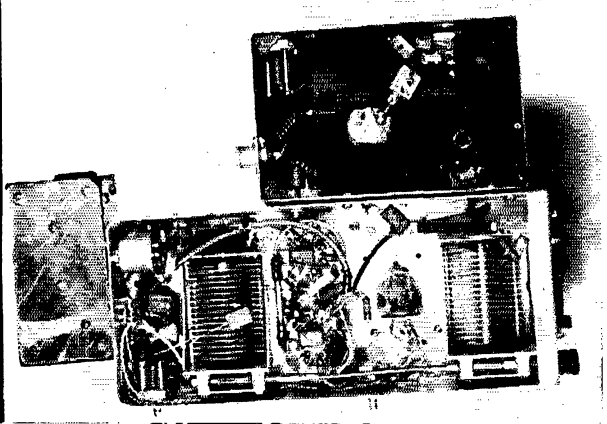
Interior view of the revised "Command" transmitter. The magic-eye and crystal sockets at the rear of the chassis have been rewired to take a 6AG7 buffer amplifier and its tank coil. Between the 1625s and the new tank condenser is a homemade air by-pass for harmonics. The outboard boxes contain a power-supply-lead v.h.f. filter, and a low-pass filter for the output.

neutralizing condensers should be connected to ground through a 15,000-ohm resistor, the resistor being by-passed. The resistor may be one of those previously removed, and the by-pass may be a now-available section of the metal-cased condenser at the rear of the chassis. Similarly, the cathode terminal, Pin 5, should be grounded through an 800-ohm resistor, by-passed with a 0.001-μf. disk ceramic. The screen, Pin 6, is by-passed to ground with a 0.001-μf. disk ceramic, also. A 25-$\mu\mu$f. mica condenser is connected directly between the plate terminal, Pin 8, and ground, to provide a by-pass for v.h.f. harmonics.

A wire is run from Pin 8 on the 6AG7 socket to one of the unused pins on the magic-eye socket. This latter pin should also be connected to the paralleled grids of the 1625s through a 100-$\mu\mu$f. mica condenser, C_7. Another unused pin on this socket should be by-passed to ground through a 0.001-μf. mica condenser, C_6. This pin should also be connected to Pin 3 on the 1626 oscillator-tube socket, and, through a 5000-ohm resistor, R_3, to Pin 6 on the 6AG7 socket. The buffer tank coil, L_1, is wound on an old octal tube base, and the coil ends should be connected to the pins in the tube base that correspond to the connections made at the magic-eye socket. A small 50-$\mu\mu$f. variable (APC type) is mounted below this socket with its shaft protruding through the right side wall of the chassis. The stator of this condenser should be connected to the pin going to the plate side of the buffer tank coil. The rotor should be grounded, of course.

Final Amplifier

This completes the wiring of the buffer stage and we can now turn our attention to the final amplifier. First, find the 1625 that has neither of its heater terminals (Pins 1 and 7) grounded. The filament line from the power plug will be found connected to one of these pins. Transfer it to the other one, and ground the pin from which the filament line was removed. This connects the heaters in parallel for 12-volt operation. Connect a 25-$\mu\mu$f. mica condenser directly across the heater terminals of each tube. On each socket, strap Pins 6 and 7 together, grounding the cathodes. From each grid terminal (Pin 4) connect a 10-$\mu\mu$f. mica condenser directly to ground. Also, connect a 25-$\mu\mu$f. mica condenser from each screen terminal (Pin 3) to ground. Connect a 15,000-ohm resistor between one of the 1625 grid terminals (Pin 4) and the key filter, C_{10}, RFC_1, C_{11}.



Bottom view of the revised BC-696 rig. The original amplifier tank padder has been transferred to the top of the chassis as a separate tank tuning condenser. The 6AL5 modulation-indicator tube is mounted in the space left vacant. The buffer tank condenser is in the lower left corner of the chassis.

Before we return to the top of the chassis, mount the 6AL5 horizontally on a bracket in the space left vacant by the removal of the tank padding condenser. Ground one of its heater terminals, and connect the other to Pin 2 on the 6AG7. Mount the 500K potentiometer, R_7, opposite the 6AL5 on the right-hand edge of the chassis. Ground one of the end terminals of the potentiometer and connect the other end to terminal 3 on the 1626 socket. The arm contact of the potentiometer goes to Pin 1 on the 6AL5.

Plate V.H.F. By-Pass

C_{17} is a plate by-pass for v.h.f. The essentials of construction are shown in the sketch of Fig. 2. It is an air condenser of approximately 50 $\mu\mu$f., made up of three pieces of aluminum sheet, each 3¼ inches high and 4½ inches wide, spaced ⅛ inch. Mounting lips 5/16 inch wide are bent over at the bottom edges of the two outside plates to provide for mounting directly on the chassis. The

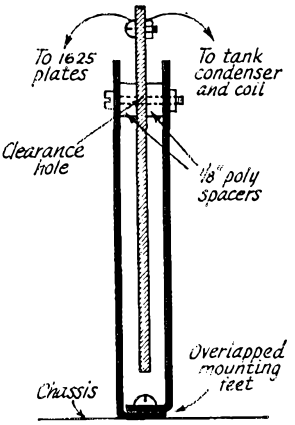


Fig. 2 — Sketch showing the construction of the plate v.h.f. by-pass for the 1625 amplifier.

center plate has a clearance hole for the assembly screw in each upper corner. The spacing washers are cut from ⅛-inch polystyrene sheet. The condenser should be mounted close to the 1625s.

The tank padding condenser, removed from underneath, will now be used as the plate tank tuning condenser. It is placed, on edge, along the right-hand side of the chassis after drilling holes in the frame. The shaft is fitted with a flexible coupling, and a hole is drilled in the panel for a panel bearing. Before mounting the condenser permanently, the meter should be mounted behind the screened hole, and the neon-bulb overmodulation indicator mounted in a rubber grommet at the hole previously drilled for it in the

♦

panel. The original tank coil, modified, is remounted, this time on the left-hand side of the chassis, opposite the tank condenser. Copper strip is used to make the connections between the 1625 plates, the fixed condenser, tank condenser and the top of the tank coil. The bottom end of the tank coil is grounded through a 1000-volt 0.001-μf. mica condenser directly to the chassis. The high-voltage wire that formerly went up through the chassis to the bottom of the plate r.f. choke (now removed) is brought to the bottom end of the tank coil. (Although it might not be necessary, I replaced this lead with a piece of coax to provide a shielded lead, since it must run back close to the buffer.) A wire is also run from this point through a pair of ½-megohm resistors to Pin 7 on the 6AL5. Two resistors are used to increase the voltage rating. Then a pair of wires must be run from Pins 1 and 7 back up through the chassis to the neon bulb on the panel.

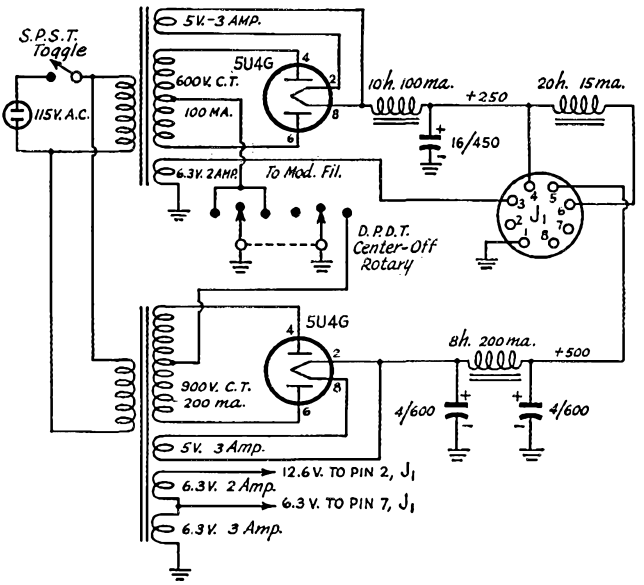


Fig. 3 — Suggested power-supply circuit for the converted BC-696.

Filters

The power-supply v.h.f. filters are mounted in a small box fastened against the rear edge of the chassis, thus covering the original power plug. A hole is punched in the side of the filter box to admit the plug. An octal socket set in one end of the box serves as the power-input connector.[2]

A low-pass filter is fastened against the left side of the chassis. Any good low-pass filter will do, and many articles have appeared in the past describing their construction. This one has six sections and is adjusted for maximum attenuation in Channels 4 and 6. Matching holes are drilled in the chassis and filter box for the leads from the output link to the filter. The box is fitted with a coax connector at the rear. To clear the cover screws of the BC-696, the bottom of the box had to project below the bottom of the former. To compensate, rubber feet were fastened to the bottom of the 696.

Shielding

The shielding of the cover is made tighter by fastening down the rear inspection plate permanently with self-tapping screws. The front inspection plate is replaced with a piece of aluminum sheet in which ventilation holes have been punched. The aluminum is backed with a piece of copper screening, and then fastened down with self-tapping screws. The louvers in the sides of the cover are also covered with screening.

The blocking battery and R_8 are connected externally across the key.

No antenna tuner should be necessary if a low-impedance dipole is used. Feed it with coax connected at the output connector.

[2] From the consideration of safety, this should be a male connector, with a female connector at the output of the power supply. — *Ed.*

Adjustment

The circuit for a suitable power supply (including a modulation choke for the screen) is shown in Fig. 3. In adjusting the rig, the calibration of the oscillator should first be checked against a standard, such as WWV, and corrected, if necessary, by readjustment of the trimmer. Then, with a low-range milliammeter plugged into the key jack, and the VFO tuned to the center of the band, the buffer should be tuned for maximum grid current. A grid current of 5 ma. is about right, and can be adjusted, if desired, by changing the value of 6AG7 screen resistor.

The amplifier can be loaded to an input of 100 watts or more, but since the plate-screen modulator used with the rig (Class B 807s) is operated from the same power supply, the input has been limited to about 50 watts. It does an admirable job at this power level. The log of W9MRB shows contacts all over the country with good signal reports, always T9x. With the new arrangement, the v.h.f. resonances in the output circuit were changed to 100 and 74 Mc. As a result, there is no TVI on any channel, although the transmitting antenna is running within 5 feet of two TV antennas. When the key is open, input to the amplifier should be completely cut off.

Before modulation is applied, the potentiometer of the overmodulation indicator should be adjusted with low voltage on, but high voltage off, until the neon bulb just ignites. Then, after the amplifier has been loaded, the audio gain can be advanced to the point where the bulb just flickers occasionally on the strongest voice peaks.

In conclusion, thanks to Norman Atlas who made the photographs.

So-o-o Big!

Latest Fashions in Beams for 144 Mc.

It's a well-known fact among v.h.f. men that it is the *size* of an antenna that counts. You can't get optimum performance by cramming a large number of elements into a small space. The capture area of the array determines its effectiveness, particularly in receiving, which is half the battle. With a given number of elements, the larger the frontal area, the better the array will work, assuming, of course, that the elements are phased properly, and the system will take power.

Much of the progress on 144 Mc. in recent years has come about because the antennas have been getting bigger and better. The fellow who worked with a folded dipole has gone to a 4- or 5-element beam. The former owner of a single parasitic array now has at least two of them stacked; usually with full-wave spacing. A 16-element collinear is no longer considered to be a "big" antenna, and 32-element arrays are by no means the largest in existence, as they once were.

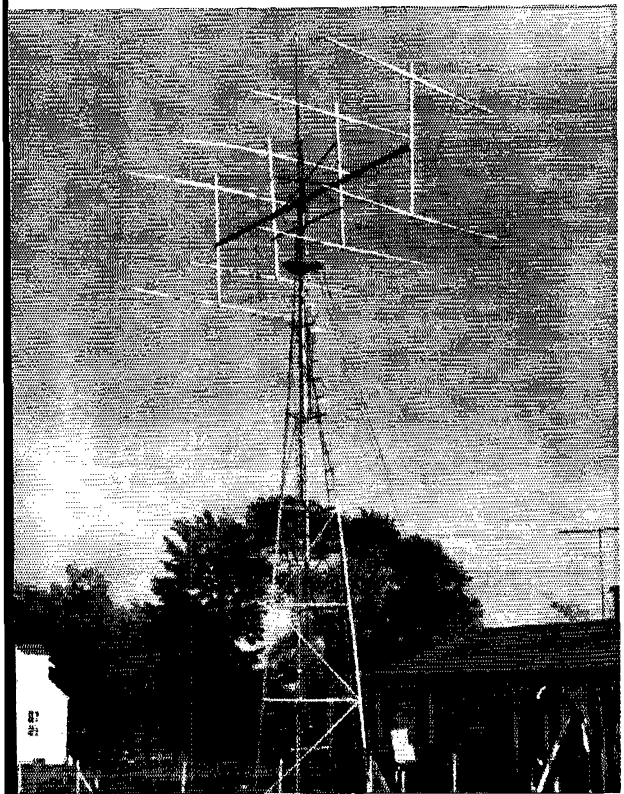
Configurations run to two general classes. One school builds its beams in sets of parasitic arrays; the other uses collinear elements, with either parasitic or screen reflectors. There is great difference of opinion as to the merits of the two approaches, but either one can do an outstanding job if the array is made big enough. In general, the collinear array is less critical as to frequency, but the big parasitic structures appear to give somewhat more gain for a given frontal area, when they are tuned up exactly on the nose.

The collinears usually employ half-wave spacing; the parasitic arrays run to full-wave in both vertical and horizontal spacing of the component arrays. Examples of both styles are shown in the accompanying photos. The monster at the lower left is probably the biggest 2-meter array ever built, a 104-element boxkite erected by W3QKI, Erie, Pa. Herb started out to check the worth of long Yagi configurations. There seemed to be almost no limit to the number of elements in line that would produce some additional gain. Ten elements showed considerable gain over 6 or 7, and 13 gave another decibel more than 10. How about a bunch of 13-element arrays? There was only one way to tell, and the 104-element array was that way.

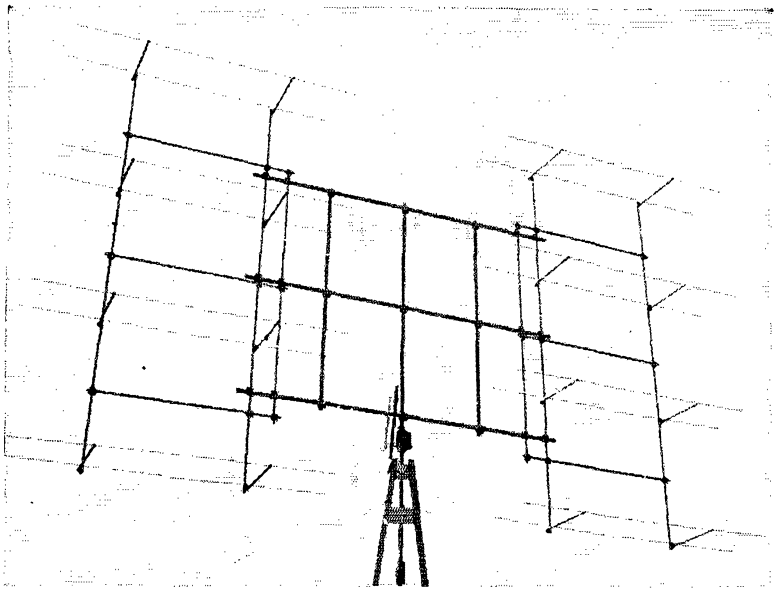
Made up of eight 16-foot booms, each carrying 13 elements, the W3QKI array is 27 feet long, 16 feet deep and 10 feet high. Its center is 43 feet above ground. Performance? Ask anyone who has worked W3QKI! Checks indicate a power gain of nearly 200, or in excess of 22 db. Aiming becomes a major problem with such a monstrosity, as the nulls in the pattern are only about 15 degrees apart. What such gain can mean in terms of 2-meter coverage can be judged by the signal Herb puts in at W1HDQ. In a series of daily skeds, W3QKI was worked every try — over a distance of about 375 miles.

The other parasitic job is a midget by comparison, but still a mighty bit of antenna construction. It consists of two 30-element arrays that follow the W2NLY design,[1] mounted side by side. It is the handiwork of W1CCH, Springfield, Mass. Two-meter operators in most of the Northeast know its signal well. A similar array is in use at W1NH, Bennington, Vt., and these two fellows work regularly on 144 Mc. over a path that would have been considered completely hopeless a few years ago.

[1] "More Gain with 30 Elements," Kmosko, *CQ*, Jan. 1950.



104 elements on 144 Mc. The "array to end all arrays" at W3QKI, Erie, Penna.



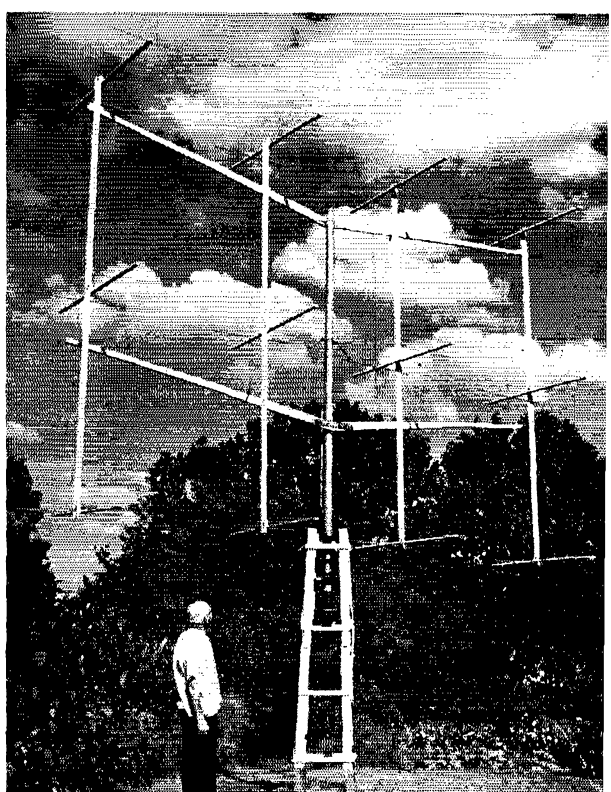
Two 16-element arrays with up to ⅝ wavelength spacing—W1VLH, West Hartford, Conn.

The third member of our Big Three is the 32-element array at W1VLH, West Hartford, Conn. It is composed of two 16-element arrays that follow the all-metal design shown in recent editions of the *Handbook*. The frame is so constructed that the spacing between the two arrays can be varied from zero to ⅝ wavelength. Mounted on a temporary support only 10 feet off the ground in a typical residential location, it has outperformed a smaller array that is 100 feet above ground. The 32-element job is now at 40-foot height, and after it has demonstrated its anticipated ability to withstand the hazards of a New England winter, it will be hoisted to the tower position, slightly more than 100 feet above ground. Already, even at the 10-foot level, it has provided the 100-watt rig at W1VLH a signal to be reckoned with in work with the W2s, 3s and 4s, at distances up to 400 miles and more.

Some other unusual but effective arrays presently in use on 144 Mc. include a 48-element job at W2NLY, a 40-element set-up at W2UK, and a 28-element array at W2ORI. The latest in a long line of antenna efforts by W2NLY consists, in effect, of two 24-element arrays one above the other. This runs to considerable height, requiring a rotating structure more than 36 feet from top to bottom.

W2UK's 40-element job also is a tall one, with eight 5-element arrays, 4 high and 2 wide, with full-wave spacing.

The 28-element array used by W2ORI is made up of four 7-element Yagis, with full-wave spacing in both dimensions. Put the W2UK and W2ORI beams together and they spell communication. These two fellows work around the clock at any season, in any weather, though they are separated by some 280 miles. — *E. P. T.*



W1CCH, Springfield, Mass., admires his handiwork — a 60-element beam for 144 Mc.

A Two-Control Multiband Transmitting Unit

Six Bands — TVI-Suppressed

BY HUGH HERRING,* W3KMA

• **This attractive-looking unit, covering 80 through 10 meters, has had over a year of operation in a spot where good TVI suppression is a must. With a 2E26 or 6146 in the output stage, this two-control bandswitching rig can be used either as an exciter for a high-power amplifier or as a low-power rig feeding the antenna.**

IN the April, 1952, issue of *QST*, a gang-tuned bandswitching frequency-multiplier unit called the "Bandbox" was described in detail.[1] This little unit was duly constructed and used for several months in various lash-ups with great success. Therefore, when it came to the project of providing a driver for a new high-power amplifier using a pair of 4-125As, it was natural that the Bandbox be considered as the nucleus. There remained only the choice of a suitable oscillator and output stage.

Circuit

Fig. 1 shows the final version of the circuit. Although provision is made for an external VFO, a grid-plate crystal oscillator using a 6AG7 is included on the chassis. The original Bandbox input circuit is suitable for either 1.75- or 3.5-Mc. oscillator output, but there is no provision for using 40-meter crystals. Since the output of the 6AG7 is adequate to drive the output stage directly, the 6AK6 80-meter and 6C4 40-meter stages can be eliminated for crystal operation, although they are left in for VFO. For crystal operation on the latter bands, the output of the oscillator is fed directly to the corresponding tank circuits in the Bandbox. It was found that the 80-meter Bandbox circuit would still cover the band and track satisfactorily with the added capacitance of the 6AG7. However, the 40-meter tank, with its lower tank capacitance, would not track with this added capacitance without readjustment of its trimmer. Since it was desired to operate the Bandbox as originally intended when using VFO, a trimmer coil, L_1, was added for crystal operation. When the ceramic switch, S_{3A}, is in the 40-meter position, L_1 parallels the 40-meter tank in the Bandbox, decreasing the effective inductance in the circuit to compensate for the added capacitance of the 6AG7. Because drive to the output stage can be adjusted by detuning the Bandbox, accurate tracking is not necessary and this expedient can be used to bring the tuning within the desired range.

The 2E26 in the output stage delivers more than ample drive for the high-power final on all bands, although a 6146 could be substituted with an appropriate change in grid leak. The plate tank circuit is conventional, making use of two tapped coils with separate low-impedance links to cover the 6 bands (including 11 meters). Although the 2E26 is keyed along with the crystal oscillator, the 6AQ5 clamp tube protects the 2E26 during adjustment and in case the VFO is keyed.

R_{11}, which varies the screen voltage to the 2E26, provides a means of controlling excitation to a following amplifier. It is a feature that was never fully appreciated until it was incorporated

* 309 West Joppa Road, Towson 4, Md.

[1] Mix, "The 'Bandbox' — A Single-Control Frequency Multiplier," April, 1952, *QST*, p. 11.

W3KMA's bandswitching exciter. To the left are the controls for the crystal switch, VFO-crystal switch and bandswitch. To the right are the excitation control, meter switch and power switches. Above are the tuning controls for the frequency-multiplier unit and the output tank circuit.

in this rig and given a workout. It also helps to alleviate TVI, since it is possible to reduce the final-amplifier grid drive to the minimum-necessary level without resorting to the usual stunt of detuning the final-amplifier grid tank circuit.

The entire exciter is operated from a single power-supply unit. The 2E26 is fed the full voltage of the supply (450 volts in this case). The Bandbox and the plate of the 6AG7 are fed from a 250-volt tap on a voltage divider, while the screen of the oscillator is fed from a 150-volt regulated tap to clear up the last traces of chirp when the oscillator is keyed. The single milliammeter is switched by S_7 to read either grid current or plate current to the 2E26.

Construction

The essential details of construction may be taken from the photographs. The components are assembled on a 13 × 17 × 3-inch chassis with an 8¾-inch rack panel. The r.f. section occupies the left-hand end of the chassis with the power supply to the right. The r.f. section is enclosed in a shielding compartment made up of angle stock and aluminum sheet. The sides are perforated with ¼-inch holes to provide ventilation. A shielding partition separates the two sections underneath. A bottom plate completes the shielding.

The layout for the Bandbox section is essentially the same as the original. However, the bandswitch shaft is extended to the rear to include the two additional sections that switch the amplifier coils. This can be done by making a new shaft of strip steel, or two Centralab shaft sections can be spliced, joining the two pieces with a length of rod with a saw-cut at each end, and securing with a pin. Longer stator rods can

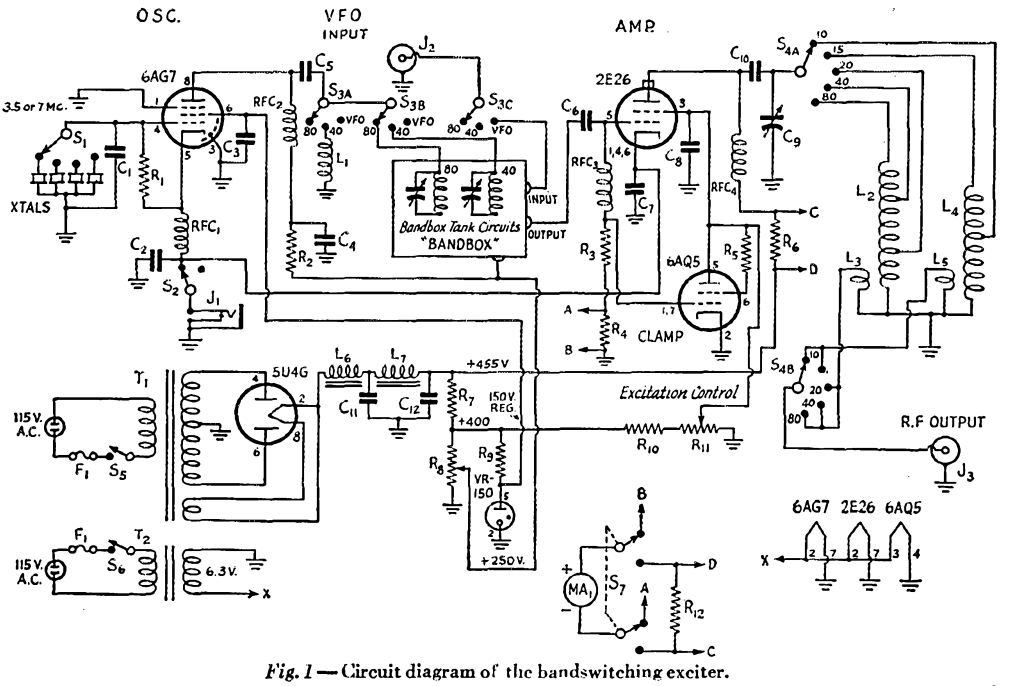
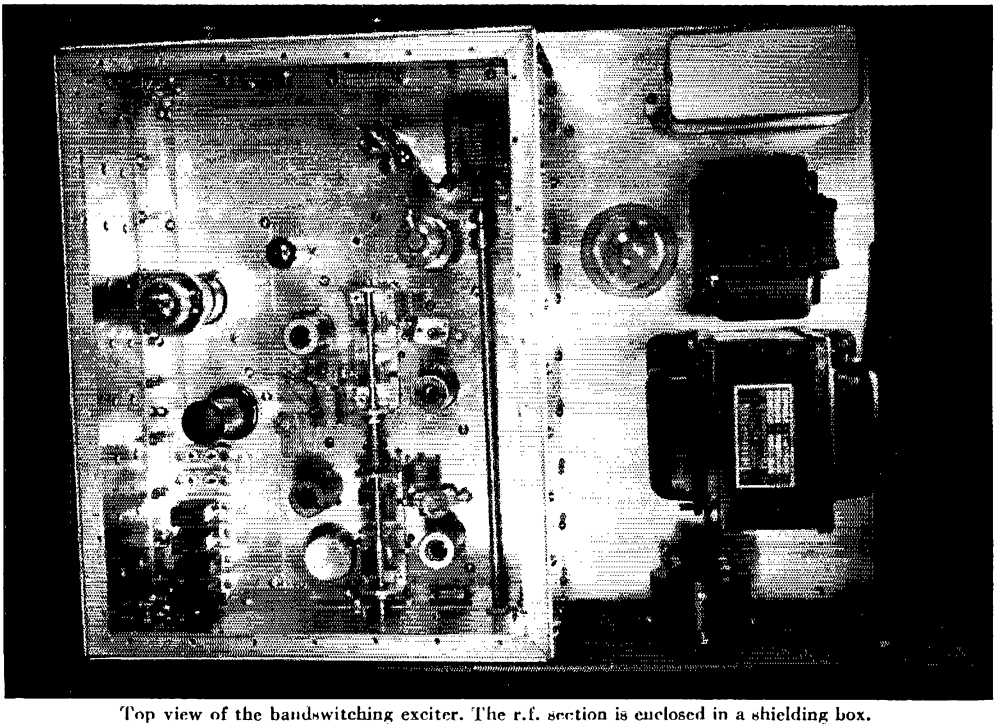


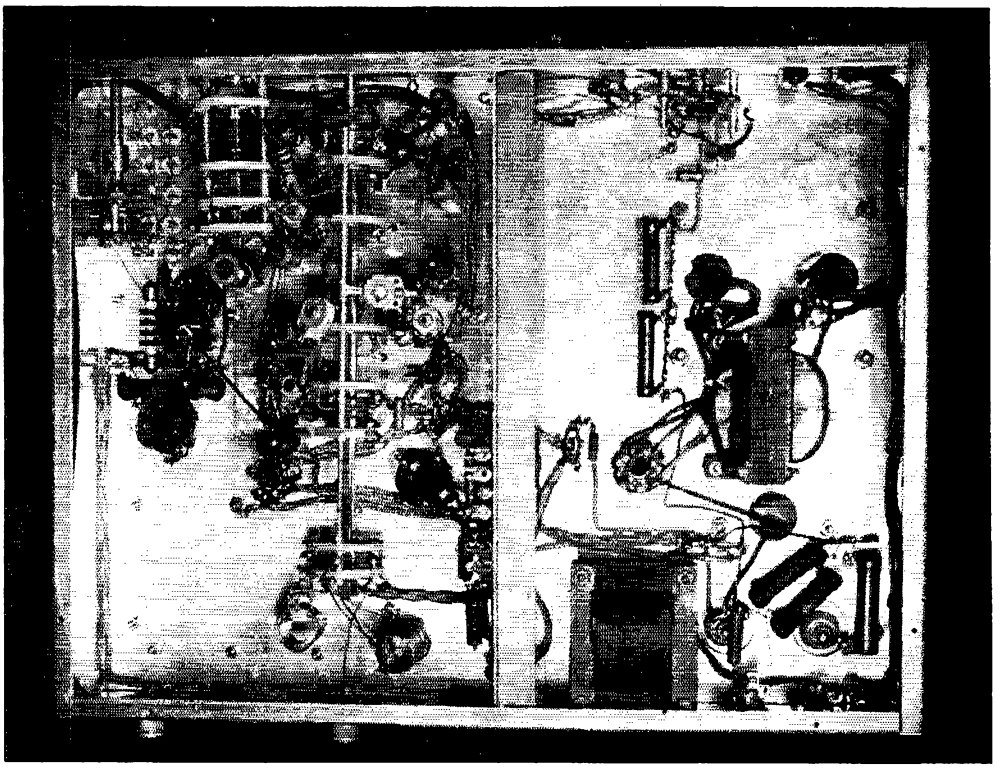
Fig. 1 — Circuit diagram of the bandswitching exciter.

C_1, C_6 — 100-μμfd. mica.
C_2, C_3, C_4, C_5, C_7, C_8 — 0.005-μfd. disk.
C_9 — 100-μμfd. variable.
C_{10} — 0.008-μfd. 1200-volt mica.
C_{11}, C_{12} — 4-μfd. 1000-volt oil-filled.
R_1 — 0.1 megohm, ½ watt.
R_2, R_3 — 15,000 ohms, 1 watt.
R_4, R_6 — 68 ohms, 1 watt.
R_5 — 100 ohms, 1 watt.
R_7 — 1000 ohms, 20 watts.
R_8 — 50,000 ohms, 20 watts, adjustable.
R_9 — 22,500 ohms, 10 watts.
R_{10} — 20,000 ohms, 20 watts.
R_{11} — 75,000-ohm 7-watt potentiometer.
R_{12} — 20-times multiplier shunt (see text).
L_1 — Approx. 14 μh. — 36 turns No. 26 enam., ½-inch diam., close-wound on iron-slug form (National XR-50 form).
L_2 — 35 turns No. 24, ¾-inch diam., 1 inch long, tapped at 14 and 21 turns from ground end (B & W 3012 Miniductor).
L_3 — 8 turns No. 22 plastic-covered, wound over ground end of L_2.
L_4 — 17 turns No. 20, ¾-inch diam., 1 inch long, tapped at 10th turn from ground end (B & W 3011 Miniductor).
L_5 — 4 turns No. 22 plastic-covered, wound over ground end of L_4.
L_6 — 12-hy. 200-ma. filter choke.
L_7 — 8-hy. 200-ma. filter choke.
F_1, — Buss-type fuse, 2 amp.
J_1 — Closed-circuit 'phone jack (or shielded connector).
J_2, J_3 — Coax connector.
MA_1 — D.c. milliammeter, 5-ma. scale.
RFC_1, RFC_2, RFC_3, RFC_4 — 2.5-mh. r.f. choke.
S_1 — Crystal switch — multitap rotary.
S_2, S_5, S_6 — S.p.s.t. toggle.
S_3 — 3-circuit 3-position rotary switch, ceramic.
S_4 — 2-circuit 5-position rotary switch, ceramic.
S_7 — D.p.d.t. rotary switch.
T_1 — Power transformer — 600-0-600 volts r.m.s., 200 ma.; 5 volts, 3 amp.; 6.3 volts, 3 amp. (e.g. Stancor PC 8414 — 6.3-volt windings not used).
T_2 — 6.3-volt 2-amp. filament transformer.



Top view of the bandswitching exciter. The r.f. section is enclosed in a shielding box.

Bottom view of W3KMA's bandswitching exciter showing the shielding partition between r.f. and power-supply sections. A bottom plate is used to seal off the r.f. section.



be made of rod threaded at each end, although this is not necessary since the additional sections can have a separate mounting.

The 6AQ5 and the 2E26 are placed to the rear of the Bandbox unit and the output tuning condenser, C_9, to the rear of the 2E26. S_4 and the output coils are directly underneath. The crystal socket, the 6AG7 and VR-150 are at the left, with the crystal-selector switch, S_1, directly below. S_3 is placed so that its shaft is centered between the shafts of S_1 and the bandswitch; the 40-meter slug-tuned coil, L_1, is immediately behind S_3.

In the bottom-view photograph, the power switches, S_5 and S_6, the meter switch, S_7, and the excitation control, R_{11}, are mounted to the right along the front edge of the chassis. The meter above on the panel has a 5-ma. scale. The grid current to the 2E26 just about reaches this value as a maximum. For reading plate current, a 20-times multiplier shunt, R_{12}, is switched across the meter. R_{12} is made of No. 36 wire wound on a 1-watt resistor of 1000 ohms or more. The number of turns is varied until the meter reads full scale for a current of 100 ma.

All power wiring is done with shielded wire and disk-ceramic by-passes are applied as recommended in the TVI chapter of the 29th and 30th editions of the ARRL *Handbook*. Shielded wire or coax is also recommended for the keying leads, both internal and external.

Reference should be made to the 30th edition of the *Handbook*, or to *QST* for April, 1952, in lining up the Bandbox circuits. This should first be done with VFO. Then, with S_3 in the 40-meter position, and the Bandbox tuned to the middle of the 40-meter band, L_1 should be adjusted for maximum drive to the 2E26. As a final adjustment, the tap on R_8 should be adjusted to give the desired average output level from the Bandbox.

This rig has been duplicated by several hams in the vicinity and all have lauded the smoothness of operation and freedom from TVI. At W3KMA, it has given over a year of gratifying service, providing an ease of band-hopping never before attained. Our operating pleasure has been increased tenfold since building this unit, and it will remain as a part of the station equipment for a long time to come. We now have no hesitation in answering the telephone whenever it rings, since there have been no complaints of TVI since the exciter was installed. This is saying quite a bit because, in addition to the local use of Channels 2, 11 and 13, we have to contend with signals on Channels 4, 5, 7 and 9 from Washington, D. C., some 40 miles distant.

See you on the low end of 20!

Strays

DXers and operating-award enthusiasts may find two new publications of value to them. The *Ham's Interpreter* — amateur terms and phrases translated into seven languages — is available for one dollar from Ben E. Wilbur, 47 Mounthaven Drive, Livingston, N. J. The *DX Log of Awards*, compiled by W4RKJ, may be obtained for one dollar from the Hobby Publishing Company, Easley, S. C.

—•••—

G3IDG informs us of another very appropriately named ham. He's G2HDJ and the name is *C. W. Touch.*

♦

You can set your operating goals to include a variety of communications achievements but we can assure you that a "two-letter-call WAS," perhaps better termed an Old-Timers WAS, is *not* one of those most easily accomplished. These forty-eight QSLs confirm c.w. two-ways with L. A. "Pete" Morrow, W1VG, *QST*'s advertising manager, contacts dating from 1947 through 1953. Which state was the "hold-out?" Kansas!

♦

The name of Donald McNichol is a familiar one to all who have followed radio and its documentary literature from modest beginnings to the bustling present day. We sadly note here his passing in late September at the age of 78, in his Roselle Park, N. J., home. "DM" — long-time friend of amateur radio, staunch upholder of all traditions of the art and chronologist-extraordinary for its archives — fired up a ham rig of his own long before the time of government licenses and call signs. Mr. McNichol first became interested in the science of wireless as a young railroad telegrapher, around the turn of the century.

Filter Building Made Easy

Inexpensive Construction with Good Performance

BY CHARLES L. HANSEN,* WØASO

• The availability of ferrite-slug inductances offers the opportunity to make audio-frequency filters of good performance. Here is a practical method of constructing low-pass configurations such as might be used in low-level speech clippers.

THE experimenter often needs a good low-pass filter that will pass frequencies in the audio range up to a required cut-off point and provide 50 to 60 db. attenuation beyond cut-off. Commercially-designed units for carrier telephone application can be obtained, but usually cost thirty-five to one hundred and fifty dollars. Special filters designed to cut off to the purchaser's specifications, as well as commercially available filters, are priced beyond the reach of the average experimenter. The compromise method of making a filter out of power-supply chokes is frequently taken, but at the expense of performance in the final equipment. This is not very rewarding, to say the least.

The purpose of this article is to describe a method of designing and building a sharp cut-off low-pass filter with components that are available from any well-stocked radio parts supply house. The passband and the sharp attenuation at the cut-off point of this home-built filter are comparable with and in many cases equal to commercial low-pass filters costing more than ten times the price of components used for this filter.

Most articles on "how to design filters" deal with the mathematical derivation of the sections or meshes that make up the filter proper. After the filter has been designed mathematically and diagrammed, many experimenters have been disappointed in the actual performance of the completed filter. Because practical components fall short of the ideal reactances on which the filter formulas are based, as well as the difficulty of obtaining exact values, there is no substitute for practical experimentation with any filter, and the final values of capacitance and inductance may differ quite a bit from the calculated values. Also, most of us do not have the equipment, time, or inclination to design, build and adjust filters from theoretical information.

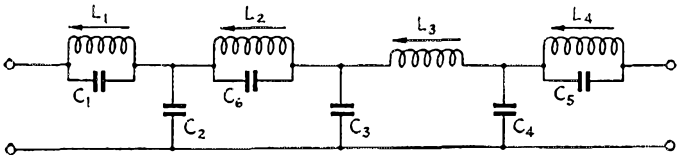


Fig. 1 — Circuit diagram of the filter discussed in the text. See Table I for sets of values for several cut-off frequencies in the audio range.

With the availability of recently developed variable ferrite slug-tuned inductors [1] good filters are now within the budget of everyone. Not only do we have an inductance that can be varied but we have the added advantage of a slug made of ferrite, which increases the *Q* by reducing the resistance per unit inductance. These inductances possess all of the qualities necessary for a good reactance which in turn results in the building of a good practical filter.

A Practical Filter Design

The configuration chosen for the filter described here and shown in Fig. 1 provides for a minimum of inductances. The filter contains two shunt *m*-derived half sections, one on each end, to provide a good impedance match from

* 3552 Pacific St., Omaha 5, Nebraska

[1] The ones used by the author are made by the Grayburne Corp., 4-6 Radford Place, Yonkers, N. Y.

TABLE I

Cut-Off Frequency	*Inductance (see notes)*				*Capacitance, μf.*					
	L_1	L_2	L_3	L_4	C_1	C_2	C_3	C_4	C_5	C_6
3.5 kc. ± 0.5 kc.	A ¼"	A ¾"	A ½"	A ¼"	0.1	0.16	0.16	0.12	0.1	0.02
4.5 kc. ± 0.5 kc.	A ⅛"	A ½"	A ⅛"	A ⅛"	0.1	0.14	0.14	0.1	0.1	0.015
8.5 kc. ± 0.5 kc.	B 7/16"	A ⅛"	A ½"	B ⅛"	0.04	0.06	0.06	0.06	0.04	0.006
16.5 kc. ± 1.0 kc.	B ½"	A ⅛"	A ¼"	B ½"	0.02	0.03	0.03	0.03	0.02	0.004

A — Grayburne type V-25 variable coil, 5–43 mh.
B — Grayburne type V-6 variable coil, 0.65–6 mh.
Dimensions refer to length of slug inserted in coil as a preliminary setting before tuning adjustments.
The capacitors should be good-quality paper units.

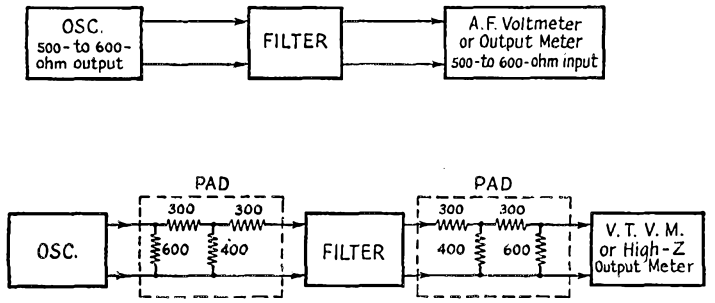


Fig. 2 — Test set-ups for adjusting filters. If equipment having output and input impedances matching the filter is available the simple arrangement shown above may be used; otherwise the use of isolating pads as shown in the lower drawing is recommended. Another alternative, when using an a.c. v.t.v.m., is to terminate the filter in its characteristic impedance, and adjust the input voltage to a fixed value for each frequency before making output measurements across the load resistance.

and to the flanking circuit units. An *m*-derived full section and a constant-*k* section make up the other two meshes. The *m*-derived section sharpens the cut-off characteristic and the constant-*k* section assures that attenuation of the unwanted frequencies beyond the passband will remain high. The impedance this filter must work into and out of is 500 to 600 ohms. Insertion of a filter into a circuit whose load impedance varies with frequency will result in erratic operation.

Good practice in an extreme case of changing load impedances dictates the use of T pads connected before and after the filter. The use of these pads reduces the effects of source and load impedance variations with frequency.

Table I gives practical component values for several frequency ranges. For example, if a low-pass filter having a cut-off of about 5000 cycles is needed, a set of values will be found in the second row. Wire the condensers and inductances as shown in Fig. 1 and adjust the ferrite slugs to the specified distances. Connect the completed filter to an oscillator and a measuring set having 500- to 600-ohm impedance. If an oscillator and measuring set with this impedance value are not available use a pad set-up as shown in the lower drawing of Fig. 2.

Manually sweep the oscillator through the passband and check the uniformity of response with the output meter or measuring set. Also check for the correct cut-off frequency of 5000 cycles. Adjust the slugs on L_2 and L_3 alternately to place the cut-off frequency at the desired frequency. Manually sweep through the passband again and adjust the slugs on L_1 and L_4 for improvement in the smoothness of the passband. These operations should be repeated until the passband response is reasonably flat (within 0.2 db.). The frequencies beyond 5700 cycles should be attenuated 60 db. or more, with an attenuation peak of 70 db. or so at 6500 cycles.

After adjustment the filter is ready for use. It may be enclosed in a metal box taking up no more room than an average 20-watt output transformer. The individual sections may be shielded from each other if desired.

Among the many applications that can be thought of for such filters are (1) speech filters in communication work; and (2) audio use in recording and high-quality home systems (see *Audio Engineering* for several discussions). For example, a 5000-cycle filter can be used for sharply cutting off the hiss and scratch from old records.

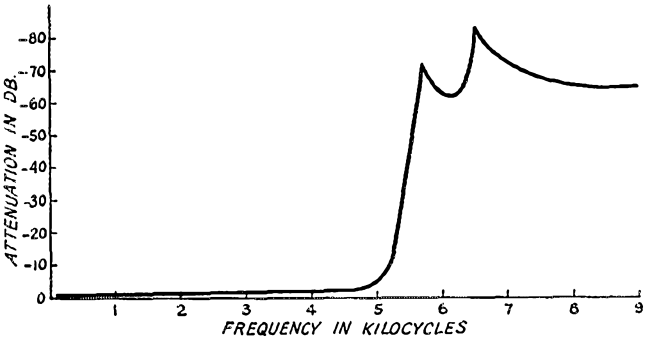


Fig. 3 — Measurements made by the author on a 5-kc. cut-off filter constructed from the data in Table I.

ARE YOU LICENSED?

• When joining the League or renewing your membership, it is important that you show whether you have an amateur license, either station or operator. Please state your call and/or the class of operator license held, that we may verify your classification.

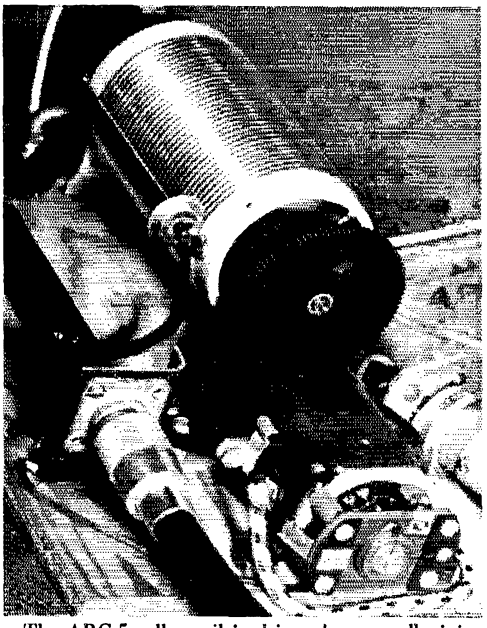
Remote Mobile-Antenna Resonating

A Tuning System Using Surplus Items

BY J. C. PICKEN, JR.,* K6DY, AND B. A. WAMBSGANSS,* W6WOY

STATIONS K6DY and W6WOY are using an interesting remote-control resonating system designed by the former for their mobile antennas. They make use of surplus twenty-four-volt d.c. motors driving a loading coil removed from a surplus ARC-5 transmitter.

Many of the 24-volt surplus motors will run on 6 volts d.c. with sufficient torque to drive



The ARC-5 roller coil is driven by a small pinion gear on the shaft of the surplus motor. The pinion fits the original fiber gear on the coil.

the coil. It was also found that some of the motors are already equipped with gears that mesh perfectly with the fiber gear on the loading coil.

The control circuit used by W6WOY, shown in Fig. 1A, is a three-wire system (the car frame is the fourth wire) with a double-pole double-throw switch and a momentary (normally off) single-pole single-throw switch. S_2 is the motor-reversing switch. The motor runs so long as the push-button switch, S_1, is closed.

K6DY has introduced an additional refinement by using a latching relay, in conjunction with microswitches, so that the motor automatically reverses when the roller reaches the end of the coil. This circuit is shown in Fig. 1B. S_3 and S_5 operate the relay, K_1, which reverses the motor. S_4 is the motor on-off switch. When the

*Cmdr., USNR, Hq., 11th Naval Dist., Code 13,511, San Diego, Calif.

• Here is a simple remote-tuning system for your mobile whip antenna. It is built almost entirely of surplus items.

tuning-coil roller reaches one end or the other of the coil, it closes S_6 or S_7, as the case may be, operating the relay and reversing the motor.

The procedure in setting up the system is to prune the center loading coil to resonate the antenna on the highest frequency used without the base loading coil. Then, the base loading coil is used to resonate at lower frequencies when QSY. W6WOY throws S_2 (Fig. 1A) to "up" or "down," according to whether he is QSY up or down in frequency, and then controls the motor by means of S_1. K6DY momentarily closes S_3 or S_5 (Fig. 1B) to close the latching relay for QSY up or down, and then controls the motor with S_4. By using an additional latching relay, K6DY has pilot lights on the control panel to show in which direction the motor is running.

Using this system, it is possible to QSY while in motion without loss of signal strength. Both

(*Continued on page 116*)

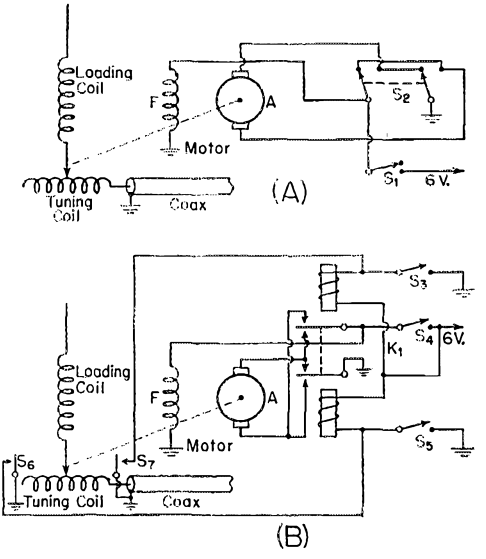


Fig. 1 — Circuits of the remote mobile-whip tuning systems used by K6DY and W6WOY.
K_1 — D.p.d.t. latching relay.
S_1, S_3, S_4, S_5 — Momentary-contact, s.p.s.t., normally open.
S_2 — D.p.d.t. toggle.
S_6, S_7 — S.p.s.t. momentary-contact microswitch, normally open.

Transistor Circuitry

A Review of Transistor Characteristics and Operating Considerations

BY RICHARD CLAY,* W9JRO/4

• Here is a general picture of transistor operation in simple terms. The two basic types of transistors are described and methods of using them in typical amplifier and oscillator circuits are outlined. If you've been thinking of experimenting with transistors this article will help you get off on the right track.

TRANSISTORS have been available for quite some time and it is likely that certain amateurs will enjoy experimenting with them. Although they perform many of the functions of vacuum tubes, any effort to insert a transistor in a standard vacuum tube circuit will almost certainly be unsuccessful. In fact, the best general rule in designing a transistor circuit is to do exactly the opposite of what would be done in the similar vacuum tube circuit. It is the purpose of this article to outline the properties of transistors and show how to design circuits using them.

It is quite unfortunate that there has been no standardization in the transistor industry. The names, characteristics, and prices vary between different producers. In order to avoid showing a preference toward any manufacturer the following circuits are given without reference to a particular transistor. In every case effort has been made to describe the considerations which lead to a proper choice for the circuit components.

Construction of Transistors

At the present time, transistors are made of the element germanium. When impurities are added to a crystal of germanium the electrical conductivity is changed in different directions through the crystal. Amateurs have been utilizing this effect for quite a few years with germanium diodes such as the 1N34. Antimony, arsenic, and phosphorus make what is called "n-type" germanium. The name arises from the fact that this type has an excess of free electrons, which are negative charges. Aluminum or boron make "p-type" germanium, which has a deficiency of electrons. Either type has greater conductivity in one direction than pure germanium, and the direction of best conductivity is opposite in the two types.

There are two types of transistors. The so-called "point-contact" type is made from a single crystal of n-type germanium. An electrode called the "base" is attached to one face of the crystal and two closely spaced contacts are made on the other face. These are called the "emitter" and "collector."

The "junction" transistor is formed of three layers of the two types of germanium. These may be arranged either as n-p-n or p-n-p. The n-p-n is the more common. In this type of transistor there are also three external connections. The base connection is made to the middle layer and the emitter and collector connections are made to the outer layers.

The junction type has higher power dissipation, lower noise, and a cut-off frequency[1] from 100 kc. to 1 Mc. The point-contact type has higher current gain and a cut-off frequency from 1 Mc. to 10 Mc. Certain types have been made to oscillate at frequencies up to 300 Mc.

With either type the emitter is usually biased in the direction of *high* conductivity and this gives a low input impedance. The collector is biased in the direction of *low* conductivity and the output impedance is high. (Note that this is opposite to the situation with vacuum tubes.) Since the current flow is roughly the same for both the emitter and collector, the transistor offers considerable power gain, because of the high ratio of output to input impedance.

Equivalent Circuit

Fig. 1 shows an equivalent circuit for a transistor. The emitter resistance, R_e, is a few hundred ohms. The collector resistance, R_c, is over 10,000 ohms for a point-contact transistor and usually over 1 megohm for junction transistors. It is important to note that the a.c. generator in the collector circuit is a *current* source. This is to be contrasted with the usual vacuum tube equivalent circuit which uses a voltage source. The factor α is the current gain and corresponds to the volt-

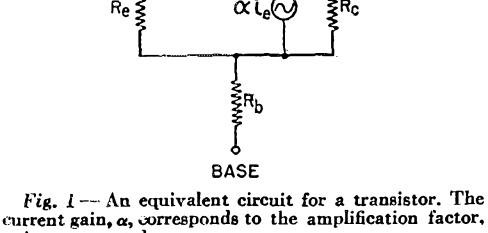


Fig. 1 — An equivalent circuit for a transistor. The current gain, α, corresponds to the amplification factor, μ, in vacuum tubes.

* RCA Engineer, Box 372, Cocoa Beach, Florida.

[1] The cut-off frequency is defined as the frequency at which the gain is down 3 db. as compared with the gain at low frequencies. In general, the cut-off point for voltage gain is different from that for current gain.

age gain or amplification factor, μ, in vacuum tubes.

There is no phase reversal in transistors. An increase in emitter voltage and current causes increases of the same polarity in the collector circuit. This fact is tremendously important in designing transistor circuits.

Amplifier Circuits

Fig. 2 shows one type of amplifier circuit, called the "grounded base" circuit. This is a stable circuit with both types of transistors and gives a power gain from 20 to 40 db. The input and output impedances are approximately the same as the emitter and collector resistances of

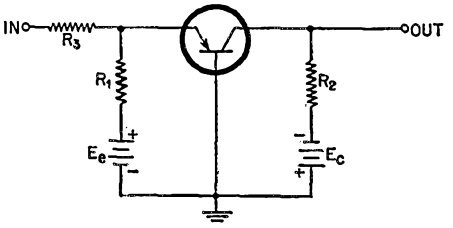


Fig. 2 — The grounded-base amplifier circuit. This circuit is stable with all types of transistors.

the transistor so this circuit has a low input impedance and a high output impedance.

The indicated polarities of E_e and E_c are proper for both n-p-n and point-contact transistors. If a p-n-p transistor is used, the polarities should be reversed. Either an examination of the characteristic curves or the manufacturer's specifications will show the proper emitter and collector currents. The resistors, R_1 and R_2, are chosen to give the proper currents through the emitter and collector. Usually E_e and E_c are low-voltage sources such as a 22.5-volt battery. With this type of source R_1 and R_2 will be around 10,000 to 20,000 ohms.

The internal resistance from the emitter to the base is not constant in most transistors. This means that the input circuit presents a load to the source which varies during portions of the cycle. In order to minimize distortion it is frequently necessary to insert a resistance, R_3, in series with the emitter circuit. The value of this resistance is best found by experiment.

Fig. 3 shows the "grounded emitter" circuit. This circuit may be unstable with point-contact

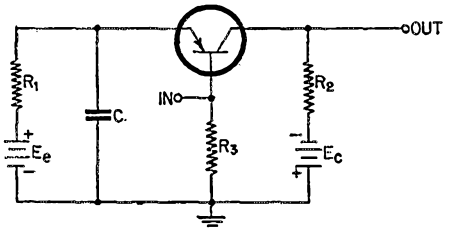


Fig. 3 — The grounded-emitter amplifier circuit. This circuit offers the greatest power gain and has characteristics which most closely resemble a vacuum tube amplifier.

transistors because the current gain in this type is greater than one. Since there is no phase reversal in transistors, base potential fluctuations due to the collector current provide a regenerative effect and may lead to oscillation when a point-contact transistor is used. This circuit will then become a relaxation oscillator and will generate nonsinusoidal waves.

This circuit has a higher input impedance and a lower output impedance than the grounded base circuit. It has the highest power gain of any of the simple amplifier circuits and most closely resembles a standard vacuum tube amplifier.

Resistors R_1 and R_2 are again chosen to give the proper operating currents to the emitter and collector. However, the flow of collector current through R_3 provides a self-biasing effect for the emitter circuit similar to a cathode resistor in a vacuum tube circuit, so R_1 will have a higher value in this circuit than in the grounded base circuit. The base resistor, R_3, is usually around 10,000 ohms. The condenser, C, by-passes the emitter to ground. For certain values of R_3 the self-biasing effect is adequate and the emitter may be grounded directly.

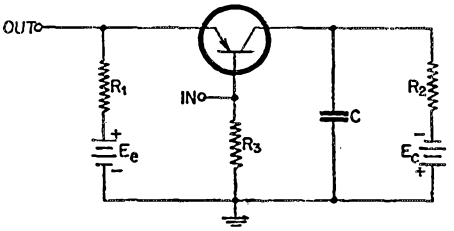


Fig. 4 — The grounded-collector circuit. This circuit has properties similar to a cathode follower.

The "grounded collector" circuit is shown in Fig. 4. This circuit resembles a cathode follower in vacuum tube circuits and is likely to be unstable when a point-contact transistor is used. It has the highest input impedance, the lowest output impedance, and the lowest power gain of all the basic circuits. The voltage gain is slightly less than one.

The circuit considerations are similar to those for the grounded emitter circuit except that the by-pass condenser, C, is placed from collector to ground.

Interstage Coupling

The peculiar properties of transistors must be considered when designing interstage coupling. It must be remembered that transistors are essentially current-actuated devices and have very low input impedances. For applications requiring compact construction it is possible to use resistance coupling in audio amplifiers as shown in Fig. 5. Grounded-base amplifiers are shown but this method applies equally well to grounded-emitter stages. The voltages and resistances are selected as described previously. Because of the low emitter resistance in the second stage the condenser, C, must be very large. It is commonly around 0.25 μf., and may be as large as 10 μf.

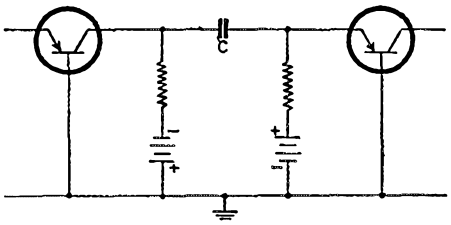


Fig. 5 — Resistance coupling in audio amplifiers. Because of the low emitter resistance of the second stage the condenser, *C*, must be much larger than normal for a vacuum tube amplifier.

if good low-frequency response is desired.

Transformer coupling can also be used and the basic circuit is shown in Fig. 6. This type of circuit can be used for any frequency at which the transistor will provide gain. In r.f. and i.f. amplifiers the primary is tuned.

The voltages and resistances are chosen to provide the proper bias currents to the collector and emitter. The capacitors, C_1 and C_2, are by-pass condensers and maintain the a.c. voltage drop across the transformer windings. In an audio amplifier the transformer has a primary designed around 10,000 to 20,000 ohms and a secondary for 100 to 500 ohms. A standard plate-to-line transformer can frequently be used. It is

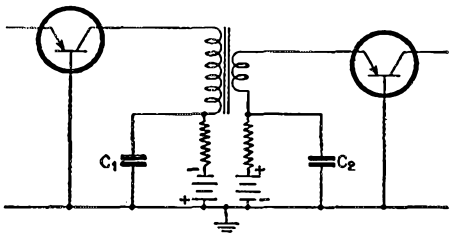


Fig. 6 — Transformer coupling between stages. In order to match impedances a step-down transformer is used.

important to note that any interstage transformer will be of the step-down type because this type steps *up* the current and thus provides greater drive for the next stage. This again is quite opposed to common practice in vacuum tube circuits.

In tuned amplifiers a very useful type of coupling is that shown in Fig. 7. This may appear very strange until it is realized that a series *L-C* circuit acts like a short circuit at the resonant

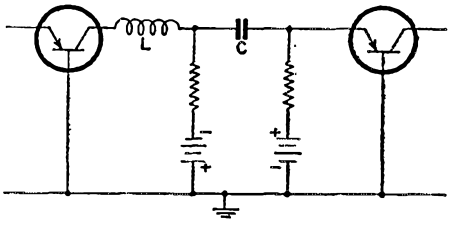


Fig. 7 — Series-resonant coupling for a tuned amplifier. At the resonant frequency of the *L-C* circuit maximum current is transferred to the emitter of the second stage.

frequency. At this frequency the maximum current will be transferred from the collector of the first stage to the emitter of the second stage. The gain will be greatest at the series-resonant frequency. The emitter resistance of the second stage is in series with the resonant circuit so for sharpest tuning this resistance should be as low as possible.

Oscillators

The type of oscillator circuit to be used depends a great deal on the type of transistor used. Perhaps the most common oscillator circuit used with point-contact transistors is the parallel-resonant base circuit shown in Fig. 8. With the point-contact type α is greater than 1 so the col-

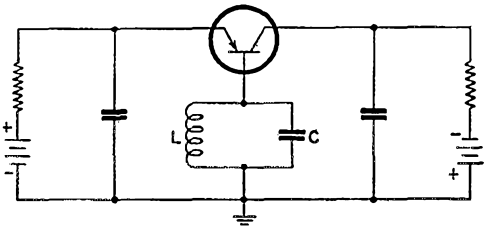


Fig. 8 — The parallel-resonant base oscillator circuit. This circuit will oscillate only when the current gain of the transistor is greater than one.

lector current which flows through the tank circuit can be greater than the original emitter current. Since this collector current flows in a negative direction the combined effect is that of a negative resistance across the tank circuit. This is the requirement for sustained oscillation. It is interesting to note that no tapped coils are necessary. This is essentially due to the fact that the transistor has no phase reversal. The capacitors from emitter and collector to ground are by-pass condensers and are chosen so as to be appropriate for the frequency at which the circuit oscillates.

A rather common oscillator circuit for junction transistors is the grounded-emitter circuit shown

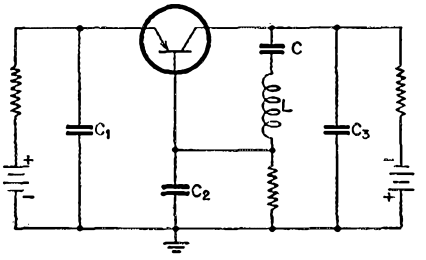


Fig. 9 — The grounded-emitter oscillator circuit. This circuit will oscillate with junction transistors.

in Fig. 9. It derives its name from the fact that C_1 is so large as to provide the emitter with an effective a.c. ground. When this circuit is analyzed it is found that a negative resistance appears across the series-tuned tank circuit. Condensers C_2 and C_3 form a voltage divider. Part of the collector current flows through C_2 and provides the emitter voltage necessary to sustain oscillation.

For frequencies in the intermediate range C_2 and C_3 are around 0.01 μf.

The Hartley oscillator circuit for transistors is shown in Fig. 10. This circuit has oscillated read-

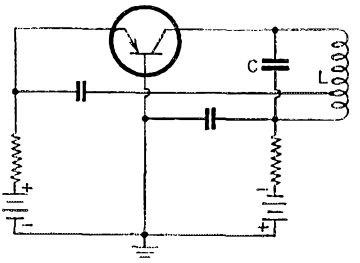


Fig. 10 — A transistor Hartley oscillator. Note that the emitter excitation has the same phase as the collector voltage.

ily for the author. Since there is no phase reversal in transistors it is necessary to excite the emitter with a voltage which is in phase with the collector voltage. Therefore, in this circuit both emitter and collector are connected to the same side of a.c. ground in the tank circuit. This should be contrasted with the vacuum tube Hartley oscillator circuit where the grid and plate are connected to opposite sides of the a.c. ground.

In the March, 1953, issue of *QST* the author described a vacuum-tube oscillator circuit in which an isolating amplifier was used to remove the loading effects of the oscillator tube from the tank circuit. Since transistors have inherently low resistances they provide a rather heavy load on a tank circuit and it seemed wise to try the same trick with transistors. The transistor analog of a cathode follower is the grounded collector circuit so this circuit was used as the isolating stage. The remainder of the circuit shown in Fig. 11 was conceived from basic considerations. The

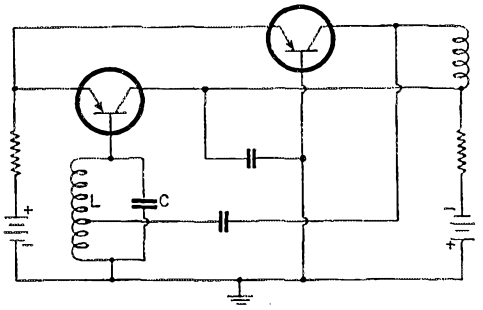


Fig. 11 — An isolating oscillator using transistors. A grounded-collector stage (on the left) is used as the isolating amplifier. This circuit has not been tried at high frequencies.

transistor on the left is the grounded-collector isolating stage.

It was a pleasant surprise to find that the circuit oscillated the first time it was turned on. Since junction transistors were used, the oscillation could not have been due to the grounded collector stage alone.

Because of the low cut-off frequency of the transistors used it was not possible to maintain oscillation past the usual intermediate frequencies. Therefore, no information could be obtained regarding the stability of this circuit when used at the higher frequencies for which the original isolating oscillator was designed.

In conclusion, it should be emphasized that although transistors have received wide publicity which in some cases has suggested that they are a panacea for all the ills of electronics, for the present at least they have rather restricted application, especially in the amateur field. The amateur and experimenter will do well to realize this fact and to regard them as rather expensive toys. He should most certainly forego the pleasures of playing with them until he feels well grounded in the basic considerations which lead to sound transistor circuitry.

Strays

W1CLS reports plenty of interest in his wide-range pi-network amplifier, described in October, 1953, *QST*. Correspondence runs largely to two questions: Where to get Helipot dials, and what kind of s.w.r. bridge was used? Answers: Beckman Instruments, Inc., Helipot Division, 1011 Mission St., South Pasadena, Calif.; Micro-Match Model MM-2, by M. C. Jones Electronics Company, Bristol, Conn.

A 220-Mc. Station for the Beginner

Part III — The Modulator and Accessories for Putting the Station on the Air

BY EDWARD P. TILTON,* W1HDQ, AND MASON P. SOUTHWORTH,** W1VLH

Two previous installments of this series of articles described a simple receiver for 220 Mc. and the r.f. portion of the transmitter. To engage in communication, we now need a modulator to impress speech or keyed tone on the transmitted carrier, an antenna system, and some means of telling when the station is working at maximum efficiency. With these somewhat unrelated items in this concluding article we start the Technician off on the road to what we hope will be an interesting career in amateur radio.

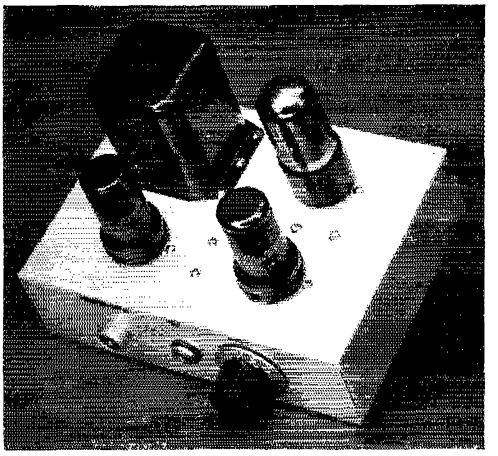
The Modulator

In its simplest terms, a modulator is a device for varying the transmitter output in accordance with variations in the operator's voice. As such it usually consists of a speech amplifier of one or more stages, to build up the minute voltages that come from the microphone, and the modulator stage itself. The latter works into an output transformer, and the plate current to the transmitter is fed through its secondary. Positive voice peaks thus add to the transmitter output; negative peaks subtract from it. That's about all there is to modulation, except that we must be careful to see that this is done only to the proper degree, and with a minimum of distortion of the original voice variations. In v.h.f. work it is often helpful to be able to transmit keyed tone, for code practice and for better signal readability under adverse conditions. Our modulator makes provision for this, as well as for voice modulation.

Only three tubes are used, but the modulator is more than ample for the job at hand. It will deliver good quality audio, and with minor modifications its power output can be stepped up for use with a larger transmitter at a later date. Unlike nearly all speech equipment described for the beginner in years past, this modulator uses a crystal microphone. Formerly, this would have seemed extravagant, but a look at current catalogs shows that the over-all cost of a modulator is about the same, regardless of whether a crystal or a carbon microphone is used. The crystal gives much better voice quality, and though it requires one more stage than a carbon job, the bulky transformer and bothersome current source needed for the carbon microphone are eliminated.

Two voltage amplifier stages are used: a high-gain 6SJ7 pentode and a 6J5 triode amplifier, ahead of a 6V6 (or 6V6GT) Class A_1 modulator. Resistance coupling is used between stages in the interest of simplicity. The output stage will deliver nearly 5 watts of audio with low distortion, enough to modulate 10 watts input. A 6L6 may be substituted, and a higher plate voltage applied, to raise the output to more than 10 watts. Tone modulation is accomplished by introducing some feed-back, to make the system oscillate at an audio frequency. The size of the feed-back capacitor, C_3, controls the pitch of the note.

The modulator is built on a 5 × 7 × 2-inch aluminum chassis. It is desirable to provide a bottom plate for shielding against r.f. pick-up and possible feed-back. On the front panel, from left to right, are the jack for the microphone, the keying jack for tone modulation, and the gain control. The key jack must be insulated from the panel with fiber washers. The two tubes in front are the 6SJ7, near the microphone jack, and the 6J5. The 6V6GT is behind the 6J5, and the modulation transformer is to its left. If a "multimatch" type of transformer is used, make the connections for a primary impedance of about 5000 ohms. The secondary impedance is found by dividing the oscillator plate voltage by the plate current. This will work out to around 8000 to 10,000 ohms.



Modulator for the 220-Mc. station. Metal tubes are 6SJ7 and 6J5 voltage amplifiers. At the rear is the 6V6GT modulator. The crystal microphone connector is at the left. A jack for keying the tone modulation is in the center, and the gain control at the right.

Most of the small components can be identified in the bottom view. Placement of leads and parts is not critical, except that the grid leads of the 6SJ7 and 6J5 should be as short as possible. The lead from the microphone jack should be made with shielded wire, as should the heater leads. The latter are run around the corners of the chassis to minimize hum pick-up by adjacent

* V.H.F. Editor, *QST*.
** Laboratory Assistant, *QST*.

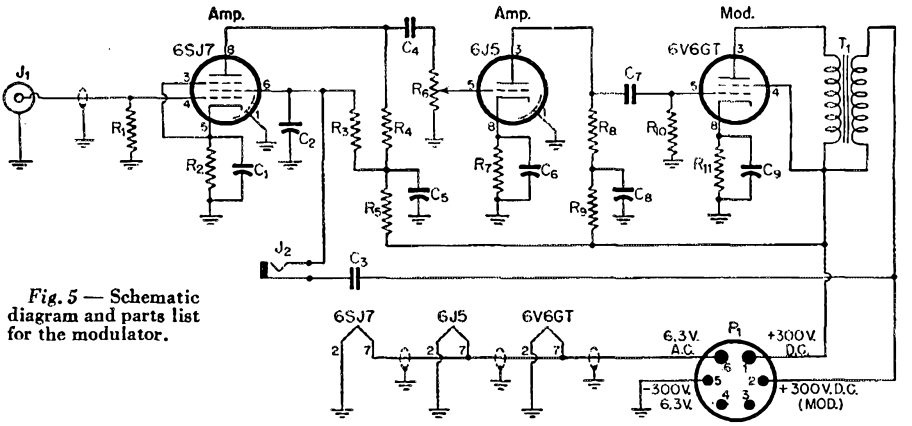


Fig. 5 — Schematic diagram and parts list for the modulator.

C_1, C_6, C_9 — 25-$\mu\mu$f. 50-volt electrolytic.
C_2 — 0.1-μf. 400-volt tubular.
C_3 — 0.004-μf. 400-volt tubular.
C_4, C_7 — 0.01-μf. 400-volt tubular.
C_5, C_8 — 8-μf. 450-volt electrolytic.
R_1 — 4.7 megohms, ½ watt.
R_2 — 1500 ohms, ½ watt.
R_3 — 0.5 megohm, ½ watt.
R_4 — 0.22 megohm, ½ watt.
R_5 — 47,000 ohms, ½ watt.
R_6 — 1-megohm volume control.
R_7 — 1500 ohms, ½ watt.
R_8, R_9 — 5000 ohms, 5 watts (1 watt usable).
R_{10} — 0.47 megohm, ½ watt.
R_{11} — 680 ohms, 1 watt.
J_1 — Microphone jack (Amphenol PC1M).
J_2 — Open-circuit jack.
P_1 — 6-pin male power connector (Amphenol 86-CP5).
T_1 — 10-watt modulation transformer (Stancor A-3871).

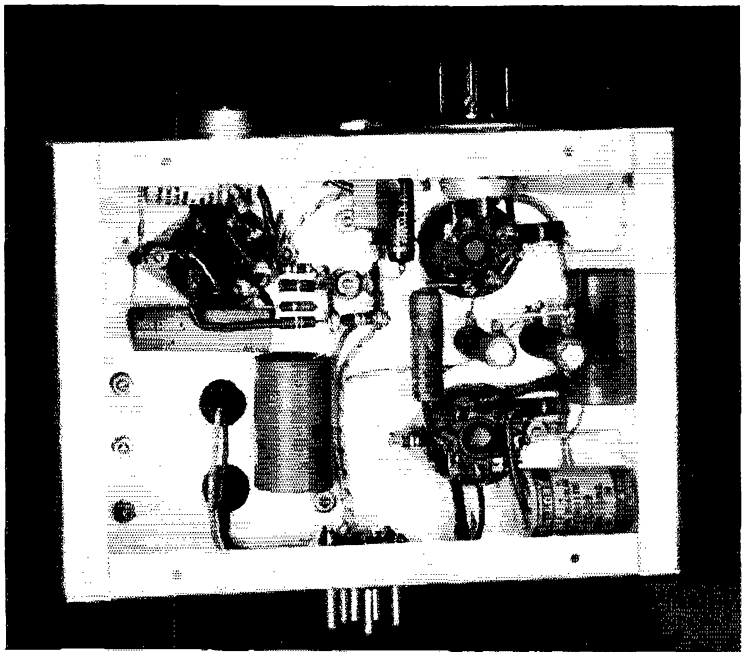
circuits. The wiring diagram is shown in Fig. 5.

Two tie-points may be seen near the front center of the chassis. A single terminal strip near the 6SJ7 supports one end of R_3, R_4, R_5 and C_5, and serves as a ground terminal for R_1 and R_2. A three-terminal tie strip supports one end of R_5, C_3 and C_4. The two 5-watt resistors are visible between the 6J5 and the 6V6GT. The high rating of these resistors is not required, and 1-watt resistors may be substituted, if tie-points are provided for supporting them. The resistors shown are mounted on 2-inch 6-32 screws, with a fiber washer at each end. Power leads are brought out to a connector mounted on the chassis rear wall.

Operation

Check the wiring over carefully before applying power to the modulator. Power requirements are 6.3 volts, a.c. or d.c., for the heaters and 200 to 300 volts at 25 to 40 ma. d.c. These voltages can be furnished by the power supply used for the receiver and oscillator portions of the station. When the units are connected by the cabling as shown in Fig. 6 the power should be turned on and the gain control advanced until a brightening of the transmitter output indicator lamp is seen as the operator speaks into the microphone. If the gain control is advanced too far there may be feedback, usually evidenced by a high-pitched squeal in the receiver.

How far the gain should be turned up will depend on the type of receiver in use at the station we wish to work. If the other fellow is using a receiver like the one described last month the modulation may be turned up to the point where there is some brightening of the output indicator



Bottom view of the modulator unit.

lamp. If he has a communications receiver, however, a very low level of audio should be used; otherwise, the signal will be unintelligible because of the frequency modulation that accompanies the desired amplitude modulation.

Our simple oscillator is very sensitive to plate-voltage changes, so the modulation process described earlier is bound to result in some frequency shift. Get someone who has a selective receiver to check with you, if at all possible, to determine the optimum gain level at the outset; then, whenever you wish to work someone who is using a communications receiver, turn the gain back to that setting. It won't look like much modulation, by ordinary standards, but it is the only way our little rig can be made to put out a readable signal when that kind of selectivity is involved. It may be impossible to hold down the frequency modulation to a satisfactory level when tone is used, so it may be necessary to save the use of the tone modulator for work with stations using broad receivers.

Power Supplies and Control Circuits

As this entire station requires only about 100 milliamperes at 200 to 300 volts, it can be operated very easily from a single 100-ma. supply. This may even be a vibrator or generator-type supply, operating from a 6-volt storage battery, in case you like to work portable or mobile. Separate power supplies for receiving and transmitting may also be used, and this approach has some advantages. The control circuits will be dependent on the power supply set-up, so these details are treated together.

The simplest possible one-switch control system is diagrammed in Fig. 6. Across the top are shown the male power fittings that are part of each unit of the station, 4 pins for the transmitter, 5 for the receiver and 6 for the modulator. Using a different number of contacts for each unit makes it impossible to connect any cable plug incorrectly. The fittings in the center of the drawing are those on the power cable. Power supply and antenna connections appear at the bottom.

The power supply is turned on by the toggle switch, S_3. The other toggle switch, S_2, is used only to turn the receiver on while transmitting. Applying the plate power to either transmitter or receiver is done with one section of the three-section switch, $S_{1A\text{-}B\text{-}C}$. The diagram shows this switch in the receive position. If S_2 is left open, as shown, the receiver will go off when the transmitter is turned on, but it may be desirable to listen to one's own transmissions, and this is done by closing S_2. This allows the receiver to run all the time that S_3 is closed regardless of whether the transmitter is on or not. The antenna is switched from transmitter to receiver by switch sections S_{1B} and S_{1C}.

No specific recommendations are made as to the power supply, other than the information in Fig. 6, as it is a strictly conventional set-up. Parts for its construction can be obtained at any radio store. A single filter section may suffice, but better hum elimination is possible if two filter chokes and two condensers are used, as shown in Fig. 6. The first choke can be shorted out with a toggle switch as a convenient means of increasing power, if the builder desires.

You may want to use two separate power supplies, one for the receiver and another for the transmitter. The heaters of all units can then be supplied from a single separate filament transformer, in this case. Switching of the antenna is done with a relay designed for this purpose. The 115-volt relay coil should be wired in parallel with the primary of the transmitter plate transformer in that case. Then when the transmitter power supply is turned on the antenna relay will be energized simultaneously, moving into its "transmit" position.

Still another possibility is "duplex" operation. This involves running the receiver and trans-

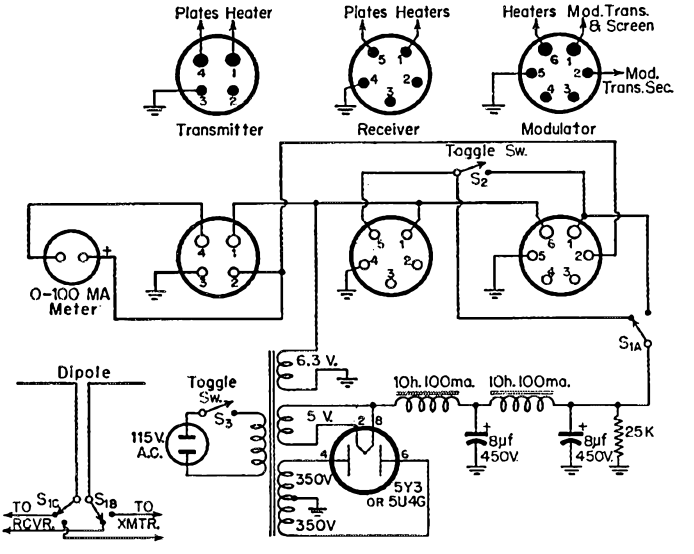
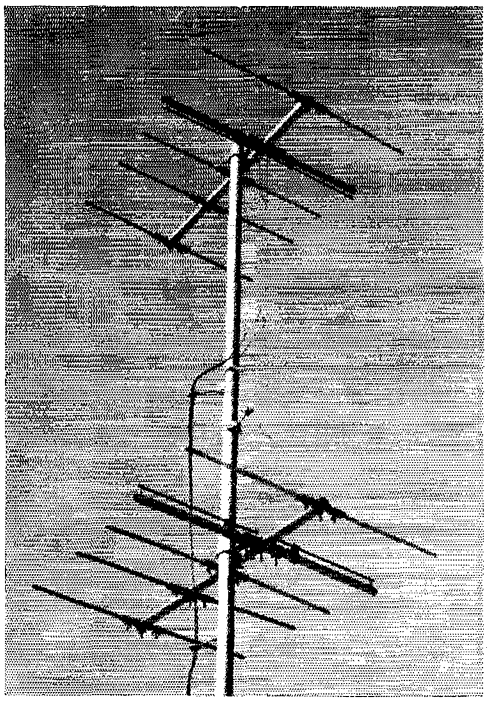


Fig. 6 — Suggested power supply and control circuits for the 220-Mc. station. The three fittings at the top of the drawing are those mounted on the individual units. Below them are the matching fittings on the interconnecting power cable. At the lower left is the antenna switching, and at the right a standard power supply diagram. A three-section two-position switch, $S_{1A\text{-}B\text{-}C}$, takes care of the antenna and power switching. The receiver can be left on during transmission periods by closing S_2.



A 5-over-5 array for 220 Mc., made from a commercial TV array originally designed for Channel 13. The two 5-element sections are spaced a full wavelength apart. A closed-end quarter-wave stub is connected at the midpoint of the phasing line, and the 300-ohm line to the station is attached to the point on the stub that gives the best match.

mitter simultaneously and requires a separate antenna for reception. Two stations operating duplex must be well separated in frequency, to prevent one's own transmitter from blocking his receiver. Such operation is illegal on bands lower in frequency than 50 Mc., because it is somewhat wasteful of spectrum space, but as interference is seldom a problem in the v.h.f. region duplex is permissible, and it may be used to advantage in crossband contacts or local rag-chewing. In working duplex, the receiving antenna is plugged into the receiver directly instead of being connected through a switch or relay.

Duplex is fun, and it allows much more rapid exchange of ideas than is possible with the more usual type of transmission and reception. It should be remembered, however, that where two antennas are employed they are likely to have different directional characteristics. For this reason, it is highly worth while to use the transmitting antenna for reception at all times except when duplex work is in progress.

Antennas

Here's a subject that could easily take up a book by itself, so we'll not attempt to deal with it extensively here. This is not to infer that the antenna is unimportant; quite the contrary, it will be the means by which your station establishes itself on the 220-Mc. band. The antenna is *all*-important, and it is worth all the work and expense you can put into it.

First we have to decide about our antenna polarization. Will it be vertical or horizontal? This controversy is as yet unresolved, and both are still in use. There is a trend toward horizontal polarization, but if everyone in your area is using vertical, you'd better go along with them. If there is no 220-Mc. activity yet, we suggest that it be started with horizontal systems, as a step toward eventual standardization.

Unless you are going to be satisfied with strictly local communication, you'll want something more than a simple dipole. Fortunately, this is not too much of a problem, as antenna elements for 220 Mc. are only about two feet long, and multielement arrays are comparatively small and light in weight. You'll find more useful information than we can put into this article in the V.H.F. Antennas chapter of *The Radio Amateur's Handbook*. We suggest you read it thoroughly.

Probably the easiest way to get a good antenna system for 220 Mc. is to revamp a TV antenna designed for one of the higher v.h.f. channels. There are many Yagi-type arrays on the market that are suitable for this purpose, and you can use one, or as many of them as your pocketbook (and possibly your wife, mother, or landlord) will stand.

An example of an array that will do a fine job is shown in the accompanying photograph. It was made from two Vee-DX[1] type JC Yagi arrays, originally designed for TV Channel 13. To use these 5-element jobs on 220 Mc. it is necessary only to cut one-half inch from both ends of each element. A single 5-element array may be fed at its folded dipole element with 300-ohm polyethylene transmission line, or the open-wire lines spaced one inch or less. The array shown in the photograph combines two 5-element arrays in a manner similar to the "Twin-Five" array originally described by W2PAU.[2]

Fittings for mounting the arrays are usually included by the manufacturer, and mast sections can be purchased at any store that handles TV installation fixtures. The center support can also be a round wooden pole of 1 to 1½ inches diameter. Such a pole can be found in most lumber yards.

The arrays are mounted one full wavelength apart, about 50 inches. The phasing line may be any of the commercial open-wire TV lines, or the builder can make his own by spacing two wires about one inch apart. The array is fed at the center of the phasing line, either through a "Q" section that matches the impedance of the transmission line to the lower value of the antenna, or by tapping the line on a shorted stub, if the antenna impedance is higher than that of the line.

Matching the antenna to the line is checked by setting up the antenna and the field-strength meter (described later) about 20 feet or more apart, and in about the same plane. In lieu of a

[1] La Pointe Electronics, Inc., Rockville, Conn.

[2] "The Wide Spread Twin Five," Brown, March, 1950, *CQ*, page 11.

means of measuring standing-wave ratio, we will use a simple but effective method for attaining a match. We will observe standing-wave ratio by running the transmission line through our fingers and noting the variation in meter reading. Any change in the matching device that results in less

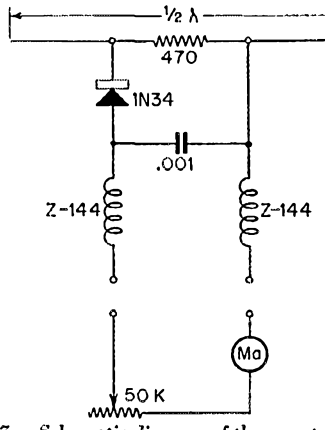


Fig. 7 — Schematic diagram of the remote-indicating field-strength meter. The upper portion is the pick-up unit; the lower is the indicator section.

variation in meter reading as this is done is a step in the right direction. With a perfect match there will be no variation, other than perhaps a slight change when the line is first touched. Obviously, this is a method that is suitable only for low-power operation, but at 10 watts input we need have no fear of r.f. burns!

In the array shown, the impedance at the center of the system turned out to be more than 300 ohms, so we used the "shorted-stub" method. A piece of 2-wire open line like that used for the phasing section was cut to a length of 14 inches. The wires were twisted together at one end and soldered, making a U-shaped stub 13 inches long. The open ends were then soldered to the center of the phasing line, using a half inch of each wire wrapped around and soldered. Our stub is thus 12½ inches long. Now we strip the insulation from our transmission line for a length of an inch or so, and connect it to the stub, about midway between the phasing line and the shorted end. Apply power, and slide the point of connection along the stub until lowest standing-wave ratio (least variation in meter reading when the line is slipped through the fingers) is found. Solder in place at this point, and you're in business.

If the method above doesn't work out, the antenna impedance is probably lower than that of the transmission line, and a "Q" section will be needed. Your *Handbook* will tell you more about this method of matching. Still another method would be to make the stub described above a half-wavelength long (about 25 inches) and leave the end open. Any impedance likely to occur in this type of antenna can be matched with such a half-wave open stub, following the procedure outlined for the quarter-wave shorted one.

Stand-off insulators of the type used in TV installations are very helpful in assembling the antenna. The photograph shows how several of these were used in our 5-over-5 array.

Field-Strength Indicator

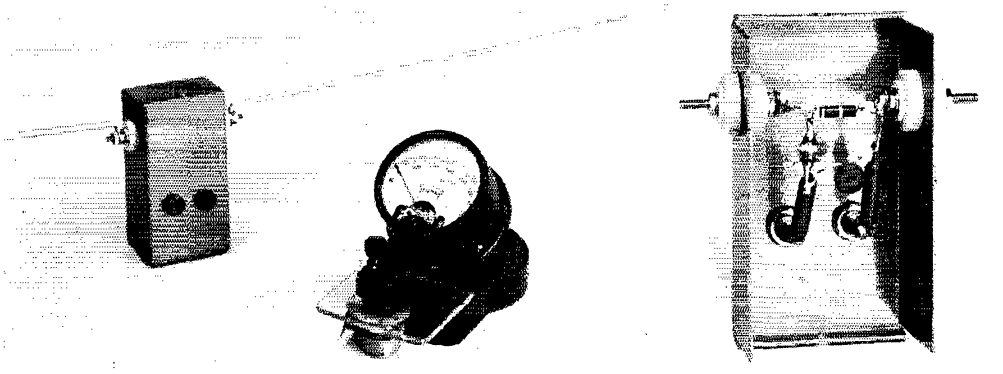
Adjustments on the antenna and transmitter are greatly facilitated if some sort of device is available for indicating relative power radiated by the antenna. Such a field-strength meter is shown in Fig. 7, and in the final photographs. It consists of two units, a pick-up section with antenna, crystal rectifier and isolating r.f. chokes and an indicating section containing a meter and a potentiometer for varying the sensitivity.

The meter shown is a Triplett 0–500 microampere model that is set in a tilting mount, but any other meter from 100 microamperes to about 2 milliamperes range will do, and it can be mounted in any convenient box. The lower the meter range the more sensitive the instrument will be, but the potentiometer permits regulation of the effective sensitivity over a wide range.

The field-strength indicator is used by setting up the pick-up unit at a distance from the an-

(Continued on page 118)

A remote-indicating field-strength meter for v.h.f. use. At the extreme left is the pick-up unit, with its antenna of TV ground wire. Beside it is the indicating portion. The two units are connected by a flexible 2-wire cable of convenient length when in use. The interior of the pick-up unit is shown at the right.



The Novice Round-up

January 9th Through 24th

AT 6:00 P.M. local time, January 9th, a two-week period gets underway when the call of the hour will be *CQ NR*, CQ Novice Round-up! Each and every amateur in the 73 ARRL sections is invited to get in on the fun and see how many Novices in how many sections can be worked.

Here is *the* opportunity for Novices to get acquainted with the enjoyment that comes from good contest operation, the chance to develop efficient operating skills and add to that elusive WAS list. The fun of competition on a sectional basis is yours for a total of 40 hours during the two-week contest period. A choice of operation on 80, 40, 15 or 2 meters is yours, offering many chances to give a good accounting of your section and yourself! Stations other than Novice can have the satisfaction of being a "new" state for many of their NR contacts while helping the newcomers over any of the rougher spots. With Novice activity on the upswing, opportunities to work new countries (for future DXCC purposes) abound. Novice "DX" calls heard on — and possible participants for the Round-up — are prefixed by WH6 (Hawaii), WP4 (Puerto Rico), WW6 (Wake Island) and WL7 (Alaska).

ROUND-UP PERIOD

Starts	*Ends*
Jan. 9th	Jan. 24th
6:00 P.M.	9:00 P.M.
Local Time	Local Time

Remember to check the frequencies above and below the 3700–3750 kc. region for contacts with non-Novice stations. The past two contests proved that stations (other than Novice) could use one to two hundred watts *for purposes of Novice contacts* in the 3.7–3.75 Mc. band without undue QRM. Higher-power stations are again requested to use frequencies above and below. No special precautions about contest work on 40, 15 and 2.

The clear-cut scoring system will make it a simple matter to comply fully with contest rules. Novices may contact any amateur station, but *only* once, regardless of frequency band used. (Non-Novice stations may contact *only* Novice stations, for contest purposes.) To your total number of contacts, add the speed certified on your Code Proficiency Award. This new total is multiplied by the number of different sections worked to obtain your claimed score. (There is still time to earn a CP Award — see contest Rule 4 and Operating News in this *QST*.)

Convenient contest log forms and a poster-style United States map are available upon request. Logs, contest comments, suggestions, operating-type pictures, etc., must be postmarked not later than February 15, 1954.

Sample of reporting form that must be used by all contestants.

STATION WN1ABC—SUMMARY OF CONTACTS, NOVICE ROUND-UP

BAND	*Date, Time of Contact*	*My NR Sent*	*My Section*	*NR Rcvd*	*His Call*	*His Section*	*Number of Each Different New Section as Worked*
	Jan. 9						
80	1805	1	Conn.	1	WN8BBB	Ohio	1
	1810	2	"	2	WN4AAA	E. Fla.	2
	1815	3	"	2	W2CD	N.Y.C.-L.I.	3
	1825	4	"	2	WN9JJJ	Ill.	4
	1935	5	"	5	WN3UUU	E. Pa.	5
	1840	6	"	9	W4KFC	Va.	6
	1852	7	"	5	WN2WWW	W. N.Y.	7
2	1905	8	"	11	W1BDI	Conn.	8
	Jan. 11						
80	0800	9	"	14	W2III	W. N.Y.	—
	0810	10	"	21	WN1CCC	Maine	9
	0830	11	"	45	W1WPO	Conn.	—
15	0845	12	"	18	WP4VH	W. Indies	10
80	0900	13	"	16	WN1ZJE	Conn.	—
	0912	14	"	16	WN1ZCS	Conn.	—
	0915	15	"	46	W1VMW	Conn.	—

Total operating time: 2 hours 15 min.
Bands used: 80, 15 and 2

Total Points	15
CP Credit	15
Diff. Sections	10

Claimed score: 15 points plus 15 CP = 30 × 10 (sections) = 300

I have observed all competition rules as well as all regulations established for amateur radio in my country. My report is true and correct to the best of my knowledge.

Signature.....

Address.....

Rules

1) *Eligibility:* The contest is open to all radio amateurs in the ARRL sections listed on page 6 of this *QST*.

2) *Time:* All contacts must be made during the contest time indicated elsewhere in this announcement. Time may be divided as desired but must not exceed 40 hours total.

3) *QSOs:* Contacts must include certain information sent in the form as shown in the example. QSOs must take place on the 80-, 40-, 15-, or 2-meter bands. Crossband contacts are not permitted. C.w. to 'phone, c.w. to c.w., 'phone to 'phone, 'phone to c.w. contacts are permitted. Valid points can be scored by contacting stations not working in the contest, upon acceptance of your number and section and receipt of a number and section.

4) *Scoring:* Each exchange counts one point. Only one point may be earned by contacting any one station, regardless of the frequency band. The total number of ARRL sections (see page 6 of this *QST*) worked during the contest

(*Continued on page 120*)

Some Notes on Improving Small-Receiver Performance

Circuit Changes in an Earlier Design

BY BYRON GOODMAN,* W1DX

• If the pictures on these pages seem familiar to you, don't be surprised. They are almost, but not quite, the same ones that were used to illustrate a description of a four-tube superhet about a year ago. There was considerable interest in the design, and in this article W1DX tells how a few simple changes will boost the performance and make a still better receiver out of it.

ABOUT a year ago a small receiver was described in *QST*.[1] Reviewing it briefly, the basic idea was to build an inexpensive receiver capable of good performance on at least two amateur bands. As outlined in the original article, extending the range of the receiver to other bands would increase the complexity and cost of the receiver, hence the restricted range. The receiver finally worked out to be a four-tube affair tuning the 80- and 40-meter bands. A 6SB7Y first converter was used, with a grid circuit capable of tuning from 3.5 Mc. to above 7.3 Mc. and an oscillator tuning from 5.2 to 5.7 Mc. A first i.f. of 1700 kc. was then followed by a 6K8 converter into a 6SN7 detector/b.f.o. working at 100 kc., followed by a 6SN7 two-stage audio amplifier. The 100-kc. i.f. used two tuned circuits and some fixed regeneration to give fair single-signal c.w. reception.

The receiver was solidly built and gave excellent frequency stability and long-time calibration accuracy, and was used at W1DX for several months of operation, with a larger receiver and a super-selective i.f. sitting on the sidelines. However, in digging for weak signals on more than one occasion it was felt that the receiver "front end" wasn't quite as "hot" as it might be, and we got the yen to see if it could be improved. Thereby hangs this tale.

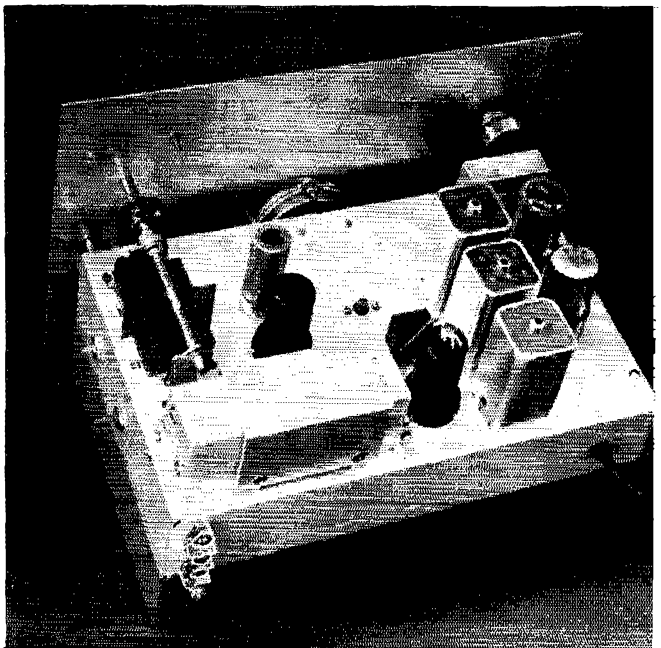
The 6SB7Y had been selected originally as the converter because it is one of the best tubes available for the purpose, as such tubes go. Since only 40- and 80-meter operation was contemplated, it was considered permissible to overlook the inherent "noisiness" of all such tubes, in the interests of simplicity and economy. This is a justifiable viewpoint where a large receiving antenna is used, because there will usually be enough noise picked up to mask the receiver noise. However, with a small receiving antenna there is room for improvement, even on noisy bands like 40 and 80.

As mixer tubes go, the first choice for low noise is among the better triodes, then the high-g_m pentodes and finally the multigrid converters. Since a 6AC7 pentode mixer is almost as good as the triodes, we decided on it for a trial, and we haven't been the least bit sorry. The improvement in both gain and noise figure is obvious, and the "good 4-tuber" is now a "better 5-tuber." A few problems developed along the way, however.

Using a pentode mixer like this required another tube for the high-frequency oscillator func-

* Assistant Technical Editor, *QST*.

[1] Goodman, "A Good Four-Tube Superhet," *QST*, January, 1953. Also, *The Radio Amateur's Handbook*, 1953 edition, page 107.



This top view of the receiver shows the oscillator tube location (miniature tube shield) between the panel and the 6AC7 mixer (*left*).

December 1953

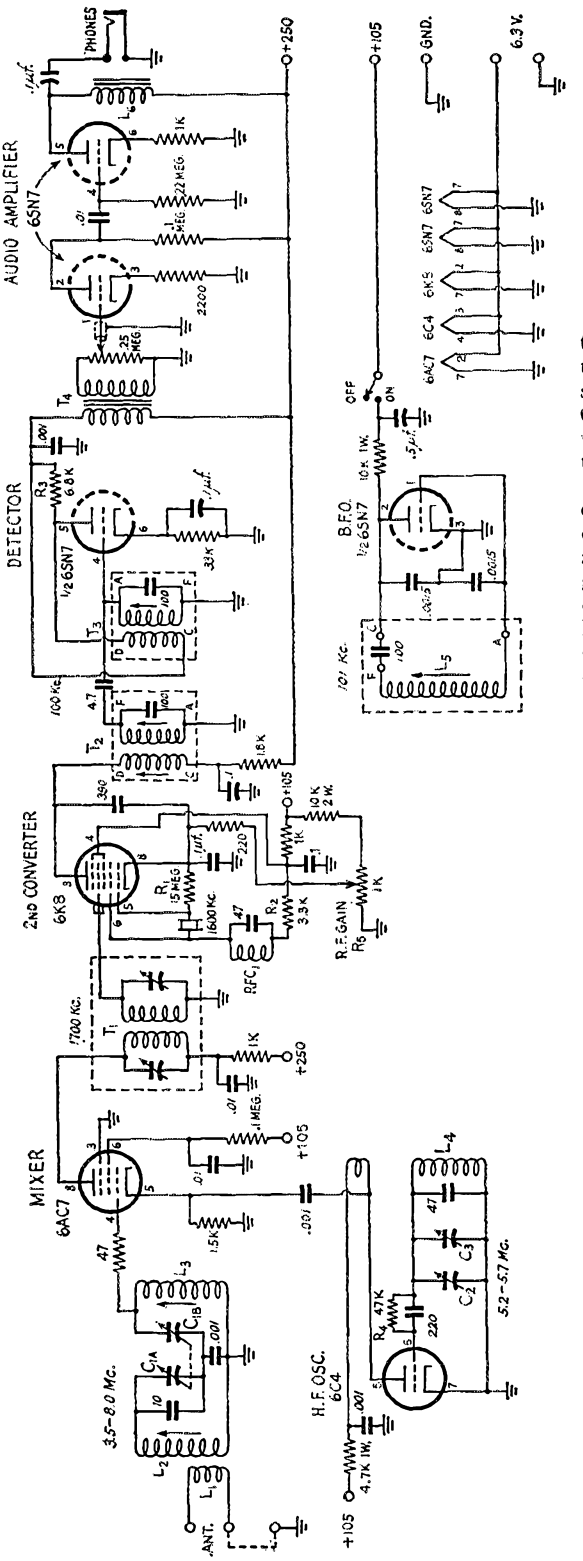


Fig. 1 — Revised wiring diagram of the 40/80-meter receiver.
L_1 — 8 turns No. 30 d.c.c. at bottom of L_2.
L_2, L_3 — 35 turns No. 30 d.c.c. close-wound on National XR-50 slug-tuned form.
L_4 — 23 turns No. 24 bare space-wound 32 turns per inch, ⅝-inch diameter. Tickler is 1¾ turns spaced 1 turn from L_4 (B & W 3008 Miniductor).

tion that was previously half of the job of the 6SB7Y. This seemed like a good job for a miniature tube, to avoid crowding, and a 6C4 was selected. A new socket hole, a few wiring changes, and we had the new oscillator.

Getting the oscillator signal into the grid circuit of the pentode mixer takes a little doing, and it isn't just a matter of running a coupling condenser over to the 6AC7 grid. This will work at higher signal frequencies or with a lower i.f., of course, but here we had a choice between inductive coupling and cathode injection, and decided on the latter. As can be seen from the revised wiring diagram in Fig. 1, a 0.001-μf. condenser is connected between the oscillator plate and the mixer cathode. Thus the r.f. voltage appearing across the plate coil of the oscillator is applied across the 1500-ohm cathode resistor of the mixer. The oscillator still oscillates, of course, and is as stable as when running unloaded. The mixer will be regenerative and can oscillate if the gain is too high, but with the values given the mixer is completely free from oscillation.

In a mixer of this type, the high-frequency oscillator voltage swings the grid at an r.f. rate through wide changes in mutual conductance. If the oscillator voltage is too low, the conversion efficiency will not be as high as it can be made, and the oscillator voltage should be such that it swings to within a fraction of a volt of running into the grid-current region, although it does appear to be critical. With the values shown, the cathode bias runs a little higher than 2 volts and the screen voltage is down around 60. With the antenna disconnected, the mixer is still slightly regenerative (as indicated by sharp peaking of the input circuit $C_1L_1L_2$), and if the 1500-ohm cathode resistor is reduced in value to 680 or 1000 ohms the mixer will oscillate. The best value of cathode resistor is the lowest one that makes the mixer regenerative without oscillation when the antenna is disconnected.

When the new mixer and oscillator had been added and checked through, it was apparent that here was a much hotter re-

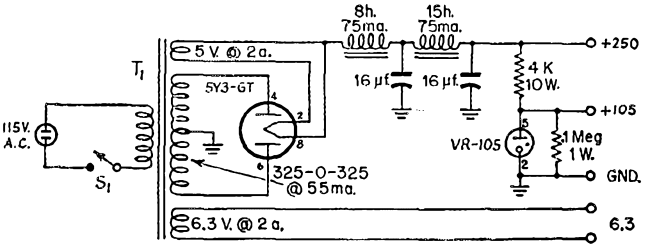


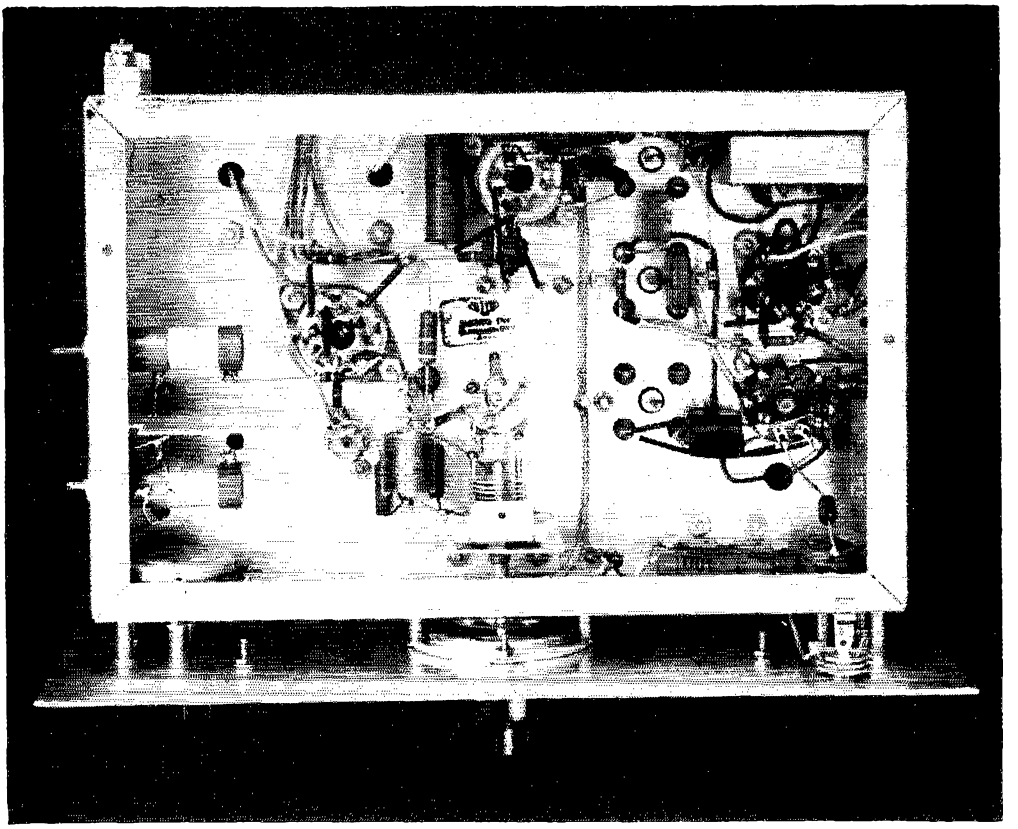
Fig. 2 — Revised power-supply wiring diagram. The 6.3-volt heater lead is grounded in the receiver, not in the power supply.

ceiver and that the change had been well worth the trouble. When first tried on the air, conditions were fairly good. Too good, in fact, because a few teletype stations started showing up in parts of the ham bands where they certainly didn't belong. This gave a little pause, and was the reason for some tracing of spurious signals. By measuring their frequencies and finding that they bore a certain magical 100-kc. relationship, the trouble was traced to harmonics from the b.f.o. getting back into the front end of the receiver and making strong commercials operating outside the ham bands appear to be inside. A little probing showed the offender to be the B+ lead to the b.f.o., and a 0.5-µf. condenser from b.f.o. switch to ground cleaned up the trouble. It was a good example of how careful one must be in a superheterodyne receiver to confine oscillator signals and harmonics to their own portions of the circuit.

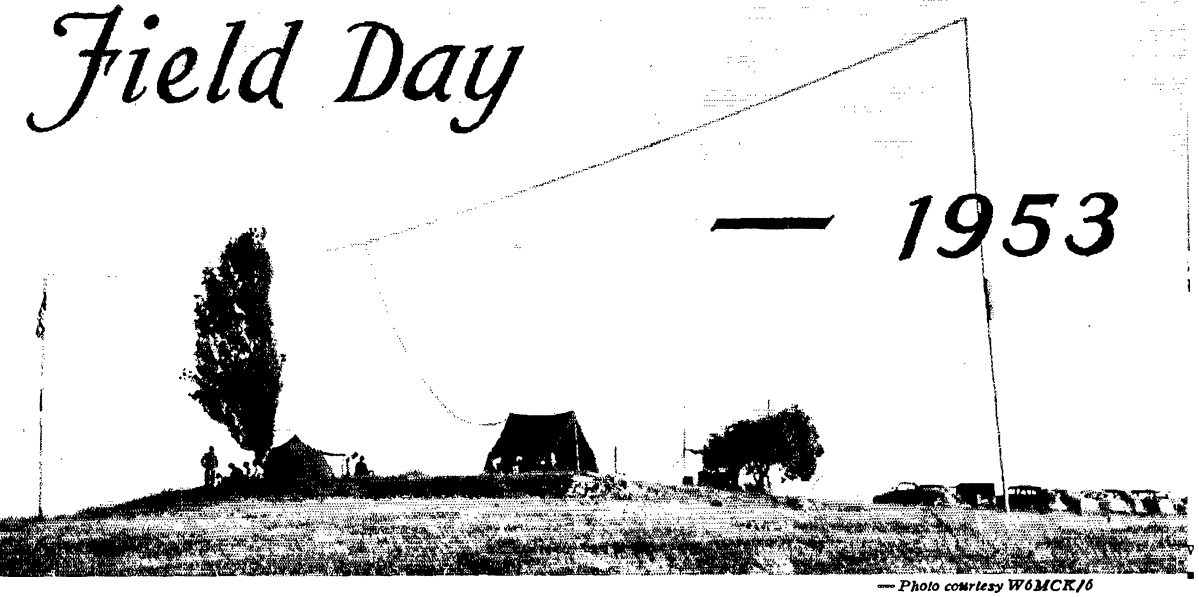
The only other change in the circuit was to run separate heater leads from the power supply to the receiver, instead of skimping and making one wire double as heater-current lead and negative plate supply lead. Divorcing the two jobs eliminated some slight a.c. hum that had been present in the earlier version.

If your present receiver uses a "noisy" converter tube and no r.f. stage, you can probably help the performance considerably by using this 6AC7 mixer circuit. With the 1700-kc. first i.f., there is no oscillator pulling whatsoever as the input tuning condenser (C_1) is rocked through resonance, an important consideration in a receiver of this type. The pulling might be appreciable if a lower i.f. or a higher signal frequency were used, but if the mixer circuit is applied to a receiver with ganged input and oscillator circuits any pulling won't be too obvious.

The bottom view shows the oscillator tube socket (miniature) and the slight change in oscillator-coil location.



Field Day — 1953



— Photo courtesy W6MCK/6

Official Results — An All-Time High Among ARRL Activities

BY PHILLIP SIMMONS,* W1ZDP

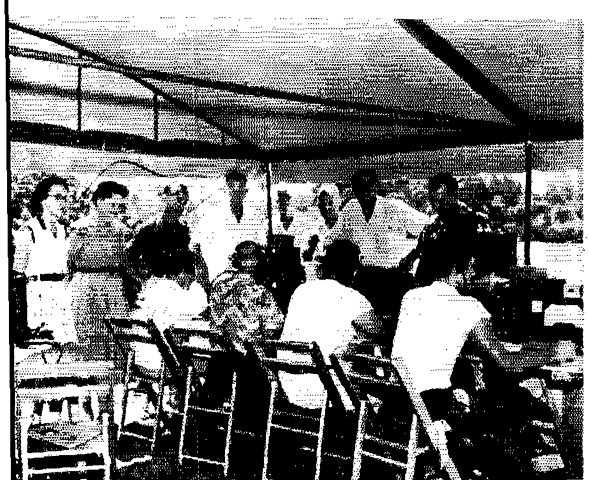
JUST how popular can the ARRL Field Day get? Back in 1946, the first postwar FD brought out 1936 participants and 187 portable stations. By 1949 these figures had climbed to 4942 and 495. Other ARRL operating activities, such as the DX Contest and Sweepstakes, seem to have their ups and downs, with attendance more or less dictated by ionospheric conditions. Not Field Day, though! Last June 20th and 21st, *7007* individuals ventured into the field in this annual test of portable gear and emergency equipment. (This is a minimum figure, too, since the number of participants was omitted in some reports.) During the 24-hour contest period they had a total of *692* portable and mobile stations and *1774* complete receiver-transmitter combinations on the air to make the '53 Field Day the top operating activity of all time!

But there is more to FD than statistics, as anyone who has taken part well knows. While most ARRL activities emphasize single-operator work from the comforts of the home shack, Field Day has come to personify club and group multi-operator and multi-transmitter operation in the field. No small amount of astute planning is prerequisite to a smoothly-functioning portable installation on mountain or hilltop . . . this, mind you, often with sleeping and culinary facilities lacking, perhaps at the mercy of the elements (snow, rain, lightning, etc.), and with the attendant miseries of poison ivy, mosquitoes, flies and other noisome flora and fauna. No, it isn't *all* fun and frolic. Small wonder that Field Day, as the test exercise for the ham fraternity under the stress and strain of conditions afield, has become an important part of civil defense equipment testing. The amateur who doesn't learn a lesson or two on this annual outing is a rare creature, indeed!

There are competitive angles to FD, too. Many clubs and individuals are prompted to vie with one another in running up the highest scores. Local contests are sometimes set up where the winners enjoy dinners at the expense of the vanquished. Other contestants present awards to their challengers attesting to the superiority of the higher-scoring group. A number of clubs also get together after the hectic week end for friendly "post mortems" and planning for next FD.

For the purposes of our *QST* report, competition is considered to be among stations using like numbers of simultaneously-operated transmitting set-ups. Final scores are therefore tabulated according to the number of transmitters in operation at each station. So that Class A entrants may compare their scores with those of the leading FD station in their geographical area, regard-

* Communications Assistant, ARRL.



♦

Grinding out QSOs from W4GAC/4 are W4s VOZ BNM WKQ and TKE at the neat installation of the St. Petersburg Amateur Radio Club in St. Petersburg, Fla. Rapt onlookers are members W4TDK, Elizabeth (no call yet), W4s WMC EYI WME TY LAB and WN4WPF.

less of transmitter classification, the top-scoring Class A station in each call area is listed below:

W1OC/1	14,316	KH6WO/KH6	1152
W2OM/2	18,252	KL7USA/KL7	168
W3FRY/3	24,795	KP4ID/KP4	1163
W4MK/4	6111	VE1ND/1	3528
W5SC/5	7425	VE2CK/2	3555
W6UW/6	11,009	VE3DC/3	7308
W7AW/7	7083	VE5AA/5	1377
W4FU/8	12,906	VE6NQ/6	2178
W9IT/9	12,717	VE7AQL/7	3103
WØHAM/Ø	5319	VO1A/VO2	744

Call area leaders in Classes B, C, D and E easily may be determined by reference to the accompanying score tabulations.

For the second consecutive year the Frankford Radio Club led all FD entrants, as twenty-five members, operating W3FRY/3 at Ambler, Pa., made 2665 QSOs for a 24,795 point tally. This is knocking 'em off at over 111 contacts per hour and marks an increase of 5000 points over their 1952 score. With ten transmitters on all bands from 1.8 through 28 Mc., FRC, like most clubs, held their rigs in the low-power bracket and relied on generators for the a.c. source. Congrats to Frankford for another superlative showing in the field!

Runner-up was the Tri-County Radio Assn. of Plainfield, N. J., with 2003 stations worked and a score of 18,252 points. Thirty operators at

TEN HIGH SCORES

Class A		*Class B*	
W3FRY/3	24,795	W6RW/6	6656
W2OM/2	18,252	W3EIS/3	5873
W2GSA/2	15,593	W2FBA/2	5549
W1OC/1	14,316	W6TSW/6	4905
W4FU/8	12,906	W1HA/1	2304
W9IT/9	12,717	W6JPM/6	2124
W9AP/9	12,645	W6IYG/6	1917
W6UW/6	11,009	W5OLD/5	1827
W2VDJ/2	10,503	W5IER/5	1773
W9PCS/9	9906	W5AJA/5	1742

Mountainside, N. J., kept W2OM/2 running efficiently for the 24-hour period, with a 6-kw. gas-engine generator powering the ten separate receiver-transmitter set-ups. The club secretary sums up the excursion thus: "Good location, all gear worked FB, excellent weather and wonderful eats. Best FD ever!" Amen.

The Garden State Amateur Radio Assn. chalked up the third highest score, 15,593 points and 1911 contacts, with 37 members working 9 transmitters simultaneously at Hazlet, N. J. The power source at W2GSA/2 was a PE-95, and rig inputs varied from 20 to 100 watts.

The West Coast continued its mastery over the Class B contingent. W6RW/6, with W6BXL

♦

At Towson, Maryland, the Chesapeake Amateur Radio Club amassed 7443 points with W3VU/3 in Class 6A. *L. to r.*: W3AFM rotating the 20-meter beam (with monkey wrench!), W3UYP logging, W3UVU kibitzing, W3AYS on 75, W3RFZ standing (?) by.

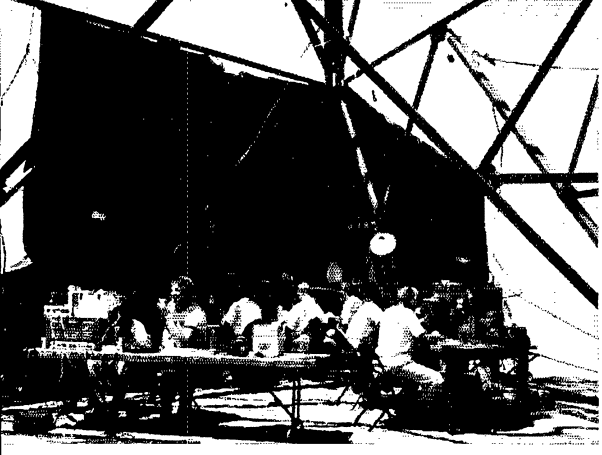
Novice licensees pick up pointers aplenty in a Field Day workout! Busy boys above are KN2s AZA and CUE, representing the Radio Association of Western New York in Class 1A. These and two other ops, signing KN2AZA/2 at Tonawanda, N. Y., used only the 40- and 80-meter Novice bands during the FD period.

second op, found a good QTH in the Hollywood Hills and worked 468 stations for 6656 points. Not without some competition, though, from W3EIS/3, ably assisted by W4KFC, whose 409 QSOs and 5873 points were garnered from a portable site in a Beltsville, Md., tobacco field. W6RW/6 and W3EIS/3 took the top two positions in Class B last year, too. Both set-ups ran 30 watts or less, used all-battery power, and bettered their 1952 totals considerably. Good going, fellows!

Top mobile score was that of W9RQM/9, who motored to Rib Mountain, Wisconsin's highest point, and, with W9RLB helping out in the brass-pounding chores, chalked up 256 contacts for 3848 points. Both W9s expressed amazement at the consistently good reports, with the center-loaded car whip the only antenna. All contacts were on 20-, 40- and 80-meter c.w. with 30 watts input to the home-built mobile rig.

Honors for the highest club aggregate mobile score go to the Westpark Radiops of Cleveland. With 31 W8 units contributing, the Radiops' 21,851 points led the mobile aggregate category by a wide margin.

Hundreds of interesting incidents and sidelights were reported by FD participants. ARRL takes pleasure in passing along as many of them as space will permit.



Little protection from the elements was needed at the W6WI/6 set-up near sunny China Lake, Calif. Operated by a nonclub group that sprang up spontaneously just before FD, W6WI/6 competed in the five-rig class.

♦

FD Quotes

"The singular 'all out' activity of our club is Field Day. We enjoy the annual opportunity to become really acquainted with our fellow members, to try out antennas for which we have no room at home, to increase our operating ability, and to prove and test QRP conditions and equipment." — *Northwest Amateur Radio Club, W9IT/9.* . . . "We made use of trees for all antennas except for one mast for 75 and a tower for 10. We were hot as a firecracker on 20. Only things holding our score down were operator fatigue and a dead 10-meter band." — *Flood City Radio Club, W8QYK/3.* . . . "Lost 3 hours trying to load up a soft 2E26. Finally borrowed a 6146 from W5TMT's Viking and got back in the running. Wouldn't be FD if something didn't go bad, weather or otherwise!" — *W5IER/5.* . . . "More 'phone operators should use prescribed procedure. Many omit their portable identification. Would like to see correct procedure stressed in *QST*." — *WØPB/Ø.* . . . "Had to shift our numbers 2 and 3 transmitters to commercial power at midnight because the generator wouldn't drive the electric stove and the fellows were getting hungry. The club voted to submit the results, anyway, as someone has to get the booby prize." — *Borinquen Amateur Radio Club, KP4NE/KP4.* . . . "Our 110-volt a.c. generator provided 70 volts under optimum conditions! Other difficulties: 40-meter dipole broke and fell, 10-meter beam wouldn't load, VFOs wouldn't oscillate, modulation transformer burned up, etc." — *Beverly Hills High School Radio Club, W6KCM/6.* . . . "W2JBQ and I have operated every FD together since 1938. Is this some sort of record? Our total in '38 was 16 contacts; now if we don't average 16 QSOs per hour, something's wrong!" — *W2FBA/2.* . . . "Had to overhaul our generator a dozen times: gas tank dirty, screen filter like glue, jets clogged up. Finally got it running decently at midnight. Sure glad it wasn't a *real* emergency! — *Lima Area Amateur Radio Club, W8GYM/8.* . . . "Number of persons participating: 17. Also taking part: mosquitoes, black flies, about 11 cases of beer." — *Goose Bay Amateur Radio Club, VO6H/VO6.* . . . "Stations should try to keep accurate reference logs. We had to turn down too many stations as repeat contacts." — *Schenectady Amateur Radio Assn., W2EFU/2.* . . . "We emphasized the emergency angle this year, with absolutely no advance preparation at the operating site. We set up the positions at noon Saturday, then erected tents and antennas. All was in readiness by the zero hour." — *West Side Radio Club, VE3JJ/3.* . . . "Was mobile on Capillo Peak, New Mexico, elevation 9800 feet. Mobile has much in its favor beside the fact that it is perhaps the ideal emergency set-up with everything self-contained. No antennas to erect, no heavy power plant to lug around, a comfortable seat and shelter for the operators. Lazy man's FD!" — *W5DAH/5.* . . . "In preceding FDs our logkeepers had trouble advising the operator whether or not a particular station had been worked. This year we used a special signaling system. Logkeepers switched on a green light to indicate to the operator that it was all right to call the station, and a red light if otherwise." — *Lancaster Radio Transmitting Society, W3NMR/3.* . . . "Our only shutdown in three FDs occurred when the coupling between the engine and generator broke; but we were back on in an hour. Although we did no advance planning, we were on the air within an hour of our arrival at the site. We feel that such procedure is more apt to show up 'bugs' that would be encountered under emergency conditions." — *VE1AAM/1.* . . . "Wanted: information on how to keep tents dry in the driving rain and how to work through rain-QRN that cut our score 'way down." — *Reddy-Watts, VE7-AQL/7.* . . . "At the termination of operations, our tired, sunburnt, mosquito-bitten crew retired to their respective homes, there to renew acquaintances with their families, catch up on some badly needed rest, and also to wait impatiently for the next FD." — *South Shore Amateur*

CLUB AGGREGATE MOBILE SCORES

Westpark Radiops	21,851
North Seattle Amateur Radio Club	12,681
Maryland Mobile Radio Club	11,129
Norwalk Amateur Radio Club	6813
Associated Radio Amateurs of Long Beach	5563
Wisconsin Valley Radio Assn.	3848
Radio Club of Tacoma	2147
Mobile Amateur Radio Club of South Bend	1378
Bloomfield Radio Club	1161
Philadelphia High-Frequency Radio Club	810
Lake Washington Amateur Radio Club	517
Connecticut Wireless Assn.	504
Westchester Amateur Radio Assn.	429
Coffee Dunkers of Detroit	270
Lakehead Amateur Radio Club	180
Waltham Amateur Radio Assn.	122
Twin-City Radio Club	36
Rock Creek Amateur Radio Assn.	27

The Westside Amateur Radio Club counted on W5s TVW VUH VSR and JCC to handle the W5BUK/5 FD 'phone position. With Flontainbleu State Park, Louisiana, as the scene of operations, WARC made 301 contacts in Class 2A.

♦

Radio Club, VE2ADX/2. . . . "We engaged in an intraclub competition, the losers to provide a beach party for the victors. Our East group, with no breakdowns and good antennas, won over the West group. Although none of us is a contest man, we always enjoy FD and will probably make this intraclub contest a FD fixture." — *Custer Radio Club, W2FBA/2 and W2KOA/2.* . . . "Our six ops agree that this was the *best* FD yet!" — *Twin City Contest Club, WØHAM/Ø.*

SCORES

CLASS A

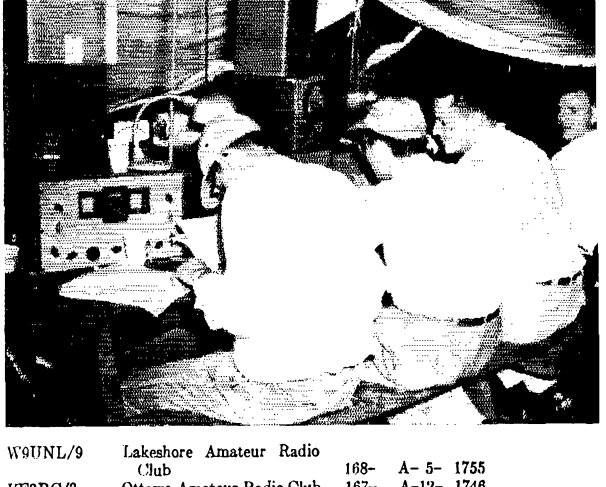
Scores are tabulated according to the number of transmitters operated simultaneously at each field station. The figures and letters following each listing indicate the number of contacts, the power or power inputs used, the number of participants at each station and the final score. The "power classification" used in computing the score is indicated by the letters A, B or C after the number of QSOs shown. A indicates power up to and including 30 watts (multiplier of 3); B indicates power over 30, up to and including 100 watts (multiplier of 2); C indicates over 100 watts (multiplier of 1). More than one letter indicates that at times power inputs fell within different classifications.

One Transmitter

WØHAM/Ø	Twin City Contest Club	566-	A- 6-	5319
W8NCF/8	Tusco Radio Club	466-	AB-23-	3952
W1TX/1	Connecticut Wireless Assn.	411-	A-14-	3924
W8II/8	(nonclub group)	403-	A- 8-	3852
W8CEA/8	Dayton Amateur Radio Assn.	394-	AB- 8-	3408
W6TZD/6	(nonclub group)	352-	A- 5-	3393
VE3BCL/3	(nonclub group)	325-	A- 5-	3150
W3UDL/3	Beacon Radio Amateurs	320-	A- 6-	3105
W8VVL/8	Queen City Emergency Net	303-	A-13-	2952
W1EH/1	South Lyme Beer, Chowder and Propagation Society	451-	B- 7-	2874
W3MBZ/3	(nonclub group)	289-	A- 5-	2826
W8TQ/8	(nonclub group)	280-	A- 4-	2745
W8OG/8	Springfield Amateur Radio Club	295-	A- -	2655
W2CCR/2	(nonclub group)	312-	AB- 5-	2595
WØWML/Ø	Newton (Iowa) Radio Club	260-	A- 6-	2592
W8ODJ/8	Buckeye Shortwave Radio Assn.	287-	A-12-	2583
W8RTR/8	Canton Amateur Radio Club	260-	A- 7-	2565
W3RQY/3	Abington Township Amateur Radio Assn.	257-	A- 3-	2538
W6GDO/6	O'Brien Radio Club of Sacramento	257-	A- 4-	2538
W6HGY/6	Whittier Radio 50 Club	247-	A-21-	2448
W5QGG/5	Midland Amateur Radio Club	374-	B- 7-	2394
W2UBU/2	(nonclub group)	248-	A- 4-	2232
W7AH/7	(nonclub group)	354-	B-11-	2124
W8OAJ/8	Mercer County Radio Assn.	220-	A- 6-	2082
W7SAA/7	Salem Amateur Radio Club	298-	B-16-	1938
W2WER/2	Oswego County Amateur Radio Club	113-	A-12-	1863
W8FZB/8	Muskingham Amateur Radio Assn.	310-	B-25-	1860
W2TIO/2	(nonclub group)	199-	A- 6-	1791

♦

Bill Koutnik, W6ZXH, unconcernedly toils away at KP while his cohorts have the fun at the Acrojet Radio Amateurs Club FD site, Carbon Canyon, Calif. ARAC members ran W6MCK/6 in the two-transmitter class.



W9UNL/9	Lakeshore Amateur Radio Club	168-	A- 5-	1755
VE3RC/3	Ottawa Amateur Radio Club	167-	A-12-	1746
VE3CAQ/3	Kingston Amateur Radio Club	193-	A- 9-	1737
W8GYM/8	Lima Area Amateur Radio Club	169-	A- 8-	1736
W4SUD/4	(nonclub group)	279-	B- 5-	1674
WØZWY/Ø	Sioux Falls Amateur Club	249-	B-12-	1646
W8NCK/8	Sandusky Valley Amateur Radio Club	157-	A- 6-	1638
W9NVW/9	Wisconsin Valley Radio Assn.	182-	A- 7-	1638
WØDVL/Ø	N.E. Iowa Radio Amateur Assn.	154-	A-18-	1611
W2CGK/2	Amateur Radio Society of Queens	151-	A- 9-	1584
WØFRL/Ø	Lawrence Amateur Radio Club	236-	B-11-	1566
W9OXR/9	Wolf River Radio Club	171-	A- 6-	1539
W6NIK/6	(nonclub group)	230-	B- 4-	1530
W2OFQ/2	Fort Stanwix Amateur Radio Assn.	247-	B-10-	1482
WØIUY/Ø	Cedar Valley Radio Club	164-	A- 4-	1476
WØHDX/Ø	(nonclub group)	136-	A- 3-	1449
W1TCM/1	Hampden County Radio Club	216-	B- 6-	1446
W2KOA/2	Custer Radio Club (East)	187-	AB- 5-	1425
W9WKR/9	Lane Tech Ham Club	122-	A- 6-	1323
VE1DN/1	Dartmouth Amateur Radio Club	121-	A- 8-	1314
WØYTA/Ø	Boone Mike and Key Club	119-	A- 6-	1296
W4GSV/4	Albany Amateur Radio Club	188-	A-12-	1278
W7SSF/7	Butte Amateur Radio Club	186-	B-12-	1266
W3RVC/3	Allegheny Kiski Amateur Radio Assn.	115-	A- 9-	1260
WØBEA/Ø	Crete Amateur Radio Club	135-	A- 5-	1215
KH6WO/KH6	Honolulu Amateur Radio Club	167-	B-24-	1152
W3KYR/3	Boys' Club of St. Marys Amateur Radio Society	85-	A- 4-	1148
W5JNB/5	Big Spring Amateur Radio Club	164-	B- 8-	1140
KH6RS/KH6	Maui Amateur Radio Club	164-	B-13-	1134
VE2AFO/2	(nonclub group)	98-	A- 4-	1116
W8MAI/8	(nonclub group)	153-	B- 3-	1068

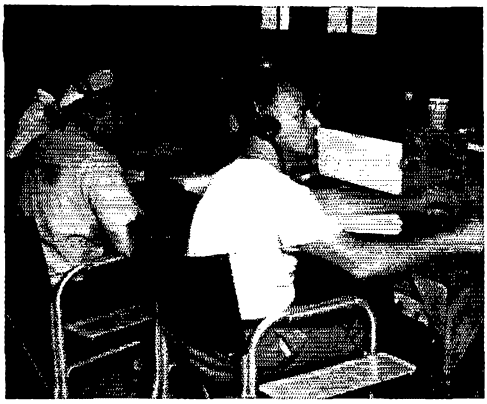
VE2BB/2	Lakeshore Amateur Radio Assn.	93-	A- 6-	1062
W4QCW/4	(nonclub group)	117-	A- 5-	1053
W8UMD/8	Treaty City Amateur Radio Assn.	117-	B- 6-	1026
K5WSP/5	Boondocks Amateur Radio Club	139-	AB-16-	1011
W9NLH/9	Door County Amateur Radio Club	167-	B- 8-	1002
W8URD/8	Case Institute of Technology Radio Club	111-	A- 3-	999
W8HDQ/8	Morgan County Radio Club	136-	B-12-	966
W4UBT/4	Sandhill Amateur Radio Club	78-	A- 4-	927
W7PZ/7	(nonclub group)	75-	A- 5-	900

The Elgin Amateur Radio Society borrowed this Fort Walton Beach, Florida, observation tower for its 10-meter 'phone group. Under the call W4SRX/4 the club made 1842 points in Class 3A.

WØCOM/Ø	CQ Amateur Radio Club	118-	B-10-	858
W4LLO/4	Key West Radio Amateur Club	117-	B-16-	852
W1FN/1	(nonclub group)	87-	A- 3-	783
W9AML/9	Central Illinois Radio Club	125-	B- 4-	750
W8CIA/8	Louisville Amateur Radio Club	124-	B-10-	744
W9DUK/9	Delaware Amateur Radio Assn.	57-	A- 5-	738
W8DFK/8	The Brass and Java League	81-	A- 3-	729
VE3RA/3	(nonclub group)	54-	A- 4-	711
VE3CWB/3	(nonclub group)	75-	B- -	675
W4KSV/4	Lynchburg Amateur Radio Club	187-	C-10-	636
W4TFP/4	Sarasota Amateur Radio Assn.	77-	B- 4-	612
W5SRW/5	Mesilla Valley Radio Club	74-	B-15-	594
W4NTD/4	Rock Hill Amateur Radio Club	73-	B-10-	588
WØFFN/Ø	(nonclub group)	72-	B- 4-	582
W3KEK/3	Harrisburg Radio Amateurs Club	189-	A-36-	567
VE5MA/5	Moose Jaw Amateur Radio Club	66-	B- 7-	546
W7SWS/7	Snake River Keys and Mikes	153-	C- 9-	534
W3MET/3	(nonclub group)	88-	B- 4-	528
W7RXQ/7	Butte Amateur Radio Club (Junior Div.)	33-	A- 6-	522
WØZLC/Ø	Clinton Amateur Radio Club	156-	C- 6-	468
W7OQI/7	Southern Montana Amateur Radio Assn.	77-	B- 4-	462
W8YN/8	Battle Creek High School Radio Club	226-	B- 5-	452
KN2AZA/2	Radio Assn. of Western N. Y.	45-	A- 4-	405
VO6H/VO6	Goose Bay Amateur Radio Club	58-	ABC-17-	303
VE3DBT/3	Kirkland Lake Amateur Radio League	32-	A- 7-	288
KH6IK/KH6	Kauai High School Radio Club	47-	B- 8-	282
W4PED/4	(nonclub group)	29-	A- 5-	261
W5FC/5	Dallas Amateur Radio Club	68-	A- 5-	204
KL7USA/KL7	(nonclub group)	28-	B- 5-	168
W1YFA/1	Walpole Amateur Radio Club	23-	B- 7-	138
W3MOT/3	Penn-Central Radio Club	46-	A- 4-	138
K2BZC/2	(nonclub group)	8-	A- 4-	72

Two Transmitters Operated Simultaneously

W1SKT/1	Narragansett Assn. of Amateur Radio Operators	671-	A-25-	6282
W4MK/4	Richmond Amateur Radio Club	654-	A-30-	6111
W9UDU/9	Racine Megacycle Club	608-	A-20-	5697
W1VB/1	Candlewood Amateur Radio Assn.	506-	A-16-	4797
W2EWT/2	KBT Radio Club	553-	AB-16-	4725
W3NMR/3	Lancaster Radio Transmitting Society	479-	A-25-	4509
W8FT/8	Findlay Radio Club	449-	A-12-	4266
W2JC/2	Bloomfield Radio Club	461-	A-18-	4149
W9UTV/9	(nonclub group)	425-	A- 5-	4050
W9ERU/9	(nonclub group)	465-	AB-12-	3822
W8KQ/8	Bendix Radio Club	601-	B-10-	3768
VE2CK/2	Montreal DX Club	370-	A-10-	3555
W1INM/1	Providence Radio Assn.	368-	A-12-	3537
W8MAX/8	Lorain County Amateur Radio Assn.	356-	A-17-	3429
W9REG/9	Tippecanoe Amateur Radio Assn.	357-	AB- 7-	3357
W8MAA/8	Central Michigan Amateur Radio Club	461-	B-20-	3283
W2KFR/2	Penn-New Jersey Amateur Radio Club	422-	AB- 4-	3204
WØDEP/Ø	(nonclub group)	324-	A- 7-	3141
W8DM/8	Kalamazoo Amateur Radio Club	312-	A-12-	3033
W4TM/4	Jackson Radio Club	364-	AB-22-	2979
W2THO/2	Walton Ham Group	315-	A- 8-	2835
W6KMY/6	Pleasant Valley Amateur Radio Club	314-	A-12-	2826
W4SAG/4	Middle Tennessee Radio Amateurs Assn.	400-	AB-10-	2820
W1AQ/1	Associated Radio Amateurs of Southern New England	286-	A- 6-	2799
W7GWD/7	Richland Amateur Radio Club	429-	B- 9-	2724
W9LDT/9	North Central Indiana Radio Club	370-	AB-12-	2694
WØEQU/Ø	Ak-Sar-Ben Radio Club	274-	A-15-	2691
WØJFI/Ø	South St. Louis Amateur Radio Club	447-	B-13-	2682
W6MCK/6	Aerojet Radio Amateurs Club	370-	AB-13-	2673
W4UWS/4	Rappahannock Valley Radio Club	416-	B- 8-	2646
WØFNK/Ø	Missouri Ozark Amateur Radio Club	268-	A-10-	2637
W3PGA/3	Aero Amateur Radio Club	291-	A- 3-	2619
W9OWD/9	Elgin Radio Amateur Service Club	265-	A- 5-	2610
WØOJY/Ø	Prairie Dog Amateur Radio Club	409-	AB-15-	2604
W9TCR/9	Dells Region Radio Club	262-	A-15-	2583
W5ND/5	Orange Amateur Radio Club	285-	A- 7-	2565
W6TO/6	Fresno Amateur Radio Club	427-	B-25-	2562
W8KAO/3	Mahoning Valley Amateur Radio Assn.	321-	AB- -	2523
W6SF/6	Stockton Amateur Radio Club	251-	A-20-	2484
W3GAG/3	Philadelphia Wireless Assn.	376-	B-11-	2406
W2QCN/2	Rochester Amateur Radio Assn.	498-	AC-27-	2364



With a graph of '52 FD contacts in front of him, W9GVZ knows exactly how he's doing on 20 c.w.! W9s MO and KBV are in the background. A perennial high scorer, the Northwest Amateur Radio Club's W91T/9 made 12,717 points with 10 transmitters.

W8KS/8	Westlake Amateur Radio Assn.	368-	B-12-	2358
W6OZC/6	Tamalpais Amateur Radio Club	358-	B-16-	2298
W4ZWG/4	(nonclub group)	308-	AB- 4-	2292
W3EDU/3	York Amateur Radio Club	254-	A- 7-	2286
W8SWG/8	Niles Amateur Radio Club	378-	B-13-	2265
W5ORH/5	Oklahoma County A.R.E.C.	351-	B- -	2256
W8BF/8	Buckeye Shortwave Radio Assn.	342-	B-20-	2202
W2IQ/2	(nonclub group)	327-	AC-15-	2199
W6KCM/6	Beverly Hills High School Radio Club	156-	B- 9-	2186
W1BNV/1	(nonclub group)	213-	A- 3-	2142
W8AKA/8	(nonclub group)	212-	A- 6-	2133
W8ZXI/8	(nonclub group)	228-	A- 8-	2052
W8VCT/8	Kanawha Valley Amateur Radio Assn.	312-	B- 8-	2022
W9BTD/9	Point Radio Amateurs	192-	A- 6-	1998
W9BVX/9	Four Lakes Amateur Radio Club	193-	A- 8-	1962
W5BUK/5	Westside Amateur Radio Club	301-	B-15-	1956
W2GGN/2	Queens Radio Amateurs	298-	B- 8-	1938
K2DIE/2	Cowanesque Canisteo Amateur Radio Assn.	185-	A- 5-	1890
W4MN/4	Palmetto Amateur Radio Club	184-	A-16-	1881
VE2TA/2	Montreal Amateur Radio Club	281-	AB- 9-	1848
W9NEV/9	Blackhawk Radio Club	247-	AB-10-	1830
W4ZQA/4	Charlotte Amateur Radio Club	203-	A- -	1827
W4TNW/4	Chattanooga Amateur Radio Club	276-	B-10-	1746
W3QZF/3	Horseshoe Radio Club	287-	B-15-	1722
W4LEN/4	Decatur Amateur Radio Club	256-	B-12-	1698
W3VV/3	McKean County Radio Club	274-	B- 8-	1644
W2CDW/2	(nonclub group)	177-	A- 3-	1593
W9DKR/9	Kokomo Amateur Radio Club	357-	BC-21-	1590
W2BXK/2	Polytechnic Institute of Brooklyn Radio Club	213-	AB-11-	1557
W5VOE/5	(nonclub group)	398-	BC- 4-	1497
W8HLD/8	Catalpa Amateur Radio Society	160-	A-16-	1494
W4GNF/4	Greensboro Radio Club	240-	B- -	1440
WØTJA/Ø	Rochester Amateur Radio Club	215-	B-12-	1440
VE2CQ/2	Quebec Radio Club	209-	B-20-	1410
VE7AO/7	Penticton Amateur Radio Assn.	130-	A- 6-	1395
VE5AA/5	Saskatoon Amateur Radio Club	207-	AC-15-	1377
W7OZK/7	Shy Wy Radio Club	165-	AB- 9-	1311
W1UKR/1	(nonclub group)	172-	AB- 3-	1299
W9PT/9	Tri-Town Radio Amateur Club	409-	AC-11-	1257
W9RIV/9	Tri-State Amateur Radio Society	138-	A- 9-	1242
VE1DA/1	Annapolis Valley Radio Club	207-	B- -	1242
W5USN/5	(nonclub group)	197-	AC- 3-	1206
W4EM/4	Mid-South Amateur Radio Assn.	169-	B-25-	1164
W5QQU/5	East Texas Amateur Radio Club	163-	B- 5-	1128
W7LAB/7	Ogden Radio Amateur Operators	99-	A-13-	1116
W7AHQ/7	Skagit Amateur Radio Club	95-	A- 6-	1080
W2SV/2	Sunrise Radio Club	332-	A-20-	1071
W9KLD/9	Kankakee County Amateur Radio Club	178-	B-15-	1068
W7NC/7	Twin City Amateur Club	177-	AB- 5-	1062
W5KYC/5	Hattiesburg Amateur Radio Club	150-	B- -	1050
W5JFT/5	(nonclub group)	169-	AB- 4-	1040
W1SBF/1	Meriden Amateur Radio Club	115-	A- 6-	1035
W3RZG/3	(nonclub group)	116-	A- 3-	1032
W1KOO/1	Burlington Amateur Radio Club	147-	AB- 6-	930
W7RIL/7	Great Falls Radio Club	93-	AB-10-	822
W3MKA/3	West Philadelphia Radio Assn.	88-	A- 5-	792
W4ACB/4	Tallahassee Amateur Radio Club	131-	A- 6-	786
W7TRU/7	Harlo Radio Club	97-	B- 8-	744
VO1A/VO2	Newfoundland Radio Club	79-	AB- 6-	744
W5AWT/5	(nonclub group)	54-	A- 4-	711
W8ECU/8	Ashland Amateur Radio Club	110-	B- 4-	660
W2KYN/1	Knickerbocker Amateur Radio Club	118-	B- -	596
W4DUG/4	Tampa Radio Club	120-	AB- 5-	591
W2GLQ/2	Nutley Amateur Radio Society	61-	A- -	549
WØEDA/Ø	Rolls Amateur Radio Assn.	65-	B- 5-	540
WN8LXG/8	(nonclub group)	53-	B- 7-	468
W9CDO/9	(nonclub group)	34-	A- 6-	459
K2BGQ/2	Schoharie County Amateur Radio Club	47-	AB- 8-	456

Atop Rib Mountain, Wisconsin, W9RQM/9 (right), with W9RLB assisting, chalked up 3848 points for the top tally in the mobile category. Getting set for a new band, they're changing the loading coil and removing the capacity hat.

W2BFA/2	Custer Radio Club (West)	58-	AB-	9-	417
K2CXP/2	IBM Radio Club	159-	B-	-	380
W1WHF/1	Hamden Amateur Radio Assn.	61-	B-12-		366
VE7ASM/7	Fraser Valley Amateur Radio Club	33-	A-	6-	297
WØOKA/Ø	Ottawa Radio Emergency Club	34-	B-	9-	180
W7PL/7	Pendleton Radio Club	12-	B-12-		72

Three Transmitters Operated Simultaneously

W8BWA/8	Cleveland Brasspounders Assn.	860-	A-	4-	8019
W2IM/2	Somerset Hills Radio Club	711-	A-25-		6624
W9TCH/9	Rock River Radio Club	697-	A-18-		6516
W1QOA/1	Bridgeport Radio Amateur Club	621-	A-	7-	5814
W2CPN/2	Lockport Amateur Radio Assn.	605-	A-20-		5679
W8ICS/8	Westpark Radiops	526-	A-	-	5499
W2WUX/2	Utica Amateur Radio Club	560-	A-16-		5040
W9GPS/9	Hamfesters Radio Club	516-	A-15-		4869
W2ZQ/2	Delaware Valley Radio Assn.	509-	A-18-		4806
W2MO/2	Livingston Amateur Radio Club	610-	AB-25-		4662
W2QYV/2	Niagara Radio Club	516-	A-	-	4644
W5MPZ/5	Sandia Base Radio Club	536-	AB-15-		4275
W5MUZ/5	Ouachita Valley Amateur Radio Club	444-	A-15-		4221
K6BAG/6	Pacifico Radio Club	667-	B-	7-	4152
W1JYH/1	Hampden County Radio Club	611-	B-	9-	3828
W5DXD/5	Temple Amateur Radio Club	525-	AB-20-		3795
W7HZ/7	Valley Amateur Radio Club	386-	A-	9-	3753
W9KDV/9	Martinsville and Bloomington Amateur Radio Clubs	375-	A-11-		3618
W6RET/6	Ventura County Amateur Radio Club	373-	A-15-		3582
W8ZZ/8	Detroit Amateur Radio Assn.	355-	A-17-		3420
W8TO/8	Columbus Amateur Radio Assn.	541-	B-32-		3396
W2NOO/2	Radio Amateur Club of Belleville	346-	A-12-		3393
W5CKT/5	Bartlesville Amateur Radio Club	409-	AB-23-		3378
W6KU/6	Modesto Amateur Radio Club	349-	A-13-		3366
W2EFU/2	Schenectady Amateur Radio Assn.	636-	ABC-18-		3349
W2DTU/2	(nonclub group)	348-	A-10-		3132
W7MAE/7	Saguaro Radio Club of Phoenix	322-	A-10-		3123
WØRA/Ø	St. Paul Radio Club	517-	B-25-		3102
W4PAY/4	Amateur Radio Club of Falls Church	319-	A-15-		3069

El-Ray Amateur Radio Club's maintenance man, W1BOD, finds his olfactory sense disturbed as he makes hasty repairs to the 20-meter c.w. rig. El-Ray made 798 QSOs, 6196 points, with W1AJ/1 in Class 5A. Scene-stealing SWL was not identified.

"Take the antenna and rig, Manny — my QSO is over" says WØJNC (left) to WØPIG. These are two of the crew who piloted the Twin City Contest Club's WØHAM/Ø to 566 contacts and top score in Class 1A.

W5ZDN/5	Central Texas Amateur Radio Club	398-	AB-20-		3048
W3VPR/3	Anne Arundel Radio Club	504-	B-15-		3024
W4RSS/4	Norfolk Naval Shipyard Amateur Radio Club	373-	AB-	9-	3009
W9CAF/9	Chicago Amateur Radio Club	333-	A-17-		2997
W9QV/9	Chicago Radio Traffic Assn.	307-	A-12-		2988
W5IGQ/5	Webster Parish Amateur Radio Club	345-	AB-10-		2985
W8NCM/8	Springfield Amateur Radio Club	327-	A-	-	2943
W2QQ/2	Amherst Township CD Group	463-	B-15-		2928
W6IFZ/6	Richmond Amateur Radio Club	488-	B-18-		2928
W8YBQ/8	Clarksburg Radio Club	292-	A-10-		2853
W3CDI/3	Baltimore Polytechnic Institute Radio Club	316-	A-17-		2844
W9GET/9	Chicago Mobile Radio Club	291-	A-	7-	2844
VE1GM/1	Yarmouth Amateur Radio Club	275-	AB-12-		2672
W8LII/8	Tri-City Amateur Radio Club	424-	AB-11-		2658
W3ALX/3	Allentown Mike and Key Club	292-	A-	4-	2628
VE1GH/1	Sackville Amateur Radio Club	246-	A-	6-	2457
W6BHI/6	Burbank Radio Club	244-	A-10-		2439
W9QXE/9	Eau Claire Radio Club	268-	A-18-		2412
W8WSX/8	CARMARS Radio Club	359-	AB-12-		2403
W3NEW/3	Capitol Suburban Radio Club	476-	BC-	-	2373
W9KIZ/9	Green Bay Mike and Key Club	317-	AB-16-		2373
W4VP/4	Amateur Radio Transmitting Soc. of Louisville	226-	A-20-		2259
VE6NQ/6	Calgary Amateur Radio Assn.	217-	A-15-		2178
W9IAW/9	Twin City Radio Club	322-	B-30-		2082
VE2CB/2	Verdun Amateur Radio Club	337-	B-11-		2022
VE1FO/1	Halifax Amateur Radio Club	181-	A-15-		2007
K5FBB/5	(nonclub group)	257-	AB-19-		1983
VE3DRT/3	Sky Wide Amateur Radio Club	214-	A-	9-	1926
W2ANL/2	Kings Radio Club	275-	AB-	8-	1909
W3PIE/3	Uniontown Amateur Radio Club	274-	AC-13-		1898
W2GZP/2	Mid Hudson Radio Club	626-	AB-	7-	1881
W4SRX/4	Eglin Amateur Radio Society	282-	B-20-		1842
W3TJV/3	Antietam Radio Assn.	204-	B-13-		1620
W4AY/4	Nashville Amateur Radio Club	304-	AB-26-		1620
W4GAC/4	St. Petersburg Amateur Radio Club	290-	ABC-32-		1590
K6APV/6	Brawley Radio Amateurs	264-	B-	9-	1584

VE2ADX/2	South Shore Amateur Radio Club	150-	A-10-	1579
W6CNY/6	San Luis Obispo Amateur Radio Club	244-	AB-10-	1578
WØLTT/Ø	Band Hopper's Radio Club	194-	ABC- 7-	1551
WØERH/Ø	Johnson County Radio Amateurs Club	185-	AB-13-	1461
W4AM/4	Tennessee Valley Ten Meter Emergency Net	197-	AB-15-	1446
W3PQT/3	Pax Ham Club	269-	ABC- 6-	1437
W7AQ/7	Yakima Amateur Radio Club	198-	AB-17-	1428
W1DJC/1	WTIC Radio Club	158-	A- 4-	1422
VE1LC/1	Loyalist City Amateur Radio Club	153-	AB-12-	1383
K4WAR/4	Camp Gordon Radio Club	230-	AB-30-	1373
W6RNA/6	Corona Gang	178-	AB- 9-	1347
W2VWH/2	Amateur Radio Club of United States Merchant Marine Academy	149-	A- 5-	1341
W8HK/8	Hiawatha Radio Club	145-	AB- 3-	1239
W6GRR/6	Bakersfield Technicians and Operators Club	203-	B- 8-	1218
W5WDD/5	Pittsburg County Amateur Radio Club	170-	AB-10-	1189
WØBLK/Ø	Black Hills Amateur Radio Club	157-	AB-24-	1167
KP4ID/KP4	Puerto Rico Amateur Radio Club	135-	AB- 8-	1163
W2BMW/3	Tu-Boro Radio Club	119-	A-18-	1071
W1FTS/1	Hoosac Valley Amateur Radio Club	143-	B-10-	1008
W5YBH/5	Gulf Coast Amateur Radio Club	86-	A-15-	999
W3CAB/3	Washington Radio Club	164-	B- -	984
WØIMW/Ø	Jayhawk Amateur Radio Society	311-	AC- 6-	933
W5JIH/5	Mineral Wells Amateur Radio Club	151-	AB-14-	930
W4ZD/4	Atlanta Radio Club	72-	A-25-	882
W4KEK/4	Peninsula Amateur Radio Club	146-	B-12-	876
W9NXU/9	Montgomery Amateur Radio Club	117-	AB- 6-	861
W9TBT/9	Browning School Amateur Radio Club	130-	B- 7-	780
VE7ASG/7	Royal City Amateur Radio Assn.	60-	A- 8-	765
W4HZB/4	Whitehaven Amateur Radio Club	80-	A- -	720
W8KYI/8	(nonclub group)	352-	B- 3-	704
KP4NE/KP4	Borinquen Amateur Radio Club	165-	AB-10-	662
W5KC/5	Baton Rouge Radio Amateur Club	45-	AB- 7-	592
W6DKH/6	Marin Amateur Radio Club	101-	AC-15-	543
W4JNB/4	Muscle Shoals Amateur Radio Club	87-	B- 9-	522
W7ETO/7	Apple City Radio Club	148-	C- 6-	519
W8KEG/8	Tri-State Amateur Radio Assn.	85-	B- 8-	510
VE2APX/2	St. Johns Radio Club	51-	AB- 7-	447
W1VPT/1	Arlington Amateur Radio Club	58-	ABC-10-	446
VE6IV/6	Seven Independent Signal Section, R. C. C. S.	58-	B- 5-	429
W1TAN/1	Rutland C.W. Radio Club	40-	A- 4-	360
W2CFY/2	Malone Amateur Radio Emergency Corps	110-	AC-13-	248
VE3AJ/3	Lakehead Amateur Radio Club	26-	B- -	216
W9DTE/9	Kenosha Radio Communication Society	105-	B-10-	210
WØFKM/Ø	Tri-State Radio Society	62-	B- -	124

Four Transmitters Operated Simultaneously

W2GTD/2	Ridgewood Amateur Radio Club	978-	A-10-	9027
W3PKV/3	Northeast Radio Club	956-	A-18-	8838
W2QW/2	Raritan Valley Radio Club	905-	A-18-	8370
W6HDY/6	Citrus Belt Amateur Radio Club	814-	A-15-	7551
K2AA/2	South Jersey Radio Assn.	744-	A-30-	6939
W6PD/6	Foothill Mobile Net	1114-	B-23-	6846
W2JT/2	Passaic Valley Radio Club	705-	A-32-	6570
W2DAY/2	Northern New Jersey Radio Assn.	732-	AB- -	6372
VE3ZM/3	Guelph Amateur Radio Club	635-	A-30-	5940
W9AB/9	Michiana Amateur Radio Club	737-	AB-16-	5811
W3VRZ/3	Beaver Valley Amateur Radio Assn.	749-	AB-20-	5382
W3AWS/3	Dit-Happy Dash-Hounds of Braddock Heights	671-	AB-10-	5379
W2AG/2	Yonkers Amateur Radio Club	583-	A-10-	5247
W6OT/6	Oakland Radio Club	569-	A- 7-	5229
W9JZA/9	Lake County Amateur Radio Club	660-	AB-24-	5010
W8OC/8	Grand Rapids Amateur Radio Assn.	625-	AB-10-	4998
W9HRM/9	Milwaukee Radio Amateurs Club	591-	AB-30-	4992
W6PMK/6	North Peninsula Electronics Club	527-	A-21-	4968
W6PMI/6	United Radio Amateurs Club	547-	A-24-	4959
W8MRM/8	Banner Motor City Radio Club	432-	AB-16-	4940
W8AW/8	Edison Radio Amateurs' Assn.	643-	AB-17-	4923
W6BZE/6	Helix Amateur Radio Club	507-	A-17-	4788
W7DA/7	North Seattle Amateur Radio Club	510-	A-23-	4590
W6MLK/6	H.A.M.S. Club	465-	A-26-	4419
W3OB/3	Amateur Transmitters Assn. of Western Pennsylvania	602-	AB-25-	4359
W2GLO/2	Levittown Amateur Radio Club	480-	A-19-	4345
W1OSA/1	Pittsfield Radio Club	597-	AB-25-	4338
W9ESJ/9	Milwaukee Amateur Radio Emergency Corps	451-	A-28-	4329
W5NW/5	Odessa Amateur Radio Club	684-	B-14-	4254
W8FO/8	Toledo Radio Club	468-	A-25-	4212
W9KPC/9	Joliet Amateur Radio Club	464-	A-15-	4119
W3QB/3	York Road Radio Club	441-	AB-20-	3969
W5KA/5	(nonclub group)	600-	ABC- 4-	3630
W4TRC/4	Kingsport Amateur Radio Club	503-	AB-24-	3586
VE1ND/1	Fredricton Amateur Radio Club	365-	A-15-	3528
W2NFU/2	Northern Nassau Amateur Radio Club	383-	A-15-	3447
W1SYE/1	Newport County Radio Club	651-	BC-12-	3435
W6MHM/6	Bell Gardens Amateur Radio Assn.	350-	A-12-	3393
W9NQF/9	Lake County Amateur Radio Club	447-	AC-18-	3393

(*Continued on page 120*)

The Verdun Amateur Radio Club found Goat Island, Quebec, a likable FD site for VE2CB/2. And if smiling faces are indicative, Pete (the cook) and VE2s ANE AFI and ARY had no difficulty keeping the 600-watt generator humming!

Correspondence From Members-

The publishers of *QST* assume no responsibility for statements made herein by correspondents.

TVI COMMITTEES

243 Colon Avenue
San Francisco 12, Calif.

Editor, *QST:*

. . . Regarding the article "Handling TVI Complaints Due to Poor TV Sets" (June, *QST*), I feel that, generally speaking, the article is excellent, and the rules laid down therein are well-taken. I, also, tell all amateurs here to get on the air and OPERATE UNRESTRICTEDLY, as long as they know their transmitters are sufficiently harmonic-free as to cause no TVI to their own or other sets in close proximity. All the other points, including the all-important diplomacy, should be considered standard practice for TVI committees, EXCEPT — the third paragraph from the end, and I quote, "You are wasting your time and that of the complainant if you agree to assume the responsibility of forcing the dealer or manufacturer's representative to get on the job."

In rebuttal, may I say that in San Francisco we have been eminently successful because we have done exactly what the article says is a waste of time. I have written personal letters to the manufacturers' representatives and the service managers, I have made personal visits to most of them to further explain the situation; and I enjoy 100% coöperation from seven manufacturers (which includes free labor), and full coöperation from four others in the supplying of a free filter, whenever my committees report that such a filter cures the TV set, and I so advise the proper company, either in writing or by telephone. In fact, only one manufacturer of TV sets which have proved to have fundamental blocking has refused to do anything about it.

To further strengthen my stand on this matter, I feel that any job left unfinished is less than a first-class job. Why should we handle the complaint thru its many steps — thru 98% of the work — and then drop the case, leaving the complainant to sink or swim on his own trying to get the filter himself? It has been my observation that the complainant has been extremely gratified and thankful to us as an amateur committee, because we not only have found his trouble, but have handled to the ultimate end of even making the arrangement to have the filter installed at no cost to him. After all, it requires only one extra telephone call, or one brief note to the proper service company, with the brief details of the case.

The only part which requires time is the original contacts and agreements, and reasons presented to the service companies. Once such agreements are set up, nothing is easier than to make one 'phone call to provide the filter. We also always 'phone the complainant after the filter is installed, and arrange a test transmission to assure him, and the amateur (and us), that the filter has done the job, and is therefore properly installed. It also allows the chairman to end the entire episode on a very friendly amateur-to-public basis.

There is one other very concrete reason why the committee should arrange for the installation of the filter with the service company: If left to the complainant, he often procrastinates week after week before going to his distributor for a filter installation — and human nature being what it is, he gets angry at the situation all over again — but rationalizes his anger by again blaming the amateur for his trouble, and often spreading more propaganda around the neighborhood. Why not short-circuit this dangerous possibility by firmly handling the entire matter to the final conclusion, once you have firmly grasped all control of the situation?

Certainly it is better to have the dealers, service companies, and manufacturers working with us rather than against us, as will inevitably happen if we simply arbitrarily tell the complainant, "This is all the fault of your set and your service company — force them to cure your trouble." While such a stand is certainly true, it seems very undiplomatic to put the matter on such a blunt basis. We, as amateurs, have always been upset and angry at those who have bluntly and unequivocably said, "That is the fault of the amateur in the next block." Let us not be in the position of doing exactly the same thing to others — they will resent it as we do. . . .

— *R. F. Czeikowitz, WGATO*

GIL CARTOONS

56 Friendship St.
Newport, R. I.

Editor, *QST:*

As the XYL of W1TXF, I look through *QST* each month. I enjoyed the clever sketches of Jeeves and the others by "Gil." I especially liked the covers of Field Day — the before and after scenes are so very realistic!

This is just a short note of appreciation for sketches by "Gil."

— *Elsie Hoyle*

ANYONE FOR A4?

4205 So. 12th Road
Arlington 4, Va.

Editor, *QST:*

I am very much interested in getting in touch with one or more hams who are interested in experimenting with an amateur facsimile system. . . .

— *Bill Valentine, W4LDW*

THAT'S THE SPIRIT

855 Sutter Ave.
Brooklyn 7, N. Y.

Editor, *QST:*

Listening to the QSOs of others on the 80-meter band reveals that it has become rather fashionable of late to decry the present state of fraternalism in amateur radio. To those who are so ready to adopt an attitude of skepticism and cynicism I should like to point out an experience of my own.

Several months ago I wrote to *QST* requesting information concerning the 220-Mc. band. This request was published, and very shortly thereafter I received a 'phone call from W2IQR who gave me a complete picture of the activity on this band, of its participants, and of their equipment. Frank also volunteered to lend me some of his personally designed and built gear so that I might be able to operate while constructing equipment of my own.

Since then he has on numerous occasions helped me to iron out kinks, to chase out bugs, or, in reality, to correct the errors arising from my rather profound inexperience in u.h.f. techniques — all of this in spite of his extremely limited and valuable time.

Has "Ye Olde Ham Spirite" departed? Heck no! — but much of it has definitely moved on to higher frequencies.

— *Jerry Kay, W2MGQ*

QST BACK ISSUES

823 N. Second St.
Memphis 7, Tenn.

Editor, *QST:*

While browsing through the reference department of the local library, I was very pleased to find back issues of *QST* and other technical magazines containing valuable information pertaining to radio available. I imagine most libraries have this service available and I hope fellow amateurs find it useful.

— *William L. Schrader, W4UDS*

(*Continued on page 146*)

Hints and Kinks For the Experimenter

HOMEMADE BUG WEIGHT

USE a 7/8-inch diameter bit to drill a hole 1/2 inch into a block of wood. Then fill the hole to a depth of 3/8 inch with solder. The wood, being a good heat insulator, will help keep the solder molten while you probe for the center (a pit left by the guide screw of the wood drill) with a toothpick. Hold the toothpick in place until the solder

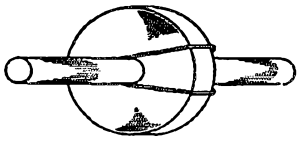


Fig. 1 — Homemade bug weight used by W6KIR.

hardens and then use it as a pilot for a 1/8-inch metal drill. Drill straight through the solder and then remove same from the block. After the new weight has been positioned on the bug shaft, it may be secured with an elastic band as shown in Fig. 1. — *Ralph W. Stewart, W6KIR*

C-BIAS SUPPLY USING VOLTAGE REGULATOR TUBES IN PARALLEL

ANYONE attempting to construct a regulated power supply using VR tubes in parallel usually finds a problem on hand. This is true even though the circuit employs equalizing resistors intended to make parallel tube operation possible. Sometimes, by careful tube matching, it is possible to make a pair of tubes fire, but an attempt to ignite three or more tubes ordinarily spells trouble. The difficulty encountered is that as soon as one tube ignites, the voltage across the other regulators is instantly dropped below the firing point and these latter tubes just cannot fire.

An investigation of this subject came about when the need for a bias supply arose. The supply requirements were −75 volts with key up and −200 volts at approximately 200 ma. (amplifier grid current) with key down. Inasmuch as the supply was to be used with a kilowatt final, it was important that it be foolproof. Naturally, the standard regulator circuits were given a whirl first. Supply voltages up to 400 volts were used, and both gradual and shock excitation of three VR tubes were tried. In all cases, it was impossible to depend on sure-fire operation of the pack.

The remedy, once arrived at, is simple. Three 0A3s were hooked up as shown in Fig. 2, with the circuit broken up into three resistive paths. R_1, R_2 and R_3 are the series resistors for the individual VR tubes and each regulator acts independently of the other two. The normal grid-leak resistor is replaced with three separate units, R_4, R_5 and R_6, of the proper resistance to give the desired voltage drop (125 volts in this case). Naturally, the reliability of the whole circuit is improved because of the divided responsibility among the several components.

Resistors R_1, R_2 and R_3 are selected to maintain 5-ma. current per VR tube, or a 15-ma. total. When keying 100-ma. grid current through these tubes, it is interesting that the 15-ma. supply current remains unchanged. This makes relay interlocking for the bias pack a simple matter. As shown in the diagram, if a relay that operates at 12 ma. is inserted in series with the supply output lead (right after the filter), it can be used to activate the high-voltage supply.

Incidentally, do not attempt to use a 130-volt transformer and a dry rectifier in this type of pack. Use a full-wave vacuum tube such as a Type 80 or 5Y3, and a filter output voltage around 220–250 volts. Otherwise, there will be a current reversal through the dry rectifier, or variation in supply current which interferes with relay action. — *Donald F. Alexander, W8DMN*

(Continued on page 146)

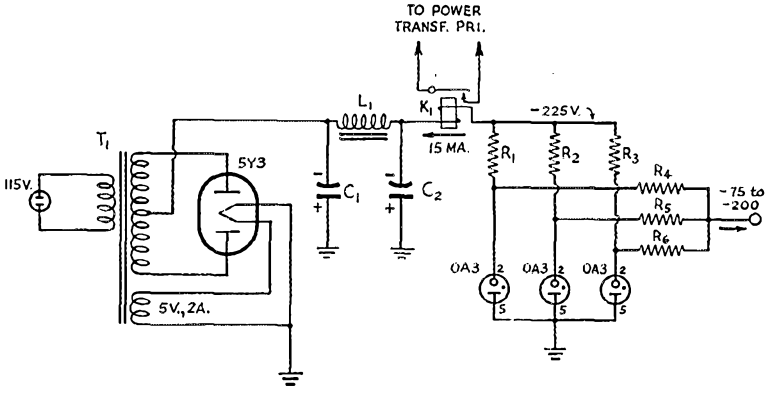
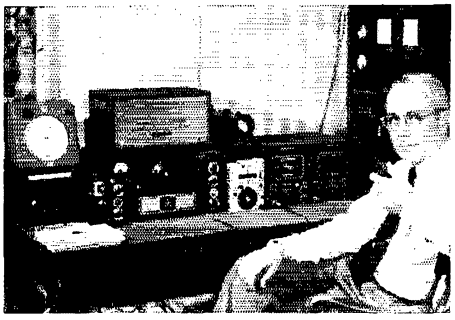


Fig. 2 — Circuit diagram of the regulated C-bias supply.
C_1, C_2 — 20-μf. 450-volt electrolytic.
R_1, R_2, R_3 — 27,000 ohms, 2 watts.
R_4, R_5, R_6 — 4000 ohms, 5 watts.
L_1 — 20-hy. 15-ma. filter choke.
K_1 — Control relay with 50-ohm coil (Sigma model 3A).
T_1 — Power transformer to deliver approximately 225 volts at filter output.

He Makes What We Hams Use



RICHARD M. PURINTON, W9SZ
American Phenolic Corporation

AN active ham who qualifies as an old-timer and who has always been one of the first to try something new, Dick helped develop the screen-grid pentode, Twin-Lead and the folded dipole. His co-authored *QST* article in the August, 1934, issue described a transmitter using the revolutionary RK20 tube; the next one in June, 1935, told how to build a rig for the cliff-dwelling hams who had d.c. only; in *QST* for June, 1947, his comparison among the many types of feed lines then in use appeared. Dick was first licensed, in 1923, as 9CXT and the following thirty years saw him operating under five different calls, the present W9SZ being issued in 1946. He was one of the pioneers on 20-meter 'phone and was president of the Hudson Radio Phone Association for several years. Although it's been mike more than key for quite a while and although right now it's s.s.b. almost exclusively, W9SZ can also be found on 20 or 80 c.w. On 'phone he's always glad to have a rag-chew with the a.m. boys, while of course he's particularly interested in QSOs with any of the rapidly growing flock of Donald Ducks.

Quist Quiz

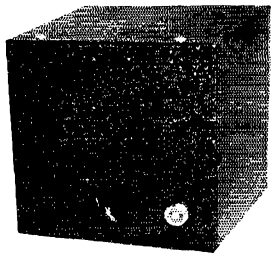
Working on the thesis that "if one is good, two are better and three are superb," our friend A is building a 2-meter converter with three r.f. stages ahead of the mixer, to get the best possible noise figure from the unit. His friend B tells him that the three r.f. stages are a waste of time, that he shouldn't need any more than one. Who has the right slant?

(Please turn to page 134 for the answer)

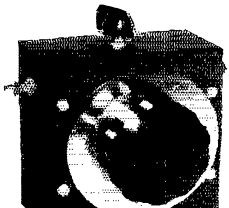
New Apparatus

The X-4 S.S.B. Exciter

Although mobile s.s.b. stations are quite rare these days, it may not be too long before that situation is changed. The new X-4 S.S.B. Exciter is built in a 6 by 6 by 6-inch cabinet and delivers about 10 watts peak power in the 75-meter 'phone band. A 6SQ7 speech amplifier is followed by a 6SA7 crystal oscillator and audio mixer, which feeds into a crystal sideband filter of the same type and performance as is used in the SS-75 s.s.b. exciter. The s.s.b. signal is then heterodyned into the 75-meter band through a 6SA7 second mixer, and a 6F6 output stage feeds the antenna or following amplifier. The audio gain of the unit is sufficient for use with a crystal microphone of −50 db. output level or higher, so there is no need to struggle along with "carbon-mike" quality. The power-supply requirements are 6.3 volts at 1.6 amperes and 200–300 volts d.c. at 80 ma. The peak power of 10 watts (obtainable with the highest plate voltage) is sufficient to drive practically any of the high-power triodes or tetrodes under Class AB_1 or AB_2 conditions.



As a basic unit, the X-4 can be used with crystal-controlled output. For VFO operation, the X-4 VFO unit is available. This is a tuned circuit that converts the oscillator portion of the 6SA7 second mixer of the exciter into a Clapp-circuit oscillator, and the 3.6- to 4.0-Mc. output range is covered in 50-kc. steps. The cabinet measures 4 by 4 by 2 inches and the unit requires no power — it plugs into the back of the exciter through an 18-inch (or longer) length of twin-coax cable. The rugged mechanical construction of the VFO makes it suitable for mobile use, and its tuning rate is slow enough to insure ease of operation.



Other companion units in the line include the X-4 Voice Control Unit, for incorporating complete voice-controlled break-in, the X-4 Mixer for heterodyning the 75-meter output of the exciter to 7 or 14 Mc., and the X-4 Power Supply for powering all of the units and supplying −45 volts for bias and muting.

The X-4 S.S.B. Exciter is priced at $69.50 wired and tested, and $49.50 in kit form. The X-4 VFO is $24.50, wired and tested. The X-4 Exciter and accessories are products of Electronic Engineering Co., Wabash, Ind. — *B. G.*

BY ELEANOR WILSON,* W1QON

YLRL 14th Anniversary Party

CONTEST PERIODS

'Phone —
Starts Saturday, Dec. 5th, at 12 noon EST.
Ends Sunday, Dec. 6th, at 12 midnight EST.
C.W. —
Starts Saturday, Dec. 12th, at 12 noon EST.
Ends Sunday, Dec. 13th, at 12 midnight EST.
Operate no more than 20 hours on 'phone and/or 20 hours on c.w.

W2OWL, Ruth, YLRL Vice-President, and her Contest Committee (W1FTJ and W4SGD) have decided upon several modifications in the Anniversary Party rules for this year. Note them well, for they should make for a bigger and better contest than ever before. Summarized briefly, the modifications are:

1) *all* Yls, whether YLRL members or not, are invited to participate for credit;

2) the number of operating hours is limited;

3) extra credit to be allowed for low-powered stations; and

4) the same YL may be worked on more than one band for additional credit.

Incidentally, YLs interested in information concerning the YLRL are invited to write Miriam Blackburn, W3UUG, YLRL Secretary-Treasurer, Box 2, Ingomar, Pennsylvania.

Read on for complete Party rules.

Name:_____ QTH:_____ 'Phone or C.W._____
Call Sign:_____
Date:_____

Time		Station Worked	QSO No.		RS-RST	Freq.	State	Operating Time
From	To		Sent	Rec.				

Suggested YLRL Party entry form.

Frequencies: All bands may be used. Cross-band operation is permitted, but only 'phone-to-'phone and c.w.-to-c.w.

Eligibility: This contest is open to all licensed YL or XYL operators throughout the world (*not* restricted to YLRL members). Contacts with OMs do not count — the YL-OM Contest will be held at a later date.

Procedure: Call "CQ YLRL."

Exchange: QSO number; RS or RST report; name of state, U. S. possession, VE call area, or country.

Scoring: a) 5 points for each contact. Same YL may be worked on other bands for additional credit. *b*) Add number of points and then multiply by number of different states, U. S. possessions, VE call areas and countries worked. (Maryland and District of Columbia count as one state.) *c*) All 'phone contestants running 150 or less watts input *at all times* may then multiply the final score by 1.5. All c.w. contestants running 150 or less watts input *at all times* may then multiply the final score by 1.25.

Awards: A cup will be awarded the highest-scoring entry in each category — 'phone and c.w. These cups are awarded on a yearly basis. Any operator winning the same cup three times gains permanent possession of it. Second and third place awards will be donated. Certificates will be awarded to the high scorers for 'phone and c.w. in each U. S. call area and in each country.

Logs: Copies of all logs must be postmarked not later than Dec. 31, 1953; to be sent directly to Ruth B. Siegelman, W2OWL, Vice-President, YLRL, 1414 Wythe Place, Bronx 52, New York. (When submitting copies of logs, please list 'phone contacts and c.w. contacts separately.)

YLRL Nets

Here is information on the YLRL Nets revised and brought up-to-date as of October, 1953, by YLRL Vice-President W2OWL. All nets welcome new members to call in at any time.

'PHONE

Freq. (kc.)	*Day*	*Time*	*NCS*
3900	Wednesday	7:00 A.M. EST	W1VOS
3900	Wednesday	8:00 A.M. EST	W8HLF
3900	Wednesday	9:30 A.M. EST	W8ATB
3900	Monday	3:00 P.M.PST	W7HHH (W7SBS alt.)
3915	Wednesday	9:00 A.M. PST	W6PJF
14,240	Thursday	2:00 P.M. EST	W6EHA
28,900	First Tuesday of each month, at 9:00 P.M. EST (QRMary Net-Round Table)		

C.W.

3610	Wednesday	9:00 P.M. EST	W9JTX
7034	Tuesday	1:30 P.M. PST	W7ROA (W7RLH alt.)

YLs interested in forming nets other than those listed are invited to write W2OWL.

Keeping Up With the Girls

OM W2SJV, reëlected SCM of Western New York for a second term, appointed W2BTB, Jeanne, as his Assistant. . . . W6CEE, Vada, is NCS for a new 75-meter 'phone net which meets Monday at 2:00 P.M. PST, on 3885 kc. . . . The new call of ex-KL7AWL is W3WPP. "Carm" is now in Wash., D. C. . . . W4JCR, Anita, writes that "Floridian prospective YL and OM hams and 'graduates' of the code class of W4TDK, Naomi, have voted her orchids for her excellent job in creating and maintaining an interest in obtaining their licenses." . . . W5SPV, Pat, and W5SYL, Iva, are forming a YL club in the Dallas area. . . . KN2DSL, Merceda Anna, age eleven, is a new YL in Bordentown, N. J. . . . Fourteen-year-old K2CLC, Barbara, now has

*YL Editor, *QST*. Please send all contributions to W1QON's home address: 318 Fisher St., Walpole, Mass.

♦

At Chicago on September 26th the LARKs (Ladies Amateur Radio Klub) had their first annual installation dinner. W9SJR, Bernice, was installed as President; W9IKS, Edna, Secretary; and W9LOY, Cris, Board Member. W9MYQ, Vice-President, was not present. YLRL President W1BCU was guest of honor. Standing, *l. to r.*: W9BCA, Helen; W9YWH, Evelyn; W9WOI, Jo; W9BCB, Helene; W9KQC, Virginia; "YL-in-waiting," Doris; W9YBC, Gloria; and W9SYX, Peggy. Seated: W9IKS, Edna; W9LOY, Cris; W1BCU, Peg; W9SJR, Bernice; and ham-soon-to-be, Stella.

♦

her Technician Class license, and another 14-year-old, KN2ECD, Nancy, of Brooklyn, would like to meet some of the W2 YLs who work 2 meters. . . . W4LAS, Mabel, tells of a new YL in Puerto Rico. KP4WI, Millie, is with her OM in the USNAS at Roosevelt Roads and is active on 20. . . . WØRAW, Bertha, is now operating "portable-five" from Arcadia, Texas. . . . W3TYC, Miriam, is spending all of her spare time assembling a Heathkit AT-1 transmitter. . . . YLs who attended the Washington Hamfest in October were W3s AKB CDQ LSX MSU OQF QBG RZD RXJ SLS TMH UXU, WN3VHF, WN3WWN and WN4ZBR. . . . W3NNS, Annabel, received a 75A-3 from her OM for her birthday. . . . WØERR of Denver is on 40 and 10 regularly. Ann writes that two other YLs active in her city are WØJGU, Edna, and WØMYL, Florence. . . . W5RTT, Virginia, and W5TTU, Pat, are active on 75; WØCXC, Mary Jo, is regularly on 40; and W5UXW, Opal, is on 10. . . . K2ESO is the new call of ex-KH6AAO, Lee. . . . W8ATB, Esther, was a guest at the season's first meeting of the N. Y. C. YLRL Club. Esther spoke about the Flint tornado and the part fellow hams and she played in it. Esther and her OM, W8QBO, enjoyed visiting a number of YLs at their homes during their trip east in September. . . . A record number of YLs attended the N. H. ARRL Convention at Concord on Sept. 13th. W1FTJ, Dot, Convention Vice-Chairman, presented each of the girls with a ceramic tile souvenir of New Hampshire. W1BCU and W1OAK, YLRL President and First District Chairman, respectively conducted the YL and YLRL meetings. Those YLs in attendance were W1s BCU FOF FTJ MDV OAK OIR OME QJX QON RLQ RYJ SVN TRE UBM UET UFM ULF UKR UZR VFK VOS VVS VYH VZD WIT WOY WTQ YFV YPG YYM YYU ZEJ, WN1WVT, W2KYF, W4AVA and W8ATB. . . . W6EHA, Gen; W6JMS, Lucille; and W6WRT, Ruby, report a grand time attending the South Western Division Convention at Los Angeles in October. Most of the main trophies went to YLs, with the big one, an HT-20 and SX-71, going to W5RZJ; a complete mobile station to W6LBO; a Pfaff sewing machine to W6PPY; and a $50.00 credit for an antenna to W6JCA. YLs who enjoyed the various festivities of the Convention were: W5RZJ, W6s CEE CQV DQD DXI EHA GAI GKJ JCA JMC JZA KER KOY KYZ LBO LMQ MFP NLM OBZ PCO PJU PPY QGX QLM QOG QYL TDL UHA WRT WSV, KN6CAL, W8HPO/6 and WN8MHE.

—•••—

The XYL of W3SFA and mother of three young jr. ops., Loreli Johnston, YLRL Chairman of the Third District, received her Novice ticket in 1951 and her General Class license in 1952. She holds an RCC, CPC for 20 w.p.m., is a CDS for North Pittsburgh and a member of various nets, including MARS. Operating 80 and 40 c.w. and 10 'phone, she particularly enjoys skeds with YLs and beginners in the Novice bands.

♦

Nine YLs who enjoyed a variety of activities at the Eastern Canada ARRL Convention in Montreal, September 19th, are (l. to r.) VE2RK, Therese; VE2AOB, Stella; VE2CA, Phyllis; VE2NJ, Nancy; W1ZCS, Marie, of ARRL Hq.; K2DRY, Emily; K2CBS, Ida; VE2AKK, Betty; and VE2HI, Ethel.

♦

How Christmas Came to S. McSquegg

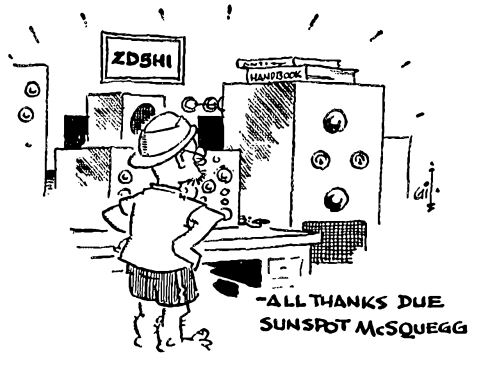
Ubiquitous Was the Word for Kilroy

BY ROD NEWKIRK,* W1VMW

YES, it was more than enough to drive a self-respecting DX man to tears. Sunspot McSquegg, our club's hottest propagation prognosticator, was mad enough to eat the poly off his ethylene. You see, Sunspot had finally gotten his fill of Earlybird Kilroy, the "sleepless wonder" of our gang.

No matter what the boys would work, when they casually mentioned it at a meeting Earlybird would reach into his vest pocket to produce the perfect squelch — a bona fide QSL from whomever the subject of conversation might be. Or, if that weren't possible, Earlybird would knock the ashes off his cigar with a flourish and remark, "Oh, *you* got 'im, too!"

Moreover, DX was just *one* of Kilroy's fields of victorious endeavor. Take the annual bargain sale at Gimple's Radio Supply, for instance. By the time the rest of the club got downtown to the counters, Earlybird was already on the way home with his station wagon full of 27-kc. i.f. strips,



surplus high-torque radar rotators, et al. The stuff he left behind for us wouldn't have looked respectable in a brand-new Novice's junk box.

Sure, we could deal with Kilroy for the good items he picked up, but brother, the *bargain* sale was over. And under all such triumphant circumstances the guy was insufferable. His overbearing air of omnipotence was exceeded only by the overwhelming stench of his cigars.

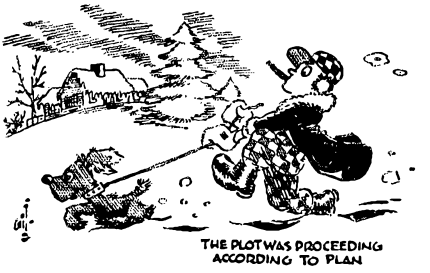
But when Kilroy put the damper on McSquegg's 7-Mc. AC5 contact it was the last straw. Sunspot determined to do something about the situation and dug into the *Call Book* for the rarest listing he could find. He settled on ZD5HI, whom he was positive had never been active, and began writing letters. Letters and *more* letters.

Subsequently, Sunspot sent the ZD5 a high-priced 14-Mc. rock. He sent him a *Handbook*. He sent him a new rig and a hot preselector. He sent him this. He sent him that. As an added token of their friendship, McSquegg even shipped the fellow a complete library on the subject of single sideband. Verily, inside of two months ZD5HI must have accumulated the paradise station of the Indian Ocean, all thanks due Sunspot McSquegg.

McSquegg at length approached the point of his correspondence, figuring that ZD5HI ought to be about ready to fire up and hit the air. In good time the stage was set; ZD5HI wrote back that he'd be looking for Sunspot at a prearranged time — Christmas morning — on a 20-meter 'phone frequency that even Earlybird Kilroy never bothered to tune. (McSquegg knew for a fact that the only 'phone gear Earlybird currently had available was QRP 160-meter stuff.)

Our hero had the propagation aspects all figured, too, for that was his forte. And not only was the sked a sure thing but it was timed shrewdly to coincide with archrival Earlybird's inevitable daily dog-walk. Sunspot McSquegg visualized a most merry Christmas — times ten! And, brother, wait until he cornered Kilroy soon thereafter!

The fateful Christmas morn arrived. Sunspot jumped out of bed before the kids, humming a pleasant Hit Parade tune — "Mine, All Mine" — and rubbed his hands. A bar of "Good King Wenceslaus" and zero hour was at hand. The 866s cast an intermittent bluish glow in the



dawn's dim light; a few moments later he was working ZD5HI c.w.-to-'phone. *Eureka!*

A glance out the shack window revealed that the plot was proceeding according to plan.

(Continued on page 152)

*DX Editor, QST.

• On the TVI Front —

U.H.F. "Strips" — A Problem for the V.H.F. Man

The evils of the double-conversion strip method of obtaining u.h.f. TV reception were outlined editorially in November *QST*.[1] The steps ARRL has taken to neutralize the wave of TVI complaints that has resulted from the considerable sale of these strips were detailed in "Happenings of the Month" in the same issue.[2] If you have any present or future interest in v.h.f., a careful reading of the above references is a must. And if you want to be in a position to render amateur radio a service, and an important one, you'll need to know the principal facts of this newest TVI threat, whether you ever expect to work on 2 or not.

We first saw this dark cloud on the 2-meter horizon last spring, when ominous stories of widespread TVI began to come from the region around Peoria, Ill., where a station had just gone on the air on Channel 43. This was an area where v.h.f. TV was none too good, so there was a rush to buy anything that promised u.h.f. reception. The quickest and least expensive approach was the insertion of strips for u.h.f. in receivers that use a well-known make of turret tuner. These double-conversion deals don't equal any of the better converters, or approach them, but they do work if you have a strong TV signal.

The catch is, however, that in strips where double conversion is involved the first intermediate frequency falls in and around the 2-meter band. Inadequate front-end selectivity is inherent in this particular conversion method, so if any signals are on the air near the intermediate frequency in question, they ride through with very annoying strength. It's not only 2-meter hams; here in Hartford Channel 30 strips are useless because the local police insist on continuing to talk to their cruisers.

How bad is the problem for 2-meter hams? Plenty bad. Ask any 2-meter man around Peoria, or any of the other areas where u.h.f. stations have come on the air. We ran a few checks in the ARRL Lab to confirm these reports before embarking on our anti-strip campaign. Here's how it shapes up:

The 2-meter rig normally used at W1HDQ was set up for operation in the Lab. A receiver was equipped with strips for Channel 43, and our u.h.f. signal generator was modulated with local video to simulate a TV signal on that channel. The receiver was also operated with several representative u.h.f. converters, to check the transmitter for freedom from spurious emissions in the channel.

With any converter tried, the 2-meter rig could be run at 1 kw. input with no interference whatever. This was with the TV and 2-meter antennas only a few feet apart. Going over to strip reception, the screen was completely blanked with only the driver running, and no antenna. The driver stage was cut off, and still no picture. A 5763 push-pull tripler was furnishing more than enough r.f., with no antenna, to obliterate reception. So the Powerstat controlling the 5763 plate voltage was backed off. At 50 volts on the plates, and 5 ma. plate current, the picture began to appear, but so long as any plate voltage at all was applied there was some interference! Is it any wonder that strip-equipped sets are getting interference from 2-meter hams 15 or 20 miles away, while next-door neighbors with u.h.f. converters experience no trouble at all?

What to do about it? Very little can be done to correct the trouble at the receiver. Where the interference is mild, as at considerable distance, the usual stub or trap treatment to block out the 2-meter fundamental will help, but if the strip-equipped set is close by there is no solution but to throw the strips out and go over to a conventional converter. That's where we come in — all of us. The double-conversion strip method is a makeshift that should enjoy no protection whatever. The innocent purchaser of such a conversion is going to have interference from some source, anyway, if he is in an area where there is appreciable use of the v.h.f. spectrum. Police, fire, aircraft — somebody, if not a ham, is going to be breaking up his u.h.f. reception.

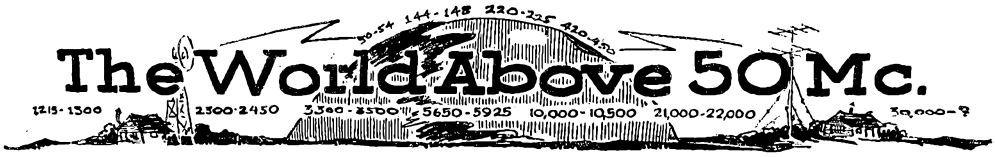
Here is a place for "Dallas Plan"[3] action, if there ever was a place. The answer to the impending trouble is education of the manufacturer, the TV serviceman, and the prospective owner. There are plenty of good converters for u.h.f. TV reception. It is the job of every one of us to sell the converter approach. We will make friends in place of enemies if we use every opportunity we have to make the nature of the problem and its solution clear to all concerned. There certainly is no reason for v.h.f. men to be plagued with it indefinitely.

— *E. P. T.*

[1] "It Seems to Us," November, 1953, *QST*, page 9.
[2] "Channel Strip TVI," November, 1953, *QST*, page 45.
[3] "The Dallas Plan for TVI," Skelton & Shook, June, 1951, *QST*, page 26.

V.H.F. PARTY RESULTS TO APPEAR NEXT MONTH

Despite the fact that this issue of *QST* is the largest that has appeared in many years, space limitations have made it necessary to postpone publication of the September V.H.F. Party results until January.



CONDUCTED BY E. P. TILTON,* W1HDQ

In a recent lunch-time bull session the talk turned to ham operating incentives. One of the group had just completed a 2-letter-call WAS, and he was justly proud of it. It had taken a lot of listening and quite a bit of operating to turn the trick, and it had resulted in many pleasant rag-chews in the process. Two others of the party were in a hot private race for the first WAS with Novices only. Still another was sweating out an 80-meter WAC. Good aims, both of these; the boys will have a lot of fun achieving them. We have no quarrel here.

But we think that these "manufactured" incentives highlight a fundamental difference between hamming on the lower frequencies and in the world above 50 Mc. We've not run out of natural incentives, and we're not likely to in a hurry.

WAS on 50 Mc.? Ask anyone who's made it, or is now trying, if it is any pushover. Reliable communication over a 400-mile haul on 144 Mc.? This takes more than patience, a commercial rig and a 100-foot wire. Development of activity on 220 or 420 Mc.? Here's the chance to break into a wide-open field; to experience the same thrills that another generation found in moving below 200 meters. There's also the opportunity to help newcomers get started in ham radio, and to head them into a kind of hamming where they still have opportunities to make outstanding contributions to the art.

Far from running out of the fundamental drives that made ham radio what it is today, we have no more than scratched the surface of the possibilities of our higher bands. If you've found yourself turning to pleasant but somewhat artificial stimuli like the ones we've mentioned above, perhaps you need to take a look at this expanding world. You'll find the most interested hams you've come across in a long time. They're going places — and they're having fun!

Here and There on the V.H.F. Bands

This section last month led off with a paragraph about the isolation of VE1QZ, Dartmouth, N. S., on 144 Mc. At least 350 miles from the nearest regular activity, he had made only a few VE1 contacts since 1949, and only a handful of DX QSOs since 1947, when he first appeared on 144 Mc. All during the fall he'd been running automatic c.w. on 144.45 Mc., in the hope of finding out what his chances were of working out more often, but a heard report now and then was all he had to show for it.

Oscar decided to continue the automatic transmissions through October, and it's just as well that he did, for the best propagation conditions of the fall season came along early in the month. On the evening of the 3rd, the automatic began to be heard by 2-meter operators down the Atlantic Seaboard; among them W4AO, Falls Church, Va. That signal rolling in from a distance of about 800 miles was too much for Ross to take quietly, so he placed a telephone call to VE1QZ at 2155 EST. Contact was not immediately established, but the call started Oscar off on a series of contacts, with W2UK, W1HDQ, W1BCN, W1ARC, W1MNF, W1DJK, and eventually with W4AO, at 0114 the following morning. W3GKP, W1PBJ, W1KCS, W3AIR, W1CLH, W3JZY and W1RFU were then worked, in that order, with several repeat contacts along the line. By this time it was 6 A.M. Halifax time, so Oscar finally quit, with the band still open. Leaving the automatic on to keep the Ws on edge, he went off for a few hours of sleep, while the signal continued to pound through at distances up to 800 miles or so, for several more hours.

A few nights later VE1QZ staged a repeat performance, getting down as far as the middle of the second call area, but has not been heard from again, at this writing.

* V.H.F Editor, *QST*.

WØZJB.....48	W5VY.....48	W8OJN.....39
WØBJV.....48	W5MJD.....47	W8LPD.....37
WØCJS.....48	W5GNQ.....46	
W5AJG.....48	W5ONS.....45	W9ZHB.....48
W9ZHL.....48	W5JTI.....44	W9QUV.....48
W9OCA.....48	W5ML.....44	W9HGE.....47
W6OB.....48	W5JLY.....43	W9PK.....47
WØINI.....48	W5JME.....43	W9VZP.....47
W1HDQ.....48	W5SFW.....43	W9RQM.....47
	W5VV.....42	W9ALU.....47
W1CLS.....46	W5FAL.....41	W9QKM.....46
W1CGY.....46	W5FSC.....41	W9UIA.....45
W1LLL.....46	W5HLD.....40	W9UNS.....45
W1LSN.....44	W5HEZ.....38	
W1HMS.....43	W5LIU.....37	WØQIN.....47
W1DJ.....41	W5FXN.....37	WØDZM.....47
		WØNFM.....47
W2AMJ.....46	W6WNN.....48	WØTKX.....47
W2MEU.....46	W6ANN.....45	WØKYF.....47
W2RLV.....45	W6TMI.....45	WØHVW.....45
W2IDZ.....45	W6IWS.....41	WØMVG.....44
W2FHJ.....44	W6OVK.....40	WØJOL.....44
W2GYV.....40	W6GCG.....35	WØTJF.....44
W2QVH.....38	W6BWG.....29	WØWKB.....43
W2ZUW.....35		WØJHS.....43
	W7HEA.....47	WØPKD.....43
W3OJU.....46	W7ERA.....47	WØIPI.....41
W3NKM.....41	W7BQX.....47	
W3MQU.....39	W7FDJ.....46	VE3ANY....42
W3RUE.....37	W7DYD.....45	VE3AET....41
W3OTC.....37	W7JRG.....44	VE1QZ.....34
W3FPH.....35	W7BOC.....42	VE1QY.....31
	W7JPA.....42	XE1GE.....25
W4FBH.....46	W7FIV.....41	CO6WW.....21
W4EQM.....44	W7CAM.....40	
W4QN.....44	W7ACD.....40	Calls in **boldface** are holders of special 50-Mc. WAS certificates listed in order of award numbers. Others are based on unverified reports.
W4FWH.....42		
W4CPZ.....42	W8NSS.....46	
W4FLW.....42	W8NQD.....45	
W4OXC.....41	W8UZ.....45	
W4MS.....40	W8CMS.....43	
W4FNR.....39	W8YLS.....41	
W4IUJ.....38	W8RFW.....41	
W4BEN.....35	W8BFQ.....42	

This was only one incident in a long string of exciting days and nights of v.h.f. DX in October. The "annual opening" that we've come to expect each year in September failed to materialize this year, but October did right well by us. With the weather map showing a continuous succession of slow-moving "highs," most of the country was favored with delightful fall weather and an almost constant inversion. Conditions were good so long that we were tempted to feel that some magic improvement in our equipment or methods had suddenly extended our reliable working ranges on 144 Mc. and higher bands.

Example: W4TLA, Rocky Mount, N. C., using a 522 at 18 watts input, feeding a 16-element array, was working stations all the way up the Atlantic Seaboard, between Sept. 30th and October 3rd. On the 2nd, in two hours beginning at 2135 EST, Warren worked 10 New Jersey stations, and one each in New York, Pennsylvania, Maryland and Virginia. The following night he worked into Connecticut, as well as many points nearer. The only contacts made previously over these paths from North Carolina were made last fall by W4CVQ, who was running close to a kilowatt!

Improved conditions were helping things along on the Kansas-Oklahoma-Texas circuit, too. WØZJB, Wichita, Kansas, reports in his V.H.F. Newsletter that business is booming on their 0715, 0930 and 2215 (CST) skeds, and fellows who have not been on 2 for a year or more are firing up again. If you live within working distance of these fellows, you can get copies of Vince's newsy mimeograph by sending stamped self-addressed envelopes to WØZJB. It contains all the latest gossip, fresh as only such a sheet can be, prepared in the inimitable Dawson manner. (Send my cut of the profits to the Salvation Army, Vince.) What was probably the first Oklahoma-to-Iowa 2-meter contact was made on the morning of Sept. 28th between W5HGH at Buffalo, Okla., and WØEMS, Adair, Iowa.

W8BFQ, West Richfield, Ohio (the change from Everett is a post-office technicality) found things very good in the direction of Chicago on both 144 and 220 in mid-October. Following a crossband duplex QSO with W9EQC on the 13th, Margaret stayed on 220 and worked W9DDG, Sheboygan, Wis., a distance of about 360 miles. W9REM and W9OVL were also worked on 220, and W9OJV was heard. W9DDG runs 30 watts to an 832A, crystal-controlled. His antenna is a 30-element array 65 feet above ground. He has also worked W9OVL and W9OJV, Hammond, Ind., 200 miles.

W8BFQ has also been doing well on 432 Mc., one of her more recent contacts being with W8DX, Detroit, a distance of about 125 miles. This was Margaret's sixth state worked 2-way on 432 Mc.

W5CVW, Ft. Worth assistant EC for v.h.f., announces the formation of the West Gulf Emergency Net. Already enrolled are 22 members in Oklahoma and Texas. Roll call is held each Tuesday at 1900, with either W5CVW or W5HD as net control. The frequency is 144.6 Mc. The net closes down at 1920 to allow the NCS to report in to the Ft. Worth Emergency Net on 29,640 kc. Rag-chewing sessions follow, and with members in the Ft. Worth and Dallas area, plus Hamilton, 100 miles south, Palmer, 42 miles east, Texarkana, 178 miles east, and Ardmore, Okla., 100 miles north, the operation of the net is doing well for 2-meter activity generally. W5CVW passes along the additional information that W5LFH, Albuquerque, N. Mex., is on daily at 0705 and 0715, with 400 watts on 144.12 Mc.

Been wondering about that 220-Mc. receiver described in October *QST*? Reports on it are beginning to come in, and one from W5RFF, Albuquerque, N. Mex., is typical. Tom built the receiver in 2½ hours construction time, and it worked at once. Signal generator checks show complete quieting at 10 microvolts input, and a readable signal at 3 microvolts. These approximate results obtained with the original. Such a receiver won't drag in the weakest ones, but it's good enough to have some fun on 220, and in building it and getting it going, the beginner, in particular, will gain invaluable experience. W5RFF thinks that there is a need for similar gear for 144 and 420 Mc.

Morning and evening tests on 144 Mc. continue on the 950-mile path between W4HHK and W2s UK, AZL and NLY. The big rhombic at W4HHK is not yet up, as we write, but it is in the works. On the morning of Oct. 6th, W4HHK recorded almost the entire text of W2UK's tape transmission, of more than 30 seconds' duration. Fragments of the signal are heard on nearly every try. W3GKP is monitoring the transmissions from W4HHK, with varying degrees of success. W2AZL copied "W2UK W2UK de W4HHK r r r bk" on the morning of Sept. 26th. The signals come through just enough to keep all hands trying, feeling that a few more decibels will put them into more-or-less solid communication.

This optimism seems well founded, on the basis of recent experience at W1HDQ. Your conductor has kept daily schedules with W8BFQ, 450 miles, since Aug. 1st, with more

2-Meter Standings

	Call States	Areas	Miles
W1HDQ	18	6	850
W1IZY	16	6	750
W1RFU	15	7	1150
W1MNF	14	5	600
W1BCN	14	5	580
W1DJK	13	5	520
W1CTW	12	4	500
W1KLC	12	4	500
WN1YQI	12	4	420
W1OPI	12	4	420
W1MMN	10	5	520
W2UK	23	7	1075
W2NLY	22	7	1050
W2ORI	20	8	1000
W2AZL	20	7	1050
W2QED	18	7	1020
W2PAU	16	6	740
W2AMJ	14	5	550
W2QNZ	14	5	400
W2UTH	13	7	880
W2SFK	13	6	—
W2AOC	13	5	400
W2DFV	13	5	350
W2CET	13	5	405
W2DPB	12	5	500
W2FHJ	12	5	—
W3RUE	20	7	760
W3QKI	20	7	820
W3NKM	19	7	660
W3KWL	16	7	720
W3LNA	16	7	720
W3FPH	16	7	—
W3GKP	15	6	800
W3IBH	13	5	570
W4HHK	23	7	850
W4AO	20	7	950
W4JFV	18	7	830
W4MKJ	16	7	665
W4OXC	14	7	500
W4JHC	14	5	720
W4IKZ	13	5	720
W4JFU	13	5	720
W4CLY	12	5	720
W4OLK	12	5	720
W4FJ	12	5	700
W4UMF	13	5	600
W4WCB	9	4	650
W4UDQ	8	4	850
W4TLA	7	4	850
W5RCI	20	7	925
W5JTI	14	5	670
W5QNL	10	5	1400
W5CVW	10	5	1180
W5AJG	10	4	1260
W5MWW	9	4	570
W5ML	9	3	700
W5ABN	9	3	780
W5ERD	8	3	570
W5VX	7	4	—
W5VY	7	3	1200
W5FEK	7	2	580
W5ONS	7	2	950
W5FBT	6	2	500
W5IRP	6	2	410
W5FSC	6	2	500
W5DFU	5	2	275
W6ZL	3	3	1400
W6PJA	3	3	1390
W6BAZ	3	2	320
W6WSQ	2	2	1390
KG6AAV/6	2	2	275
W6NLZ	2	2	237
W6GCG	2	2	210
W6EXH	2	2	193
W6ZEM/6	1	1	415
W7LEE	3	2	240
W7YZU	3	2	240
W7JU	2	2	140
W7JUO	2	2	140
W7RAP	2	1	165
W8BFQ	24	8	775
W8WJC	23	7	775
W8WRN	20	8	670
W8WXV	19	8	1200
W8DX	19	7	675
W8BAX	19	7	655
W8UKS	18	7	720
W8RWW	17	7	630
W8EP	17	7	—
W8RMH	16	7	690
W8WSE	16	7	830
W9EHX	23	7	725
W9FVJ	22	8	850
W9EQC	21	8	820
W9BPV	20	7	1000
W9UCH	20	7	750
W9LF	19	—	—
W9WOK	17	6	600
W9ZHL	17	6	—
W9MBI	16	7	660
W9KLR	16	7	—
W9BOV	15	6	—
W9LEE	14	6	780
W9DDG	14	6	700
W9FAN	13	—	680
W9UIA	12	7	540
W9GTA	11	5	540
W9JBF	10	5	760
W9DSP	10	4	700
WØEMS	24	8	1175
WØGUD	22	7	1065
WØIHD	18	6	725
WØONQ	17	6	1090
WØINI	14	6	830
WØZJB	12	7	1097
WØOAC	12	5	725
WØWGZ	11	5	760
WØJHS	9	3	—
WØHXY	9	3	—
VE3AIB	20	8	890
VE3DIR	17	7	790
VE3BQN	14	7	790
VE3BPB	12	6	715
VE3AQG	11	7	800
VE1QY	11	4	900
VE3DER	10	6	800
VE2AOK	7	3	440

success than we anticipated. Raising the 16-element array at W1HDQ to 70 feet recently (from 50) has apparently helped remarkably. Several quite-solid c.w. QSOs were made between Oct. 14th and this writing, and a signal of sorts has been heard every morning. Near-solid communication has been established on a daily basis with W3QKI, Erie, Pa., 385 miles, and W2ORI, Lockport, N. Y., 320 miles. All three stations are worked over very rough terrain at the eastern end of the path. Results at these distances have been sufficiently good to indicate that a bigger antenna at W1HDQ would make possible two-way work with stations considerably farther west.

The most interesting thing about these signals is that they seem to be in there every day, with so little day-to-day variation that there is little point in giving signal reports. There is fading, but the degree of fading and the strength seem to have almost no relation to signal levels encountered on shorter paths. There have been no "openings" but no deadband conditions, either.

Aurora has shown up fairly often this fall, though most openings have been of a minor nature. Sharper observation, big antennas, low-noise receivers and more extensive use of c.w. may be making the difference. A habit of checking frequently with the antenna north will show up aurora much more often than most 2-meter operators realize. This happens most frequently in the northeastern part of the country, but stations above Latitude 40 in the Northwest should be able to get in the act more often than they do. General opinion now favors the use of high selectivity in aurora reception. With the signal broadened out as it is by the diffused reflection, you'd think that high selectivity would be harmful, but checks have shown marked improvement in weak-signal readability when the crystal filter is used in its medium positions. Forget the S-meter, cut off the a.v.c., back off the i.f. gain, and crank up the selectivity next time, and see if you don't dredge up some new weak ones out of the muddy background noise.

Don't be too sure that you have the beam in the best position, if you've aimed it in the general direction of north. Aurora can come from some odd directions, at times, and it may shift markedly and rapidly. At one time during the aurora of Sept. 18th, W8RWW found signals coming in with his array at about 45 degrees. Then, a little later, W4AO peaked up with the beam at 75 degrees, almost due east. W1s usually aim somewhat west of north, and at times the signals come in from as far around as northwest for western stations in the same latitude. You can miss a shot at VE1 by relying on this, however. They might be straight north, or even east of north, under the same conditions.

If you live in a place where you can't have an outside antenna, take heart from the work of W4UMF, Arlington, Va. Tom lives in an apartment, with only an attic space 12 by 14 feet and a maximum clearance at the middle of 6 feet in which to put up antennas. This is under a peaked roof, so the height slopes off to zero at the edges. In this Pandora's Box, W4UMF has a "Twin-Five" for 144 Mc., a rotating dipole for 50 Mc., plus antennas for TV and f.m. A Twin-Five in a space with a maximum vertical height of 6 feet? How? Easy — you mount the two 5-element Yagis side by side, one wavelength center to center. It works, too — Tom's signal during those Atlantic Seaboard openings in October was right up there with the other W4s. The remaining space, if any, in the attic, will soon be taken up by arrays for 220 and 420 Mc., which should give W4UMF the record for invisible antennas at one location.

The Northwest is enjoying something of a boom in 2-meter activity, according to W7PXB, Seattle. There are some 300 stations on the air, and there is considerable interest in attempting to work out beyond the normal confines of the mountains. Monday is 2-meter night, and schedules are kept in the hope of working into W6-land. It's less than 700 miles from Seattle to San Francisco, and we can't escape the feeling that this hop is not impossible. There are lots of mountains, but amazing things are happening over other mountainous paths, and we feel confident that high-power c.w. and the narrow-band receiving techniques that make the most of it, plus some big *horizontal* arrays, would turn the trick. Most of the western 2-meter work is being done with vertical antennas, which for our money is the hard way.

(*Continued on page 134*)

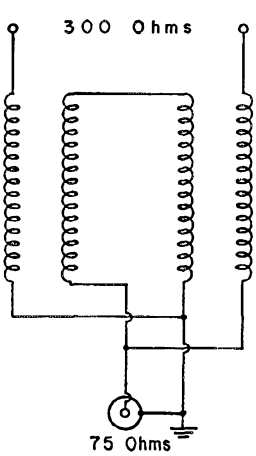
V.H.F. Balun — Pocket Size

Coax has many advantages, and its use in v.h.f. work is increasing all the time. It simplifies and improves antenna coupling circuits of v.h.f. converters, but what of the losses in a long run of transmission line? A good many of us still don't like what we see in the "Attenuation per 100 feet" column, so we hesitate to go all the way from the operating position to the antenna with coax. Result, the input circuits of our converters are draped with a variety of loops of coax to achieve optimum coupling between our balanced lines and our unbalanced antenna input circuits.

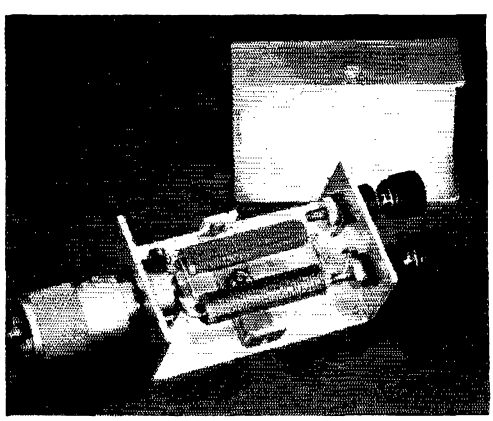
Pictured herewith is a neat little gadget that does away with the inconvenience and messiness of the coax balun in v.h.f. reception. It was made by Technical Director Grammer for ARRL Lab use, but hams who have seen it are unanimous in their expressions that it should be written up in *QST*, so here it is.

It is built around a pair of standard TV balun coils (also called an elevator transformer) and they lend themselves almost ideally to amateur v.h.f. receiving applications. Designed to cover 54 to 213 Mc., they work well in the 50-, 144- and 220-Mc. ham bands. Checks on the air and with a noise generator show no measurable difference between the balun assembly and drape-type baluns for each band made of coax.

The Grammer model is housed in a handmade aluminum box 1 by 1½ by 2½ inches in size. Two feed-through binding posts are mounted at one end of the case and a coaxial fitting at the other.



V.h.f. receiving balun. Coils are in series at one end; in parallel at the other.



I.A.R.U. News

QSL BUREAUS OF THE WORLD

For delivery of your QSLs to foreign amateurs, simply mail cards direct to the bureau of the proper country, as listed below (bold-face type indicates a recent change from previous listings). *Do not send foreign cards to A.R.R.L. headquarters except those for which no bureau is here listed.*

For service on incoming foreign cards, see list of domestic bureaus in most *QST*s (page 54 of Nov. *QST*) under the heading, "A.R.R.L. QSL Bureau."

Algeria: Via France
Argentina: R.C.A., Avenida Libertador General San Martin 1850, Buenos Aires
Australia: W.I.A., Box 2611W, G.P.O., Melbourne
Austria: Via ARRL
Austria: QSL Bureau (U. S. Occupation Forces), APO 168, % Postmaster, New York, N. Y.
Azores: Via Portugal
Bahamas: C. N. Albury, Telecommunications Dept., Nassau
Barbados: VP6PX, Wood Goddard, Bromley, Welches, Christ Ch., Barbados, British West Indies
Belgian Congo: P.O. Box 271, Leopoldville
Belgium: U.B.A., Postbox 634, Brussels
Bermuda: VP9D, James A. Mann, The Cut, St. Georges
Bolivia: R.C.B., Casilla 2111, La Paz
Brazil: L.A.B.R.E., Caixa Postal 2353, Rio de Janeiro
British Guiana: Desmond Yong, 22 Sussex St., Charlestown, Georgetown #16
British Honduras: D. Hunter, Box 178, Belize
Bulgaria: Box 830, Sofia
Burma: B.A.R.S., P.O. Box 376, Rangoon
Canton Island: Fred V. Carpenter, KB6AY, U.S.P.O. 06-50000, Canton Island, South Pacific
Ceylon: P.O. Box 907, Colombo
Chile: Radio Club de Chile, Box 761, Santiago
China: M. T. Young, P.O. Box 16, Taichung, Formosa
Colombia: L.C.R.A., P.O. Box 584, Bogotá
Cook Islands: Ray Holloway, P.O. Box 65, Rarotonga
Costa Rica: F. Gonzalez, Box 365, San Jose
Cuba: Radio Club de Cuba, QSL Bureau, Lealtad No. 660, Havana
Cyprus: MD7XP, P.O. Box 451, Nicosia
Czechoslovakia: C.A.V., P.O. Box 69, Prague I.
Denmark: E.D.R., Box 79, Copenhagen, K.
Dominica: VP2DC, Roseau
East Africa (VQ1, VQ3, VQ4, VQ5): P.O. Box 1313, Nairobi, Kenya Colony
Ecuador: Guayaquil Radio Club, Casilla 784, Guayaquil
Eire: I.R.T.S. QSL Bureau, % EI5Z, 23 Orwell Gardens, Rathgar, Dublin
Fiji: S. H. Mayne, VR2AS, Victoria Paraed, Suva
Finland: SRAL, Box 306, Helsinki
France: R.E.F., BP 26, Versailles (S & O)
Germany (DL2 calls only): QSL Bureau, % Posts & Telecommunications, Wahnerheide, B.A.O.R. 19
Germany (DL4 calls only): DL4 QSL Bureau, APO 757, % Postmaster, New York, N. Y.
Germany (DL5 calls only): Via France
Germany (other than above): D.A.R.C., Postbox 99, Munich 27
Gibraltar: E. D. Wills, ZB2I, 9 Naval Hospital Road
Great Britain (and British Empire): A. Milne, 29 Kechill Gardens, Hayes, Bromley, Kent
Greece: C. Tavaniotis, 17-A Bucharest St., Athens
Greenland: APO 858, % Postmaster, New York, N. Y.
Grenada: VP2GE, St. Georges
Guam: G.R.A.L., Box 145, Agana, Guam, Marianas Islands
Guantanamo Bay: KG4AD, Box 35Q, Navy 115, % FPO, New York, N. Y.
Guatemala: Manuel Gomez de Leon, P.O. Box 12, Guatemala City
Haiti: Roger Lanois, % R.C.A., P.O. Box A-153, Port-au-Prince
Hong Kong: Hong Kong Amateur Radio Transmitting Society, P.O. Box 541, Hong Kong
Hungary: H.S.R.L., Postbox 185, Budapest 4
Iceland: Islenzkir Radio Amatorar, P.O. Box 1080, Reykjavik
India: Amateur Radio Club, India, P.O. Box 6666, Bombay 20
Indonesia: P.A.R.I., P.O. Box 222, Surabaja, Java
Israel: I.A.R.C., P.O. Box 4099, Tel-Aviv
Italy: A.R.I., Via San Paolo 10, Milano
Jamaica: Thomas Meyers, 122 Tower St., Kingston
Japan (JA): **JARL, Box 377, Tokyo**
Japan (KA): F.E.A.R.L., APO 500, % Postmaster, San Francisco, Calif.
Kuwait: Doug Taylor, VT1AC, Box 54, Kuwait, Persian Gulf
Lebanon: RAL, B. P. 1202, Beyrouth
Libya: See Tripolitania
Luxembourg: G. Berger, 40 rue Trevires, Luxembourg
Macao: Via Hong Kong
Madeira: Alberto C. de Oliveira, CT3AA, Beco Chao da Loba, 4, Funchal
Malaya: **QSL Manager, P.O. Box 600, Penang**
Malta: R. F. Galea, 20, Collegiate Street, Birkirkara
Mauritius: V. de Robillard, Box 155, Port Louis
Mexico: L.M.R.E., Apartado Postal 907, Mexico, D.F.
Montserrat: VP2MY, Plymouth
Morocco: C. Grangier, Box 50, Casablanca
Morocco (Tangier International Zone only): EK1MD, Box 57, British Postoffice, Tangier
Mozambique: Liga dos Radio-Emissores, P.O. Box 812, Lourenco Marques
Netherlands: V.E.R.O.N., Postbox 400, Rotterdam
Netherlands Antilles (Aruba): **Postbox 80, San Nicolas, Aruba**
Netherlands Antilles (Curacao): **Postbox 383, Willemstad, Curacao**
Netherlands East Indies: Hr. C. Loze, PK1LZ, Burg. Kuhrweg, 47 Bandoeng, Java
New Zealand: N.Z.A.R.T., P.O. Box 489, Wellington C1
Nicaragua: L. B. Satres, Bolivar Ave., 106 Managua
Northern Rhodesia: N.R.A.R.S., P.O. Box 332, Kitwe
Norway: N.R.R.L., P.O. Box 898, Oslo
Pakistan: P.O. Box 416, Lahore
Panama, Republic of: L.P.R.A., P.O. Box 1616, Panama
Paraguay: R.C.P., P.O. Box 512, Asuncion
Peru: R.C.P., Box 538, Lima
Philippine Islands: Elpidio G. DeCastro, Philippine Amateur Radio Assn., **2046 Taft Ave., Pasay City**
Poland: Polski Zwizek Krotkofalowcow, P.O. Box 320, Warsaw
Portugal: R.E.P., Travessa Nova de S. Domingos, 34-1° Lisbon
Roumania: A.R.E.R., P.O. Box 95, Bucharest
Salvador: YS1O, Apartado 329, San Salvador
Siam (Thailand): Frank Speir (W6FUV), Saha Thai, 4th Mansion, Raja Damnoen Avenue, Bangkok, Thailand
Singapore: P.O. Box 176, Singapore, Malaya
South Africa: S.A.R.L., P.O. Box 3037, Capetown
Southern Rhodesia: R.S.S.R., Box 2377, Salisbury
Spain: U.R.E., P.O. Box 220, Madrid
St. Vincent: VP2SA, Kingstown
Sweden: S.S.A., Stockholm 4
Switzerland: U.S.K.A., Postbox 1203, St. Gallen
Syria: P.O. Box 35, Damascus
Trieste: MF2AA, Major M.H.R. Carragher, HQ V.G. Police
Trinidad: John A. Hoford, VP4TT, P.O. Box 554, Port-of-Spain
Tripolitania: Peter Keller, MT2DZ, P.O. Box 260, Tripoli
Uruguay: R.C.U., Casilla 37, Montevideo
U.S.S.R.: Central Radio Club, Postbox N-88, Moscow
Venezuela: R.C.V., P.O. Box 2285, Caracas
Virgin Islands: Richard Spenceley, Box 403, St. Thomas
Yugoslavia: SRJ, Postbox 48, Belgrade

How's DX?

CONDUCTED BY ROD NEWKIRK,* W1VMW

How:

"IARU News" of this *QST* contains an up-to-date listing of QSL bureaus of the world. Now all we've got to do is find some DX to work. That isn't always easy these sunspotless days.

And not only do we have to scrounge around in the noise level for DX that too often isn't there, but we have to watch our Ps and Qs in the line of prefixes. There still are several categories of foreign amateurs that W/Ks are forbidden by FCC to QSO and these should be kept in mind. They are

Austria (FKS8, MB9 and OE13 excepted), *French Indo-China* (including Cambodia, Laos and Viet-Nam), *Republic of Indonesia, Iran, Korea* and *Thailand.* Prefixes to be avoided, therefore, are OE (except OE13), FI8 (also 3W8 and XW8), PK (with certain PK6s and PK7s excepted), EP-EQ, HL and HS.

We've no space to go into the full story [1] right here — it's quite complex — but that's the way it stands. Several countries previously taboo are now okay. We're optimistic about the possibility of soon decreasing the number further. Meanwhile, we should be prudent.

What:

We'll lead off with *twenty meters* once more this month although the lower-frequency bands will probably hold the limelight for the next three or four moons to follow. The furor created by EA4BH & Co. signing EA9DD has finally quieted but the 14-Mc. band bears continuous watching for other pleasant (and often frustrating) surprises. W7QDJ raised two antennas, a vertical and a horizontal, and quickly worked JA8AQ (14,072), KAs 7PL (051), 8AB (065), HR1AA (008), KH6ASU/KM6 (080) and VP8AJ (020). Victor asserts that his horizontal wire has it all over the vertical for 20-meter DX with 75 watts . . . . FA9VN (070), GC2FZC (070) and OA4J (040) were bagged at W2EBV, while W2HSZ kept busy with JA1CO (075), KAØIJ (050), OQ5VN (105), SVØWE (025), ZDs 2S (050) and 4BN (080) . . . . The Oceania-Europe path opened solidly a few times of late to give KG6GX much action. DX catches at this multi-operator station include C3BF (060), JA1AH (120), SP3PK (096), VS1FF (120) and VU2RA (095) . . . . W3AXT really bore down in the DX department this year. Sam's trophies: CRs 4AJ, 6CS (038), DU1EC, EA8s BC BF BK, EAØAB (078 t8) FB8BE (048), FQ8s AF AS, HA5BD, HE9LAA, HZ1AB (060), I5LV (054–072 t8), IS1CXF, JAs 1AA 1AP 1AQ 1AR 1CB 1CR 2AT 2BX 3AW 4BB, KA2s AA DC KS, KR6 IN, LU5ZO, LZ1KPZ (095), OD5BH, OE13s BR USA, OY2Z, SPs 1KAA 2KAC, SU1s MQ SS, TG9RB, VS6AE, VU2JK (020), YI2AM, YOs 3RA 3RD 6CD, ZD4s BJ (089), BN (046), ZS3B, 3V8AN and 4X4DR . . . . An interesting one at W2EQS is AC3VK (180) who was coming through weakly and at the correct hour. W2EQS is up to a 141/128 total . . . . The ground-plane and 75-watter at W6JKH/2 brought Paul CP1BX (001), CT2BO (025), FP8AP, VQ4NZK and ZB2I (084) in short order . . . . The TCDXC gang accounts for FK8AO (002), I5RM (115), KB6AY (064), MS4AR (048), VQ2W (042) and ZD4KJ (105) via scribe W4ZAE. CX4CZ (042), GC3EBK (071), KX6BF (010) and TF3MB (052) answered W4ZAE's beck and call . . . . DX doesn't come easy out W7 way but W7CSW reached a 117/107 total with the assistance of GD3IBQ, LU3ZO and ZP5AY. "Twenty opens about 6 A.M. PST when Central America starts showing up. Europe comes in about an hour later and stays with us till 1 or 2 P.M. Africa occasionally pops in from 9 A.M. to 2 P.M. Have been after VQ4QQ till I see his call sign in my sleep . . ." . . . . VQ3KIF was KP4KD's 198th 14-Mc. country; W5VIR was happy about ZK2AA . . . . The West Gulf DX Club gang write of CRs 6AI (098), 6AQ (038 t8), 6CZ (043), 7LU (055), 9AH (068), DU7SV (075), FB8s BB (030), RL (100), FF8AZ (078), FK8s AB (080 t8), AC (055), FO8AC (055), FQ8AR (045), GD3UB (078), GI3IJ/AG3 (045 t9c), HH3DM (080), KR6AZ (078), KS6AB (065), KW6BB (045), LB8YB (033), LUs 3ZO (057), 3ZS (032 t9c), 4ZS (062 t9c), SP1KAA (060), ST2s HK (019), UU (096), SU1BJ (080), TA3AA (026), TF5SV (040), VK1BA (080), VP8s AE (100), AK (005), AN (025–080), VQs 1NZK (080), 4DS (075), 4QQ (051 t8), VR2CU (020), VU2s CS (060–105 t8), RT (024), ZB1CU (019), ZC5VS (080), ZDs 2DCP (096), 4BI (107) and ZE3JP (075) in their *DX Bulletin* . . . . Watch for FW8AB of Wallis Isle around 14,100 kc.

On *twenty 'phone*, G3HLS was the first European worked by XW8AA in Laos. Too bad we Ws will have to miss this one until the FCC ban lifts. G3HLS also 'phoned with ZC5s VM (096) and VR. "European band conditions lousy, but traces of VKs and Pacific Island boys starting to break through and should mean DX fun for everybody," adds the G3 . . . . W1KYK mentions KA3MD on 14,210 kc., while W9LMC recommends HR1GM (172) and YV4AM (120) . . . . FB8ZZ (075), GD3UB (135), GD3ENK (190), HC8GI, LZ1KAB (020), SU1MR (135), SP5AJ (191), TA3AA (185), UA8AH (180), UI8AD (175), VP8AN (150), VQs 1NZK (144), 4AC (135), 8AL (149), YI2AM (200), ZC4IP (015) and 9S4BS (200) were logged by listener L. M. Michel in Pennsylvania . . . . The WGDXC boys are setting their sights for CR5s AC (170), SP (193), German yacht DI9AA (200), FK8AO (200), I5RM (113), SP2KAC (120), VK9YT (179), VQ1PZK (138) and ZK2AA (182). Ham-tourist business in Zanzibar continues to flourish but the place is still pul-lenty rare.

Forty c.w., next on the agenda, has been averaging several

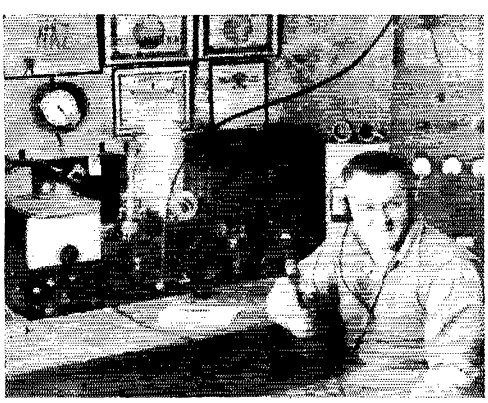
* DX Editor, *QST*.

[1] See Feb., 1951, *QST* (p. 23); May, 1952, *QST* (p. 24); Dec., 1952, *QST* (p. 31); Aug., 1953, *QST* (p. 49).

good DX nights per week. KL7VOZ doesn't miss many and his catches feature KW6BI (7010), LU3ZS (10) and VK9YY (10). That KL7VOZ-LU3ZS QSO was *real* DX; a truly antipodal stunt . . . . . FK8AB (35) is local QRM for KG6GX . . . . . W2LYO captured EA8BF, PJ2AN and ZP6CN (08), while W5VIR made off with VP8AJ . . . . . A 7-Mc. contact with ZK1AB netted postwar country number 204 for KP4KD. Ev's 93rd 40-meter country . . . . F7SHP, not rare but a little unusual, LB8YB on Jan Mayen, LU4ZS, PZ1WX, VP8AK of Deception, VQs 2GW and 3KIF worked W3AXT . . . . . W2QHH grabbed VK1RL and ZD2DCP, while W1APA ran down FK8AO, FP8AP, KG4AN, KX6BE, LU4ZO and PZ1WK. Gil bumps into VK1RL quite often in the early A.M. By the way, LB8YB on Jan Mayen was W2QHH's 107th 7-Mc. country . . . . . Fifty watts got TI2PZ and VR2CG for W1UNG . . . . . Southern California DX Club's *Bulletin* lists 40-meter prospects C7AT (10), CN8EM (10), KC6AB (80), LUs 4ZO (40), 5ZO (23), ØQØCZ, PZ1WS (20), VK9WZ (09), VS2DW (05), ZK2AA (40), ZSs 3O, 7D (30), 7H (25) and 8D.

Even *forty 'phone* is getting gay at times. W1APA recorded QSOs with people like KJ6BA (7278) 0651 EST, KX6BC (273) 0622, KZ5CR (225) 0450, VK3MH (055) 0654, VP9AY (270) 0517 and XE2OZ (200) 0521. We take it that 7-Mc. A3 results are mainly a matter of early to bed and early to rise . . . . . W9LMC tips us off on HK2DZY (236), TI2VJ (233), VP1ZU (278), XE1GA (210), ZLs 2BE (158) and 3LE (184) . . . . . HR1AA regales the flock with a fat signal near 7200 kc.

You must be quick on the trigger to take full advantage of *fifteen meters* during present conditions. And not only that, but be on tap for the day DX shift. KP4KD sums up 21-Mc. doings down his way: "Open most days, sometimes as early as 1200 GCT, other times not until 1500–1600 GCT. Closed between 1900 and 2200 GCT, although many days open for an hour or so, then closed only to reopen again an hour or so later for another short period. In general it seemed that there was more 'phone activity than c.w. activity. During September a total of 43 countries were heard/worked, distributed as follows: North America 8, South America 10, Europe 13, Africa 9, Asia 2 and Oceania 1. Of these 43 countries, 24 were heard/worked on 'phone as follows: North America 7, South America 6, Europe 7, Africa 4, Asia none and Oceania none." 'Phones HK4FV, HP3FL, VPs 5SC 6FR, XE3BR and YV1AP bring Ev up to 69 21-Mc. countries. KP4KD is another who notes W 'phones being careless about 15-meter band edges . . . . . Get a load of the 'phone stuff W6ZZ has been salting away: CEs 1AJ 1BE 3NS 3PV, CP5EK, CR6BX, Gs 2AMG 3BXI, HR1s BG JM, KA7RC, KB6AY, KG6s AUA AEX FAA, KH6s AR IB NS SP, KL7AON, KP4s KD UE VA WI, KR6LJ, KV4s AQ BB BD, KX6BH on Kwajalein, KZ5s DG FL GD, LU3DD, OA4ED, PAØALO, PYs 2JU 3AGP, TI3LA, VKs 2ID 4HD 4TN 4ZB 9GW, VPs 6AL 6FR 6PV 6WR 9BK, VQ2HA, VR2CG, XE1OM, YN1AA, ZEs 1JE 2JK, ZK2AA, ZLs 1BY 1BZ 1GW 1OF 2BE, ZSs 1MP 5MP 6DW 6SG and 6DC. Then, giving the modulator a rest, Miles telegraphed with JA1CO, VK2GW, VQ2AB, YN1AA, ZL1s AH BY and MQ. Putting it mildly, W6ZZ writes: "I've worked so much lately and they are coming so fast I haven't had time to figure up the score until now. . . . Not too bad a month for 21-Mc. 'phone; 36 countries in 6 continents and I missed a lot of good ones like OQØDZ, VQ4AQ, VQ1NZK, FO8AD, IS1AHK and CR4AI." Miles is now up to 132 countries, 53 on fifteen meters . . . . . KA7RC is on 21,350 kc. daily around 0100–0130 GCT with 900 watts input and a 350-foot-per-leg rhombic aimed Statesward . . . . . "Conditions seem to be improving somewhat on 21 Mc. . . . Fairly consistent openings to South America and Oceania. At times a few of the African boys break through just like old times." This from W5VIR. Tex raised A3ers CE2CI, HC1MB, LUs 2MD 3AX 8AE, PYs 2AC 4VX 5UG, TI2s ACQ EV, XE1s QB SA, YV5FL and ZL3JA; A1ers VK4XH, VQ4HJP, XE1s H SA and YN1AA . . . . . W3APQ doesn't consider himself a dyed-in-the-wool DX man but GD3UB came back to his 35-watter on a 2-by-2 call. Good old (or should we say young!) 21 Mc. . . . . W2ESO found TA3AA workable on 'phone one Sunday — a big, big sig.



Dave Brown, ZL1HY, leads the Oceania DXCC contingent with 231 postwar countries confirmed, 190 on 'phone. You'll be in for stiff pile-up competition if you tangle with this guy over a rare one.

160-METER TRANSATLANTIC TESTS

Plans for the 1954 series of 160-meter DX tests, as arranged by interested U. S. A. and British amateurs, have been completed and all "Top Band" stations throughout the world are invited to participate. Conditions are expected to be good, for a Transatlantic QSO was recorded as early as October 4th and New Zealand-U. S. A. contacts occurred throughout the summer. Regular nightly activity is anticipated and concentrated efforts are recommended as follows.

Dates: January 3rd, 17th and 31st; February 14th and 28th; and March 14th. In addition, a trial-run test is scheduled for December 20th as a gear tune-up opportunity.

Times: The period between 0500 and 0800 GCT is recommended. W and VE stations are urged to transmit on the hour for five minutes, listen for DX answers for five minutes, transmit for another five minutes beginning the tenth minute after the hour, etc., until DX contact is established. Transmissions by DX stations will commence five minutes *after* the hour and continue in like fashion. Take care to maintain time-piece accuracy! Use the call "CQ TEST" if desired. Contacts should be kept short to ensure maximum opportunity for all participants.

Frequencies: Look for G stations on their newly assigned band, 1825–1875 kc. ZLs will be using their 1875–1900-kc. segment. DX stations are urged to tune all W/VE sectors — 1800–1825, 1875–1900, 1900–1925 and 1975–2000 kc.

Reports: Stewart S. Perry, W1BB, 36 Pleasant Street, Winthrop, Mass., will appreciate reports from participating W/VE stations. DX stations can communicate their results to L. H. Thomas, G6QB, Forest Barn, Turkey Road, Bexhill, England.

W4NQM & Co. vigorously come to the defense of *ten meters*. Sparkie convinces us there's more DX available on 28 Mc. than a quick pessimistic swing of the receiver dial will reveal. W4NQM garnered the following interesting reports of 10-meter 'phone DX worked. At W3QMG: CE2CC, CX4CS, HC1RT, HP2HG, KH6AKZ, OA5OP, PY1ANU, numerous LUs, VP6NA and ZP5CX. At W3MO: HK1AM, VP6s FR HR and YN4CB. At W4NQM: CE2CC, CXs 2CL 3BT 4BN, FO8AB, HC1RT, HK1DW, HPs 1AP 1LL 2HG, KH6AFS, PJ2AL, PYs 1AGP 7XQ, YVs 1AP 3BB and ZP5GF. Ten has been propagating best between 1600 and 2000 EST in the Arlington, Va., area. True, this is almost strictly north-south stuff but certain countries down South America way come easier on ten than on any other band. W3PWB, W4WVM and WØEQW also have been finding enough DX on ten to keep busy.

Where:

Perhaps one or more of the following DX station addresses will lead you to positive results in the QSL department. Please bear in mind that none is necessarily "official"; nor can we unconditionally guarantee their accuracy.

CN8EJ, S/Sgt. Noel N. Case, AF-14275036, 49th Comm. Sqdn. (Div.), APO 117, % Postmaster, New York, N. Y.

Operators and operating positions of widely-worked European stations (l. to r.) EA1AB, I1AOF and ON4NC. The Spanish gentleman turned in second highest European c.w. score in ARRL's most recent DX Test. I1AOF possesses 'phone DXCC membership.

ex-CN8FS, M/Sgt. Stuart M. Brierley, WØMGC/7, 3925th Comm. Sqdn., Stead AFB, Reno, Nev.
CR6BZ, Box 32, Lobito, Angola
DM2ACM, W. Mueller, Triftweg 30, Leipzig, East Germany
EA9DD, (QSL to EA4BH)
FK8AO, (ex-FQ8AE) Georges Birepinte, Box 104, Noumea, New Caledonia
FW8AB, Andre Monjoie, P.O. Muta Utu, Wallis Island, Fr. Oceania
HH5AM % M/Sgt. W. E. Cristian, USAF Mission, U. S. Embassy, Port-au-Prince, Haiti
I5LV, Box 505, Mogadiscio, Italian Somaliland
ex-JA2CK, (QSL to W9NMI)
KA5RC, CWO Roy Case, Post Maintenance Shop, 8098th AU, APO 354, % Postmaster, San Francisco, Calif.
KA8TB, Thomas F. Black, W-5, Odori-Sapporo, Japan
KG4AN, Lt. Cmdr. W. S. Lane, USN, Box 15, Navy 115, FPO, New York, N. Y.
KL7AVP, Wm. J. Stewart, P.O. Box 481, Mt. Edgecumbe, Alaska
KL7VOZ, Capt. W. A. Lentz, jr., 1995th AACS Sqdn., APO 937, % Postmaster, Seattle, Wash.
KX6BH, W. H. Carter, Navy 824, Box 22, FPO, San Francisco, Calif.
OQ5FY, Rev. Irving M. Lindquist, BAMS Stn., Kamulila, Bukavu, Belgian Congo
OX3BK, (QSL via EDR)
VP1ZU, % British Honduras Broadcasting Svc., Belize, Br. Honduras
ex-VR2CD, Chas. H. Freeman, VE7ASL, % CBU Transmitter, CBC, 950 #4 Rd., Lulu Island, Vancouver, B. C.
VS2UW, Capt. J. B. Lievens (G3GUW), % P.O. Box 1003, Kuala Lumpur, Malaya
VS7WB, 40 Jayaratna Rd., Negombo, Ceylon
W9FZS/VO4, Box 235, Harmon AFB, Stephensville, Nfld.
XE2OZ, Eugenio G. Richer, jr., P.O. Box 1771, Monterrey, Mexico
ZB1BF, Vincent Genovese, 8 St. Benedict Flats, Zimelli St., Hamrun, Malta
ZP5GF, James Babcock, % American Embassy, Asuncion, Paraguay
ex-ZS3O, Bill Banfield (ZS5HX), Empangeni, Zululand, U. of S. Afr.
ZS8D, J. A. Strydon, P.O. Box 58, Maseru, Basutoland, U. of S. Afr.
9S4AB, Kurt Erkel, Saarbruecken 3, Blumenstrasse 18, Saarland
9S4BN, W. Thome, St. W. Litwinus-Siedlung 24, Mettlach, Saarland

W1s APA ODW RWS WPO, W3AXT, W2s EBV GT, W6ZZ, W9CFT, DL4DC, W. F. Hunteman, L. M. Michel, R. Waite and the West Gulf DX Club *DX Bulletin* have our thanks for help in assembling the preceding "Who's Where."

Tidbits:

Asia — The JA (Japanese nationals) gang is now on the air in considerable force. A few of the more active who have been putting consistent signals into W/VE territory are JA1s AA AH AL AQ AR BZ CR FA, JA2s AB AT AW BJ, JA3AZ, JA4s AJ BB, JA5s AF AG AI, JA6s AA AK AO AY, JA8s AA AG and AQ. We understand that all JAs can receive cards through the JARL bureau where JA1AH acts as QSL manager. JA1BZ is ex-J1EI-J2HK, JA2AB is ex-J2XF, JA5AF is ex-J4DE and JA5AG is ex-J4CM. The JA boys like 807s for finals and their inputs collectively average around 50 watts. Folded dipoles, Zepps and long wires are common antennas used in Japan; beams are very few and far between. Most JA-station receivers are home-grown supers of from 5 to 12 tubes but BC-342s, BC-348s and Super Pros are to be found here and there. C.w. is their regular medium but they do roll through on 'phone when conditions are sufficiently favorable . . . . . W4VE, late of KA9AA and KA2AA, has moved his military medical operations to the Okinawan scene. Fred should be on with a KR6 call before this ink dries . . . . . Ex-marine W1KYK returned to civilian life just before his 3rd Marine Division moved to Japan. They're now represented on the amateur bands by KA3MD . . . . . W4SSS looks forward to two years as KA5RC and possible subsequent DX labels. Roy's Viking-II is getting much competition from the local KA high-power crew . . . . . AC4NC QSLs have been coming through for a fortunate few. Chak has a 25-watt 'phone rig and a 20-meter full-wave in action . . . . . Two extremely active Israeli fellows are 4X4s CW and CZ. They are ex-ZS6PW and ex-ZC6AB, respectively, and 4X4CZ has 250 watts to TZ40s on 14-Mc. 'phone. . . . . AP2K is ex-DL3ZV and keeps Pakistan available with his 150-watter, a BC-348 and a 3-element beam for 20 . . . . . VU2s AK and JP are among the more active Indian stations. AK runs 25 watts to a VFO-6V6-6L6-807 line-up, receives with an SX-23 and radiates with a dipole. JP has a 40-watter, an HQ-129X, dipoles for 40 and 80 meters and a 3-el. whirler for 20 . . . . . Ceylon is kept on the active list with the help of VS7s FG and WB. FG's layout features a 50-watt 807 rig with Class AB_1 807s modulating on 14 Mc., an HRO and a 2-half-waves-stacked array. WB gets his kicks with an 807 20-watter and a Marconi CR-100 receiver.

Africa — CN8EB is the new call of W2MQB. Don points up pertinent facts concerning Morocco ham regulations: CN8s are permitted a maximum input of 50 watts and no third-party traffic is allowed. Person-to-person station-visitor chatting can be arranged, however . . . . . CN8FS, now WØMGC/7, writes: "Sure enjoyed the many contacts I had with the W gang on 20 and 40 'phone. Wish about 30 per cent of my 40-meter contacts would QSL — I QSLd 100 per cent. Never could figure why so many are eager for QSLs and then fail to reciprocate . . ." . . . . . Interesting line from OQ5FY: "Our three mission stations are located out in the jungle of the equatorial forest among the Balega people and the problem of communication between our outposts is a big one." So, in addition to his amateur radio activities, OQ5FY is busy rigging up a network for missionary efforts . . . . . Ex-M13LK (W3NLS), now stationed at Ft. Monmouth, paid a recent in-the-flesh visit to W2FGG . . . . . Amateur radio is well represented in Portuguese African possessions with CR7s AF CD and IZ keeping Mozambique very available. AF gads about with a 3-stage 60-watt rig and dipole antennae; CD has a converted BC-458A 20-watter, a Super Pro and a Hertz sky-wire on 40 meters; and IZ, contending with 190-volt-d.c. mains, has an all-6L6s rig, a worked-over S-22 and a long-wire radiator. He's ex-CT1OE. CR4AI is mighty popular, too, with 120 watts, an S-20R and a long-wire antenna on 14-Mc. 'phone . . . . . ZD6RD is ex-DL2GZ-G3GAR, ZS6HW is ex-ZD4BC, ZS6R is ex-ZS6QF and, since 1920, 3V8AN has held the calls TUN2, FT4AA, FT4AG, FT4AN

(Continued on page 138)

DX Century Club

The following list contains the call letters and countries totals of all holders of the Postwar DX Century Club award as of October 15, 1953. The calls of new members as well as those receiving endorsement credit during the period September 15 through October 15, 1953, are included in this listing.

253
W1FH

251
W8HGW

248
W3BES
G2PL

246
W6VFR
WØYXO

243
W6ENV

242
W6AM

241
G6ZO

240
W2BXA
W3GHD
W6SN
G6RH

239
W3JTC

238
W3KT
W4BPD
W8NBK
PAØUN

237
W2AGW

236
PY2CK

235
W3CPV

234
W2QKS
W3EVW
W3GAU
W6MEK
W6MX
W8BRA

233
W5ASG
W7AMX

232
W1ME

231
W5MIS
W6SYG
ZL1HY

230
W1TW
CE3AG

229
W6GRL

228
W6TT

227
LU6DJX
ZL2GX

225
W3JNN
W9RBI
F8BS

224
W6EBG
W6TS

223
W2WZ

222
W9KOK
SM5LL

221
W1CLX
W2DS
W8DMD
W8JIN

220
W1ENE
W2NSZ
W2QHH
W3OCU
W5ENE
W5FNA
W6ADP
W6AMA
W6CUQ
W6DZZ
W8KIA
PY1GJ
VK2DI

219
W3DPA
W3EPV
PY1AJ
VK2ACX

218
W9FID

215
W5KC
W6QJU

214
FA8IH
KV4AA
PY1DH
ZS6BW

213
W5KUC

212
W8BTI
HB9X
ON4AU

211
W6SAI
W6TI
WØPNQ
G4CP
HB9J
ZS2X

210
W2AGO
W5EGK
W5JC
W6VE
W6ZCY
W7GUV
W8SYC
KH6IJ
SM5KP
VE4RO

209
WØNUC
VE7HC

208
W4AIT
W9FKC
WØDAE

207
W2AQW

206
W4NNN
G8IG

205
W5ADZ

204
W1BIH
W2HHF
W3IYE
W4MR
4X4RE

203
W3DKT
W3GRF
W8CDT

202
W4TM
W6DI
W6NNV
W7DL
CX1FY
G2MI

201
W1JYH
W3BXE
W3OP
W5GEL
W6PQT
W0UOX
GM3DHD
KH6BA
PY1AHL

200
W1ADM
W1GKK
W1HX
W2YW
W4BRB
W4OM
W5BGP
W6EPZ
W6GAL
W6MJB
W6MVQ
W6PB
W6RBQ
W8BKP
W9LNM
CE3DZ
DL7AA
G6QB
G6YQ
HB9EU
LU7CD
ON4QF
VE3QD
ZL1BY

199
W2IYO
VK2NS

198
W2CYS

197
W1AXA
W1CH

195
W5JUF
W8DAW

194
W5FFW
W7PGS
WØAIW

193
G8KP
LA7Y

192
W2TQC

W4PN
W6BPD
W8HFE

191
W2ALO
W2HMJ
W2TXB
W6TZD
G5RV
HKN
OQ5RA
VE7ZM

190
W2HZY
W2IOP
W3JKO
W6ANN
W6GFE
W6IBD
W6OMC
W6UCX
W8DX
W8WZ
G3DO
KH6CD
KP4KD
PY4IE
VO6EP

189
W1ZL

188
W2CWE
W9IOD

187
W4CYY

185
W6EHV

184
W5LXY
W7GUI
W9MXX

183
W1LOP
W2CTO
W2EMW
W6UHA
HB9CX

182
W2IWM
W4NNH
W4RBQ
W6SRU
G3FNN
HB9CX

181
W1HA
W1IAS
W2CNT
W2RWE
W2UFT
W6NTR
W8JBI
W8UDR
W9AND
G3YF

180
W1RY
W2BJ
W2DKF
W2IMU
W3KDP
W3LPF
W4RBQ
W5MPG
W6ETR
W6RM
W6CVU
W8KPL
W8UA5
W9HUZ
WØEYR
G2EC
KP4CC
ON4JW
PAØGN

VE3AAZ
VE7VO

179
W2CSO
W2GWE
G4ZU
KZ5CP
SM5WI

178
W2COK
W4LZF
W5LHP
G2WW
VK3BZ

177
W1JLT
W1WK
W4CYU

176
W2GUM
W3QJV
W5CEW
W6CYI
W9AEH
PY2OE

175
W2JVU
KH6QH

174
W8RDZ
W9TJ
WØTKX
CN8MI
HOJ
KH6VP
MF2AA

173
W3KQF
W7HIA
W8ACE
F8PQ
KG4AF
OK1FF

172
W2DSB
W3DRD
VE3IJ
VK4FJ

171
W1AB
W1FTX
W2LJR
W2PWP
W2RGV
W3JTK
W4DKA
W5CKY
W5EB
W6MHB
W8FJN
EA2CA
ON4NC
PY1HX

170
W1DQH
W1MB
W2GFW
W2PRN
W3ALX
W3CGS
W4HA
W5KUJ
W5LGS
W6EAY
W6GPB
W6KUT
W6LDD
W6LW
W7ENW
W7KTN
W8EWS
W8MPW
W8SDR
W9GRV

W9TQL
G3BKF
KL7PI
PY7WS
SM5ARP

169
W2PUD

168
W4JDR
HAY
MI3AB

167
W2MLO
CM9AA

166
W1BLF
W5NMA
W7AH

165
W2GVZ
W3LBG
ZS6A

164
W9VND
KH6LG
ON4AZ

163
W3ALB
W3HRD
W3JYS
W5EFC
W8AJW
OH2RY
ON4GU

162
W1ATE
W2LSX
W2WC
W3NOH
G2AJ
SM5CO
ZS2AG

161
W1KFV
W2LV
W2RDK
W4VE
W5ALA
W6BZE
W6GHU
W6WKU
W7GBW
W8EYE
GM3AVA
HB9DO
OK1LM
OQ5LL
ZL3GU

160
W1TX
W2REF
W6BVM
W6CIS
W6CTL
W6JK
W6KYG
W7DET
W7HXG
W8TJM
W8ZZU
W9ABA
CP5EK
G2FSR
GM3CSM
HAIV
ON4PA
VE8AW
ZL4GA

159
W1DX
W4JFE
W6PZ
GW3ZV
HIR

HIXK
LA6U
OK1HI
OK1VW
VQ2GW

158
WØAIH
SM7QY

157
W4JXM
WØTJ
G3HLS
IS1AHK
SM6HU

156
W2SAI
W3WU
W6KEV
WØLLN
G5VT
SM5WJ

155
W5NW
FA8DA
G3DCU
G6GN
ZL3CC

154
W1CUX
W2ITD
W2QCP
W8GLK
GM6MD
PAØVB
PY2NX

153
W1BFT
W1DEP
W1LZE
W1QF
W2GTP
W4HVQ
W9ABB
W9BQE
CE3AE
OH2NB
VE3ZW

152
W1MUN
W2MYY
W2UWD
W6JZP
W6NIG
W8WWU
DL1AU
EI5F
G3COJ
HAMU
PAØLB
SM7MS
VK5RX

151
W2BRV
W2ITD
W2OST
W3FLH
W4AZK
W5CGC
W6NGA
W6VOE
W7AC
W8HUD
W8UPN
W9PGW
W9YNB
G2AJF
G6LX
GW3FSP
ON4PJ
ON4TA
SM5DZ
VK3JE
VK6SA
ZL3BJ

150
W2ADP
W2ZVS

141
W1AZY
W1IKE

W3ADZ
W3LVJ
W3MLW
W5BZT
W6ATO
W6BJU
W6DE
W6EAK
W6LVN
W9CIA
W9IU
G2IO
G2VD
G3DOG
G6GH
G6RC
HK3CK
HP1BR
I1IT
KH6MI
KZ5WZ
ON4FQ
OZ7EU
VK4EL
ZC4XP
ZL3GQ
ZS2AT

149
W2UEI
W4FVR
W8DEN
ON4MS
PAØIF
ZL2QM

148
W7FZA
W8BWC
HB9CE
SM5FL

147
PY4RJ

146
W1HRI
W3FYS
W3RCQ
W6LV
G6RB

145
W3FGB
W6RW
W6WO
G3BI
G6BS
PAØRC
PY2AJ

144
W6LMZ

143
W2PJM
W5ACL
W7BE
W9PSR
LU3DH
NY4CM
SM3EP
YV5AE
4X4BX

142
W1NW
W4GMA
W5LVD
W9AHP
CX1BZ
EI4Q
G4JZ
G8GB
GM3CIX
KZ5IP
PAØNU
VP5FR
VP7NM
ZS5CU
4X4DK

135
W1BAV
G5OO
G6XA
SM5PA

W1ZW
W2BYP
W2GNQ
W4ZD
W6MEL
W6NZ
W6VDG
W7AYJ
W9CU
G5LH
HB9MQ
I1UA
ON4GC
TA3GVU

140
W1AH
W1BGW
W1BOD
W1JNV
W2GTL
W2OMS
W2ZA
W3IXN
W3LVF
W3MDE
W4IWO
W5BNO
W5FXN
W5IGJ
W5LGG
W5MET
W6DUB
W6WWQ
W8CXN
W8FJL
W8LAV
W9NZZ
W9RQM
WØERI
WØGKS
WØOUH
DL1KB
DL1QT
EA4CR
G2AKQ
G3AKU
G5YV
G8KU
JA2KG
KH6PM
ON4FL
PY1ADA
SM3AKM
VE2BV
VE5QZ
VE7VC
ZS2CR
ZS3K

139
W2GUR
W3FUF
W4DHZ
K6CU
W6PBI
W6TXL
G3AWP
G5FA
G6QX
OK1CX
OZ3Y
OZ7CC

138
W6FSJ
VE1HG
ZL3AB
ZL3LR
9S4AX

137
W2AZS

136
W1QPN
W4CKB
W4IUO
W8IB
W9LI
WØNTA
G3AH
GI4RY

135
W1BAV
G5OO
G6XA
SM5PA

134
W1ZD
W3JNM
W3LNE
W4CYC
W5CPI
G2BXP
G5VQ
JE2JN
KV4AQ
OH2TM
PAØGT
ZE2JN
ZS5YF

140
W1AH
W1BGW
W1BOD
W1JNV
W2GTL
W2OMS
W2ZA
W3IXN
W3LVF
W3MDE
W4IWO
W5BNO
W5FXN
W5IGJ
W5LGG
W5MET
W6DUB
W6WWQ
W8CXN
W8FJL
W8LAV
W9NZZ
W9RQM
WØERI
WØGKS
WØOUH
DL1KB
DL1QT
EA4CR
G2AKQ
G3AKU
G5YV
G8KU
JA2KG
KH6PM
ON4FL
PY1ADA
SM3AKM
VE2BV
VE5QZ
VE7VC
ZS2CR
ZS3K

139
W2GUR
W3FUF
W4DHZ
K6CU
W6PBI
W6TXL
G3AWP
G5FA
G6QX
OK1CX
OZ3Y
OZ7CC

138
W6FSJ
VE1HG
ZL3AB
ZL3LR
9S4AX

137
W2AZS

136
W1QPN
W4CKB
W4IUO
W8IB
W9LI
WØNTA
G3AH
GI4RY

135
W1BAV
G5OO
G6XA
SM5PA

134
W1ZD
W3JNM
W3LNE
W4CYC
W5CPI
G2BXP
G5VQ
JE2JN
KV4AQ
OH2TM
PAØGT
ZE2JN
ZS5YF

133
W1CJK
W1KWD
W1PKL
W2AW
W2MEL
W3AYS
W4AAW
W5LV
W6BIL
W6DBP
W6QDE
W9CYT
W9CYU
W9FJB
W9QIY
G3AIM
G5SR
PY7LJ

132
W2ICO
W2PBG
W3AFU
W3KZQ
W3LMM
W4AIS
W5AWT
W6CEM
W6KEK
W8MFB
W8ZJM
W9UZS
G2FYT
G3CBN
G6UT
GM2DBX
HA4SA
PAOLR
SM5AQV
VK5KO

131
W1BLO
K2BU
W2CDP
W2DSU
W2QKJ
W8ID
W6MHH
W6RLQ
W7GPP
W8CKX
W8EKK
G3LP
I1IZ
KH6PY
LA5S
SM5VW
ZL4BO

130
W1LQ
W1RAN
W2ABS
W2ATE
W2CZO
W2LTP
W2TJF
W3ARK
W3HOX
W3MZE
W4EPA
W4IYT
W5DML
W6ETJ
W6LER
W6OBD
W6WJX
W7RT
W8CED
W8NJC
W8YIN
W9EXY

W9UIG
WØQVZ
EA9AI
F3FA
F8SK
I9QU
G2BQC
G8FW
G8UG
I1LT
I1UB
ISIFIC
OH2PK
OH2QQ
OH4NF
SM3ARE
VE3SR
VE5JV
VK3YD
VQ2DH
VQ8AD
ZS6CZ
ZS6EU
ZS6FN
ZS6OV

129
W1JMT
W1ODU
W1OJM
W3RNQ
W4BGO
W5DMR
W8OCA
W8ZMC
F8CW
HB9AO
LA2B
OK1SV
VQ4SGC
ZL1AH
ZL1MR

128
W2OCI
W4TP
G6BB
G8VB
PAØJQ
PY2DY
VK4RF

127
W1RWS
W1RZD
W3CTJ
W3LXE
W4FIJ
W5OLG
W6YX
W4FIJ
G5PP
I1AOF

126
W1BDS
W5GZ
W6RDR
W7AHX
WØMKF
G3BNC
G6VQ
LA5Q
VE1PQ
VP6CDI
ZC1CL
ZS6LW

125
W1VG
W2BLS
W2BUY
W2LPE
W3EYF
W6MUF
W9FDX
DL1YA
I1BEY
OK1WX
PY1HQ

124
W1APA
W3KQU
W4QT
W6BAM
W6CEO
W6KYT

W8AE
CE7AA
G5VU
11FO
OK1SK
VK3TL
ZS6JB

123

W1EOB
W1KKP
W1NLM
W4AAU
W4ITR
W6UZX
W9GWK
W9UX
DL3JV
G2YS
KV4BB
PA0MZ
SM6AKC
ZL2HP
ZS1FD
ZS6GI

122

W1QV
W2FBA
W2PZM
W4EEO
W6EAE
W6IFW
W8YHO
W9FKH
W9GDI
W9NDA
CT1SQ
DL4TL
F9AH
G2AJB
HZ1HZ
IIRC/T
LU9CK
OZ7SN
PA0DA
VE1PA

121

W2AFU
W2QCF
W3DGM
W3GHS
W4LYV
W4ML
W6KYV
W6ZBY
W7KWC
W9BRD
WØAZT
WØDU
CN8EJ
F3RA
G3BXN
KG6AI
PA0CP
SM5FA
SM5KX
VE3ADV
ZS2U

120

W1BIL
W3EVT/1
W1JOJ
W1MRP
W1PKW
W2BBK
W2BXY
W2CGJ
W2CWK
W2EQS
W2ROH
W2WPJ
W2YTH
W3AOO
W3AXT
W3DYU
W3MNO
W4DCW
W4IZR
W4LQN
W5RX
W6YK
W6YZU
W8DFQ

W9HQF
W9UXO
WØDST
WØGUV
CE4AD
DL1DX
DL3TP
EA3CY
G2HNO
G3BQ
G3EMD
G3TK
G6XX
G8ON
G8PL
HB9FE
I1VS
KL7IT
OK1AW
OK1RW
PAØCB
VE3AGC
VK3NC
VS6AE
YV5BZ
ZL1MB
ZL1QW

119

W3DPA
W4GHP
W4OG
W6RRG
DL7AB
G8DR
HB9P
KG6DI
SM6ID
SV1RX
VE7KC
4X4DE

118

W2IRV
W6LDJ
W6PH
DL3GZ
EA4BH
VE4XO

117

W1BGA
W2PQJ
W4GOG
W6LS
W6SR
W9NRB
WØDGH
G5JU
OZ7SM
VE7ZZ
VO3X
ZS2EC

116

W1LQO
W2AGU
W2AUH
W3TIF
W7BD

115

W2NFR
W9LNH
DL1BO
LU6AX
OH3NY
VE3BBR

114

W2ABM
W4NKQ
W9ELA
W9LVR
CT1DJ
DL1FE
DL7BK
G3AJP
VE1EK
VK4RC
ZS6HO

113

W1DSF
W1EFQ

W1FTJ
W2CC
W2TUD
W4EV
W9KA
F8TM
G8OJ
ON4SS
OX3MG
TF3EA
VE3ACS
VQ3HJP
ZS5BS
ZS6J
4X4CJ

112

W1AJO
W3BEN
W6ALQ
W6AUT
W6BUO
W6JTB
DL1CS
F9KQ
G2CDI
G2CNW
G4FN
GI6TK
GM3CFS
SM5AQW
VK5FM
4X4CR

111

W1AWX
W1CDX
W1QXQ
W2MA
W2UAT
W3KEW
W3ZN
W4JUJ
W4LIM
W4OSU
W6NKR
W7BDW
W7JYZ
W8AAI
W8PNT
W8TTS
W9DUR
W9ERV
W9HUV
WØSBE
EA1AB
EK1AO
F3SM
F8VK
F9DN
G2FFO
G2IM
G3CEG
G4AR
G4AU
HP1LA
I1CJW
I1PG
KG6ABI
OZ8SS
SM2OS
VE1EX
VQ2AB
VU2JP

110

W1APU
W1BTE
W1KQY
W2OKM
W2VRE
W2VZD
W3AS
W4DPE
W4EXO
W4FNS
W4HQN
W4HYW
W4KWC
W4LVV
W5KTD
W5KWY
W5RVV
W5VSS
W5WI
W6AAO

W6AOD
W6AX
W6DBT
W6MUB
W6UQQ
W6UYX
W6ZUI
W7BTH
W7NKW
W7PEY
W7WH
W8ERA
W8FGX
W9ALI
W9DGA
W9HLR
W9JIP
W9JUV
W9MXP
W9NN
W9WFS
WØBBS
WØGBJ
WØRIA
WØSRX
DL1VU
DL6HJ
EI3R
G2DPY
G2HKU
G3CCO
G3CDG
G3CUG
G3GMB/A
G4QK
G5CW
G5PQ
G8IL
HB9AT
HB9FI
HB9GJ
HC2KJ
I1ADW
ON4JD
OZ7KV
PAØXE
PAØZL
SM6DA
VE3ADM
VE3HB
ZS1M
ZS2IW

109

W2AYJ
WØMCF/C1
CO6AJ
DL6IC
EA3FL
F9ER
F9IL
FA8CF
FA9VE
G2DC
G2DHR
G3AMM
G8GP
G8IH
HB9BN
HB9EI
HB9KU
LU8EN
PAØPN
VS1DZ
VS7NX
ZL2CU
ZS1BK
ZS6DW
ZS6KK

108

W1EZ
W2UOX
W3HER
W6LGD
W6LN
W6PUZ
W6YMD
W8MKY
W9TLT
WØMJM
DL1LD
EA8BC
F3MS
F9FY
FA9OW
G2BOZ

G5GK
G6KS
KZ5KS
OK1DD
OH1NK
PAØOK
PY6DU
VE6GD

107

W1KLY
W1MJJ
W1PDF
W2ESO
W2LJR
W4AUL
W6CUL
W6PWR
W8BNA
W9CKP
DL1FK
DL3UE
G3APN
G3CSP
G8IP
G8QZ
JA3AA
ON4PZ
PJ2AA
SM7YO
VE1EP
ZL3OA
4X4CW

106

W2DPS
W2JB
W3HTO
W4CS
W4DX1
W4FPK
W5NUT
W6FOZ
WØVIP
DL1AV
DL1SC
DL1TM
DL4EA
F8BQ
F9FS
F9RS
G2CBA
G2HFO
G2ZF
G3CMT
G3DDK
G3ETU
G3QD
G8TD
HB9BJ
I1AEG
I1RY
KH6DQ
OK1CG
OK3SP
OZ3RO
SM5TQ
SM5UH
SM6DN
VE2WW
VE3AHV
VE3PK
VK5BO
VO1B
VQ2HW
ZB1AJX
ZE1JI
ZS1FR
ZS5FS
ZS6RI

105

W1TS
W2KJZ
W2QXB
W4COC
W4DYM
W6BUD
W6CPL
W6DFY
W6DOT
W6KPC
W7AJS
W7HJC
W7PGX
W9DUY

WØFID
CR7AF
CT3AN
DL3BJ
G3JW
G5US
G6CB
G6IC
G8QW
GI3AXI
GM6MS
GW3JI
HZ1KE
KP4JE
MI3ZJ
OH6NZ
OK2OS
OK2XF
PAØALO
PY1MK
VE3KE
VE6AO
VK2ADE
VK2PV
VK6DX
ZK2AA
ZL1RD
ZS6JZ
ZS6QF
ZS6SB
ZS6XQ

104

W1AFB
W1DF
W1KMY
W2BUV
W2RWN
W2TSL
W3IBT
W3ZQ
W4AWS
W4FNQ
W4IPR
W6CG
W6DYP
W6EJA
W6KRI
W6LRU
W6MUC
W7FBD
W7KEM
W7KVU
W8ELL
W8JRG
W9GA
W9IHN
W9RYK
W9TFU
WØBAF
WØDSO
WØGYL
WØSQO
CR7BC
DL1PV
DL6YK
F8WK
F9DW
G2CLL
G2FQP
G3APX
G3AZ
G3CQF
G3FJ
G6FB
G6VC
G8PW
GW3DOF
HB9IM
KG6GU
OK1NS
OK1OP
OK1PN
SU1AD
TF3SF
ZL3HC
ZS5U

103

W1IAP
W2JJC
W2PIN
W2PXR
W2UPH
W2VRE
W3EIV
W3KMS

W3LTW
W4DRK
W4KVX
W5DF
W5MMD
W6APH
W6BAX
W6GHG
W6JWL
W6LMB
W6MLY
W6WB
W7DXZ
W7GEB
W8CLM
W8NGO
W9YFV
WØCFB
WØFNN
WØRBA
CM2SW
CN8MZ
DL1CU
DL4FS
DL7AH
EA5BD
EA9AP
F8DB
FA8RJ
FF8AG
G2KI
G2SA
G3DAH
G3EFY
G8RC
G8VG
GC4LI
GM3AWW
GM3DZB
HB9HC
I1AFM
I1ARA
I1NIL
I1UV
KP4HU
LA3Y
MD1D
MD5KW
OH5NK
OH6OA
OK2SO
ON4JU
PAØLY
SM5AOI
SM5HH
SM6AOU
SM6AWE
SM7VX
VQ4HK
ZB1AH
ZL3IA
ZS1BM

102

W1CEG
W1GDY
W1SU
W2GVP
W2HQB
W2HY
W2JA
W3AFW
W3AZG
W3HTV
W3MFW
W3TVB
W4EJH
W4INL
W4KKX
W4PHJ
W5BDI
W5DGV
W6JU
W6TGH
W7CSW
W8AVB
W8CEI
W8DUS
W8LYQ
W8VLK
W8YJE
W9GMZ
W9VW
WØCDP
WØFET
WØZDM
CE3AW

CX6AD
DL1AT
DL1EI
DL3BK
DL3HZ
DL3LM
DL7AP
EA1BC
EI6G
EI9J
F8DU
FA9RW
G3ABG
G3ATU
G3CFK
G3CVG
G3EYN
G3FML
G3FPQ
G3HK
G4JB
G5CI
G6XS
G8WF
GM2FHH
GM3CMB
GW3AHN
GM3EST
GM3RL
GM8CH
HB9HZ
I1ALU
I1KZ
KG6GC
KG6GD
KS4AI
KZ5AU
OE1AD
OE1ZZ
OH2UD
OH2XK
OK2EL
OK2MA
OK3AL
OK3DG
OZ2LX
PAØRU
PAØSU
SM3FY
SM5AUP
SM7AKG
SM7TQ
TA3FAS
VE1BV
VE1DB
VE2WW
VE3RM
VE6FK
VK2YC
WR2CG
YU1CAG
YI3BZL
ZE3JP
ZL2BH
ZL3CP
ZS2FH
ZS3S
ZS6VR
4X4CZ

101

W1FPS
W1GKJ
W1MLT
W1NAV
W1NMP
W1ODW
W1ODY
W2EQG
W2FBS
W2FXE
W2IYG
W2JME
W2KXK
W2LWI
W2QKE
W2ROM
W2TNA
W2UVE
W3IL
W3KAT
W3OPM
W3TXQ
W4BPU
W4DIA
W4GD
W4IKL
W4JV

W4LHQ
W5IIP
W5RS
W6AYZ
W6CG
W6IPH
W6JFJ
W6POZ
W6RCC
W6SC
W6TEU
W6UJ
W7CNM
W7EJD
W7ETK
W7KSA
W7LYL
W7NIN
W8CJ
W8FJX
W8HRV
W8PM
W8TAJ
W8WSL
W9FNR
W9TWC
WØCAW
WØCWW
WØDIB
WØIEL
WØLWG
WØVBQ
WØVDC
CE3AX
CR6AI
CT1AS
CT3AA
DL1CR
DL1DA
DL1KV
DL1YQ
DL2RK
DL6SS
F8IW
F8PA
FE8AB
G2DM
GSDVD
G3BQR
G3CDC
G3CHW
G3CSE
G3GIQ
G3HEP
G3VA
G4GI
G4GJ
G4LP
G5RM
G5UF
G6XY
G8CD
G8NV
G8TS
GW4CX
HB9BX
HB9NL
I1ADX
I1AFQ
I1BCB
KH6EL
KH6LF
OE3CC
OE5CA
OZ1W
PAØFD
PAØMOT
PK6HA
PY1ARZ
TF3AR
VE1CU
VE1OK
VE6MN
VE6MZ
VK5MF
VP9OO
VQ3CB
VS7NG
ZD9AA
ZE4JC
ZL2GH
ZS6CT
ZS6QS
ZS7C
4X4DF

100

W1BBN

W1BUX
W1CKU
W1COM
W1EQ
W1EYP
W1IOZ
W1NS
W1PEG
W1PPZ
W2BWC
W2CBS
W2EGG
W2GSN
W2HAZ
W2HZN
W2JJI
W2LRW
W2QJM
W2RA
W2SGK
W2TJK
W2TWC
W2ZQW
W3AFM
W3ANK
W3ETD
W3FJU
W3GRS
W3HA
W3JLJ
W3KDF
W3KHU
W3KJJ
W3MQC
W3ORU
W3QLW
W3RBF
W4CRI
W4GXB
W4KCQ
W4KFC
W4KIT
W4KRR
W4POF
W5BK
W5CD
W5IX
W5KCR
W5NTT
W5QLY
W5QN
W6BUY
W6CAE
W6CGP
W6DUC
W6EKC
W6FUF
W6ITH
W6MI
W6SQP
W6VBY
W6VZG
W6ZTU
W6ZZ
W7FMX
W7ITN
W7JUO
W7KEV
W7ONG
W7PZ
W8AL
W8FJR
W8HEV
W8HRC
W8HSW
W8ICC
W8ILG
W8IQS
W8JM
W8LCN
W8LYP
W8NKU
W8OPG
W8PXP
W8RVU
W8SSI
W8ZIY
W9JNB
W9KXK
W9MZP
W9QLW
W9TKV
W9TMU
W9UAZ
W9VIN
WØARH
WØBFY
WØBMQ

WØFFV
WØIDI
CE6AB
CO2BM
CR9AG
CT1FM
CT3AV
DJ1BZ
DL1DC
DL1HA
DL1VR
DL3FM
DL3OO
DL3QQ
DL6TW
DL7CW
DL7DA
EAØAB
EI3S
F8PI
FG7XA
G2AO
G2BJY
G2GM
G3AAE
G3AAG
G3ACC
G3BDS
G3BNE
G3CSL
G3CWW
G3FXB
G3RB
G3VW
G5CR
G5WC
G8JO
G8JR
G8UK
GI3BKG
GI4NU
GM3EDU
GM8AT
GW8UH
HB9DH
HC2KJ
HC7KD
I1PL
KH6SO
KL7PJ
KL7UM
OA4AK
OE1CD
OE1FF
OE1KF
OE5LV
OH2WM
OK1GT
OK1MB
OK1WF
OZ4KX
OZ4PA
PAØBK
PAØHG
PAØUV
PK4KS
SM3ACP
SM5ARL
SM9IZ
SM7ACO
SM7IA
SP1JF
VE1EA
VE1NE
VE2ADQ
VE2BK
VE2CK
VE3ARS
VE3OR
VE3QB
VE3TB
VE3XY
VE7AAD
VE7CN
VE7SB
VK3RJ
VQ4HJP
VQ4KRL
VS6BA
YS1O
YU3AC
ZL2FI
ZL4CK
ZS5KF
ZS5LA
ZS6IH
ZS6OW

RADIOTELEPHONE

229

PY2CK

224

W1FH

220

VQ4ERR

215

XE1AC

209

W1NWO

208

W1JCX

207

ZS6BW

205

W8HGW

202

W2APU

201

W1MCW
SM5KP

200

W9RBI

197

W5BGP

195

W2BXA
W6DI

194

G2PL

193

W6AM

192

GM3DHD

190

W3BES
ZL1HY

186

ZS6Q

184

W2AFQ

181

W1MB
W3JNN

180

W8BF
CE3AB
CX2CO

176

W9ROQ
EA2CQ

175

I1SM
PK4DA

174

W3GHD
G8IG
HC2JR

172

W4EWY

CT1CL
ZL2GX

171

G6RH

170

W3DHM
W7HIA
W8GZ
W9HB

EA2CA
G4ZU

168

W1LMB

167

W5JUF

164

W4HA
W5ASG

163

W3KT
VE3KF

162

W1ATE
CM9AA

161

W1ENE
G2ZB

G3FNN
I1YJ
VE3KF

160

W4AZD
W5EFC
W6MBD
W7MBX
F9HE
G3DO

(Continued on page 180)

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
R. L. WHITE, W1WPO, Asst. Comm. Mgr., C.W.
PHILLIP SIMMONS, W1ZDP, Communications Asst.

GEORGE HART, W1NJM, Natl. Emerg. Coördinator
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., 'Phone
LILLIAN M. SALTER, WN1ZJE, Administrative Aide

W1AW Maintains Major Skeds after Fire. Reconstruction work is under way at W1AW at this writing following a fire which broke out there on the morning of October 14th. Alarm was turned in by an unidentified passer-by who noticed the smoke at 6:15 A.M. The fire was under control by 7:00 A.M. and apparently had started in the main electric junction box in the basement. Holes were burned in the floor and the partition between the Memorial Lobby and the main operating room was scorched. There was considerable smoke damage but damage to equipment was slight with the exception of complete fire loss of the tape perforator and its table. The blaze did not directly touch transmitters or the operating desk and all damage is insured

No evenings of scheduled operation were missed in spite of the fire. Temporary wiring from the underground entrance cable to the transmitters permitted W1AW to be back on the air on three bands the same day, in time for evening bulletins and code practice. Operation will not be completely normal until reconstruction contracted for has been completed. As this issue appears the general operation periods are being resumed in accordance with the schedule in October *QST*.

'53 Field Day Tops Them All. It's a pleasure to confirm the prognostication made in this column last month, at the same time we publish the official report of the '53 ARRL Field Day. The number of receiver-transmitter combinations tested afield was 1774, up 12.6 per cent, and the number of separate portable and mobile stations (692) was up 32.6 per cent. Individual participation topped the seven thousand mark for the first time at 7007, 8.6 per cent over last year!

Ending Signals vs. Verbiage. Ordinary QSOs make a nice balance between avoiding formula QSOs, and becoming excessively wordy for the intelligence they transmit. Good procedure is the mark of the true communicator. Use of proper prosigns (procedure signals) and especially the proper ending signals is one fast way to differentiate between the greenhorn and the seasoned two-way communicator to whom all accord high respect! Mid, W5CA, got us thinking about this lately, writing: "Many newer hams and some who should know better are using such deplorable operating expressions in their c.w. as *'Back to you OM'* or *'Over to you OM'*." It's not apparent whether this is because of some inherent desire to become poor imitators of the entertainment field rather than two-way communicators. Perhaps it's just a matter of not having had the right information set down to steer them to efficient and good ending-signal practice. All interested are invited to send for ARRL's Operating Aid No. 2, free on radiogram request, which gives the correct meaning and use of ending signals.

Experienced amateurs, to whom standard abbreviations and Q Code are second nature, can do much to help operating conditions by setting the example. Make it *good*, and introduce the newer gang to sound and correct use of K, KN, AR, SK, CL ending signals in c.w. work as the occasion affords. Some of those who aren't getting *answers* can blame their own long calls without enough station identification.

Operating Progress Attained through Activity. December offers a "breather" after the fun in the ARRL "SS." This is a good time to advance programs for the technical betterment of stations, whether 'phone, c.w., RTTY, s.s.b. or other forms are your favorites. Station results, noteworthy communication records, and operating ability come through *continued activity*.

The set kept on the shelf is *not* contributing to either personal enjoyment or operating progress, or to the public service record of the amateur. By getting into one's section net, 'phone or c.w., the pleasure of belonging to a closely knit fraternal group may be combined with practical communicating ability and results.

Novices should not neglect current code practice opportunities (W1AW, W6JZ) and the announced monthly qualifying runs from W6OWP and W1AW. The annual operating period dedicated to a Novice QSO party known as the Novice Round-up will take place *next month* (Jan. 9th–24th) and proper log forms can be requested from Headquarters as soon as you receive this copy of *QST*. Besides the Novice-to-Novice contact objective, we want this to be a get-acquainted radio period for already-licensed amateurs and newcomers. Those who are not Novices will be invited to submit their best lists of Novices worked. Novice licensees will be eligible for ARRL Award Certificates in each ARRL section named on Page 6. This year there are more Novice bands and it should be a lot of fun.

If v.h.f.-minded, be sure to be ready for the V.H.F. Sweepstakes coming January 9th–10th, the announcement scheduled for January *QST*. There will also be the CD Bulletin to all appointees in early '54, with opportunity for getting into the first quarterly CD Party as mentioned in the Activities Calendar.

Regular use of one's amateur rig, emergency equipment included, is a top essential for proper maintenance and for creation of one's station

operating record! Car mobiles should get scheduled use, even in winter, if they are to be depended on come any emergency . . . a point for ARRL ECs and FCDA Radio Officers, as well as the rest of us, to bear in mind. — *F. E. H.*

SEPTEMBER FMT RESULTS

The September 18th ARRL Frequency Measuring Test went off on schedule, though nature was unkind as to the propagation conditions in certain areas. There were 97 entries divided about equally between Official Observers and amateurs interested in measurement work but not holding the SCM appointment available to those using their gear to assist fellow amateurs through ARRL's Official Observer system.

Honors for top position in the OO group go to Don Fenton, W1MUN. In the non-Observer group two excellent performers in previous tests lead the lists: Mrs. Helen Apple, W4VGO, and Lloyd W. Root, W8HB. The standing of the top measurers is presented as usual in terms of the "parts per million" deviation from the official commercial frequency measuring bureau readings. Decimal fractions are shown only to establish an order of listing, since the "umpire" has a generally accredited accuracy of 4 parts in ten million (more accurately stated as 2 parts in 10 million plus or minus 2 c.p.s.). In keeping with the announced rules, no entry of a single measurement was considered eligible in the competition.

Observers	*Parts/ Million*	*Non-Observers*	*Parts/ Million*
W1MUN	0.4	W4VGO	0.4
W4JUI	1.2	W8HB	0.5
W6CK	1.9	W1ILF	1.0
W1QHS	2.1	W3LOX	2.1
W4IU	5.7	W8CUJ	2.1
W1BKG	5.8	W6CIW/9	2.7
W6GQA	6.3	W1BSY	3.6
W8BZD	6.3	W1EFQ	4.1
W4KL	7.4	W8WXY	7.4
VE2AAO	8.6	W4VWS	9.8
W1AYG	9.3	W2DOM	12.1
W6CAE	9.5	W7CCC	13.0

The following ratings are based on a single measurement: OOs — KZ5FL 9.9, W3EQK 10.8. Non-OOs — W3TFN 3.1, W8BMO 5.7, W6YUY 10.1.

Careful analysis of all the results, and comparison with the previously-comparable test, reported in May *QST* (p. 81), shows slightly higher deviation from perfection than in the last test. This no doubt resulted from the hollow and wavery signals that had to be dealt with by this expert group because of conditions. This emphasizes, however, that our FMT is a practical rather than a laboratory exercise. That is as it should be, since Official Observers have to work with practical on-the-air conditions of *every* conceivable sort in carrying out their missions of observation and assistance to amateurs (including our WNs) in keeping on frequency.

CODE-PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from W1AW will be made on December 15th at 2130 EST. Identical texts will be sent simultaneously by automatic transmitters on 1885, 3555, 7125, 14,100, 21,020, 52,000 and 145,600 kc. The next qualifying run *from W6OWP only* will be transmitted on December 6th at 2100 PST on 3590 and 7138 kc.

Any person may apply; neither ARRL membership nor an amateur license is required. Send copies of *all* qualifying runs to ARRL for grading, stating the call of the station you copied. If you qualify at one of the six speeds transmitted, 10 through 35 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m., you may try later for endorsement stickers.

Code-practice transmissions are made from W1AW each evening at 2130 EST. References to texts used on several of the transmissions are given here. These make it possible to check your copy. For practice purposes, the order of words in each line of *QST* text is reversed during certain of the slow-speed transmissions. To get sending practice, hook up your own key and buzzer and attempt to send with W1AW.

Date	Subject of Practice Text from October *QST*
Dec. 1st:	*A 220-Mc. Station for the Beginner*, p. 11
Dec. 3rd:	*ARRL TVI Demonstration* . . . , p. 16
Dec. 7th:	*Automatic 'Scope Monitoring* . . . , p. 19
Dec. 10th:	*Simplified Voice Control* . . . , p. 18
Dec. 18th:	*A Desk-Top Driver-Amplifier*, p. 24
Dec. 21st:	*Chirp-Free Break-In Keying*, p. 28
Dec. 23rd:	*More Sugar-Coated Single Sideband*, p. 31
Dec. 29th:	*A Wide-Range . . . Pi-Network Final*, p. 34
Dec. 31st:	*TVI and the Novice*, p. 40

W1AW OPERATING SCHEDULE

(All Times Given are Eastern Standard Time)

W1AW returned to its fall-winter operating schedule Sept. 27th. Lithographed master schedules showing complete W1AW operation in EST, CST or PST are available upon request.

Operating-Visiting hours:
Monday through Friday: 1500–0300 (following day).
Saturday: 1900–0230 (Sunday). Sunday: 1500–2230.

Exceptions: W1AW will be closed from 0300, Dec. 25th, to 1900, Dec. 26th, and similar times Jan. 1st and Jan. 2nd, Christmas and New Year holidays.

General Operation: Refer to page 73, October *QST*, for a chart to determine times during which W1AW engages in general operation on various frequencies, 'phone and c.w. This schedule is still in effect and is not reproduced herewith for space considerations. Note that since the schedule is organized in EST, certain morning operating periods may fall in the evening of the previous day in western time zones. W1AW will participate in all official ARRL operating activities, using scheduled general operating periods for this purpose if necessary.

Official ARRL Bulletin Schedule: Bulletins containing latest information on matters of general amateur interest are transmitted on regular schedules:

Frequencies (kc.):
C.w.: 1885, 3555, 7125, 14,100, 21,020, 52,000, 145,600.
'Phone: 1885, 3950, 7255, 14,280, 21,350, 52,000, 145,600.
Frequencies may vary slightly from round figures given; they are to assist in finding the W1AW signal, not for exact calibration purposes.

Times:
Sunday through Friday: 2000 by c.w., 2100 by 'phone.
Monday through Saturday: 2330 by 'phone, 2400 by c.w.

Code-Proficiency Program: Practice transmissions are made on the above-listed c.w. frequencies, starting at 2130 daily. Speeds are 15, 20, 25, 30 and 35 w.p.m. on Monday, Wednesday and Friday, and 5, 7½, 10 and 13 w.p.m. on Sunday, Tuesday, Thursday and Saturday. Approximately ten minutes of practice is given at each speed. Code-practice transmissions will be replaced by ARRL Code Proficiency Qualifying Runs on Dec. 15th and Jan. 13th.

A.R.R.L. ACTIVITIES CALENDAR

Dec. 6th: CP Qualifying Run — W6OWP
Dec. 15th: CP Qualifying Run — W1AW
Jan. 8th: CP Qualifying Run — W6OWP
Jan. 9th-10th: V.H.F. Sweepstakes
Jan. 9th-24th: Novice Round-up
Jan. 13th: CP Qualifying Run — W1AW
Jan. 16th-17th: CD QSO Party (c.w.)
Jan. 23rd-24th: CD QSO Party ('phone)
Feb. 6th: CP Qualifying Run — W6OWP
Feb. 9th: Frequency Measuring Test
Feb. 11th: CP Qualifying Run — W1AW
Feb. 12th-14th: DX Competition ('phone)
Feb. 26th-28th: DX Competition (c.w.)
Mar. 7th: CP Qualifying Run — W6OWP
Mar. 12th: CP Qualifying Run — W1AW
Mar. 12th-14th: DX Competition ('phone)
Mar. 26th-28th: DX Competition (c.w.)
Apr. 2nd: CP Qualifying Run — W6OWP
Apr. 10th-11th: CD QSO Party (c.w.)
Apr. 12th: CP Qualifying Run — W1AW
Apr. 17th-18th: CD QSO Party ('phone)

Our Civil Defense and RACES work cannot help but become enmeshed with the voluminous details of civil defense in general. This becomes horridly and terrifyingly apparent when we communicators attend conferences which include other aspects of civil defense. The communications aspect alone is complicated enough. Still, a general knowledge of the whole subject is necessary, especially at leadership levels. We should be familiar with such terms as ground zero, web defense, Conelrad, fire storm, mutual assistance, mobile support, isocasualty lines, damage control, static support, and vulnerable urban district, as well as with many other c.d. terms, a good many of them not used in communications at all. Even in communications, we should realize that RACES is not the whole show, but only one aspect of the communications picture. Each c.d. service thinks it is the most important; but each depends on many others for its existence and effectiveness.

Contact at all levels with civil defense officials reveals a constant increase in amateur interest and participation in RACES. In some areas the participation by amateurs is intense, in others amateurs are antagonistic, in still others their apathy reflects public attitude. RACES licensing is on the increase. Latest statistics show that eleven state plans have received full approval, and 28 local areas have approved RACES Communications Plans on file at FCC. About the same number of each are under study by FCC pending approval. Over 100 amateur stations have been authorized to operate in RACES, and more station authorizations are coming up, both with approval of additional communications plans and to supplement existing authorized stations. It took a long time doing, but we are finally under way with a good head of steam.

We attend FCDA conferences to which we are invited mostly to listen, to learn, and to assist with any problems concerning amateurs. As and if opportunity arises, we promote and champion the cause of amateur radio, but we do not shout, pound on tables, wave our arms or froth at the mouth. At a recent FCDA conference in Washington we found occasion to remark that the main reason amateurs occasionally refused to participate in civil defense was the insistence by c.d. officials that we enter their service individually, to serve only them, ignoring the existence of an already-organized amateur emergency service — the AREC. Immediately c.d. officials present cited examples to show that the other extreme also existed, that well-organized amateur groups insisted on "taking over" the entire RACES program, which of course usually was not well received by the c.d. Communications Officer.

This was not a heated argument, but a friendly, informal chat. In the end we came to the conclusion, again informally, that a middle point must be reached; that c.d. officials must recognize the existence of organization where present, and take it into account in formulating local RACES plans, and on the other side of the fence, amateurs must recognize the responsibilities of civil defense officials in RACES and not try to force the usage of the existing setup if it does not seem to c.d. officials to be feasible. RACES is both an amateur service and a civil defense service, a joint operation of amateur radio and civil defense. *Both* are involved in a job which cannot be done by either alone. In practically all cases, a halfway meeting place can be found if it is looked for.

— • • • —

Remember the "C.D. Committee Report" which appeared in *QST* for July, 1953, page 60? Mr. Bother of Skonk Hollow, who submitted that report, has received a letter from Ima Comrade II of Salt Pits, Siberia, congratulating him on his progress. Comrade Comrade, formerly a less successful operative in the Buffalo area (hence his present QTH), writes in part: "At first Agent 14 informed us that everything was going fine down in Buffalo, but about six months ago the c.d. Commissar must have executed a few people because things are certainly jumping now. The No. 1 suspect for aiding the growth of this c.d. group is the EC, W2PPY. At first I thought he was with us, but found out later that EC does not stand for 'Eager Comrade.' The group has three emergenski nets, all operating during the summer, and they have contacted the local c.d. office. It looks bad for us now, comrade. The c.d. office is getting ready to buy 30 stations for the amateurs to run. What chance will we have to knock out communications when people act like this?"

The letter ends with a note of admonishment: "I want to wish you more bad luck in organizing your c.d. activities, and remember, don't try too hard on this c.d. business or things might *really* get going."

— • • • —

At 0500, October 25th, EC W4PLE was notified that hurricane "Florence" was showing signs of heading for the West Florida Gulf Coast. Stations were alerted by landline and one hour later W4SRX had been placed in operation in a hurricane-proof building at Eglin Air Force Base. The 75-meter stations went into action first, handling weather information into and out of the area as needed to aid the weather bureau in plotting the expected course of the storm. W4s NN AOK and ROM handled this traffic. Meanwhile, the 10-meter net began its job. Several power units made available by the Air Force were distributed. Tie-ins were completed with Air Force, Red Cross, MARS, and 75-meter stations. As the hurricane neared the coast, it became evident that the local area was in for some high winds. The local 75-meter stations acted as co-NCSs of the Gulf Coast Hurricane Net as an added duty and traffic was handled into and out of the area without serious interruption. The 10-meter fixed stations operated on emergency power when the 80–85 m.p.h. winds caused failures in the commercial service. Traffic on these stations was of a local nature.

After the danger had passed, the Hurricane and Incident Radio Net had been active for 34 hours. Traffic was handled for the Air Force, Red Cross, Power Co., radio and press services. The following members of the HAIR Net were active: W4s AOK BKZ CAJ JM KWM NN PLE RDW SIW SMM SRX STU SWF SYP SZM UNE UNV VAQ VEY WKQ ZWG, K4s FAR FBS, W2UHA/4, W5QMK/4, W9AIR/4 and W9KVX/4. Other nets participating were the Florida Emergency 'Phone Net, Gulf Coast Hurricane Net and Alabama Emergency 'Phone Net.

— *W4PLE, EC Eglin Air Force Base, Fla.*

— • • • —

On Sept. 13th, an emergency drill was conducted by the AREC organization of Hagerstown, Md., in conjunction with the local Red Cross Disaster Relief Committee. One member of the Red Cross committee was stationed near a school building with a Red Cross banner displayed on his car as an "Object of Search." The second committee member was stationed at Red Cross Headquarters and joined

♦

Pictured at left are part of the San Joaquin Valley section gang who took part in parade control for the Merced County Fair Parade on August 29th. From left to right: W6s SQR, GIW, WN6BGM, W6s BUA, OHB and ZRJ (EC). Seven mobile units were used at six points along the parade route. The Merced Amateur Radio Club was in charge of communications.

by W3CIQ, acting for the EC. At 1430 the acting EC called the roll via 'phone patch through NCS W3CKJ, and the mobile units were directed to schools and industrial areas, with the mobile unit finding the "Object of Search" to so report. When this mobile unit so reported, the other mobiles were redirected to other strategic locations, such as hospitals, Telephone Co., Fire Department, etc., to establish communication where needed. After that, they all were directed to rendezvous at the area where the "Object of Search" was located.

— *W3OYX, EC Hagerstown, Md.*

The Southeastern Massachusetts Amateur Radio Association, in conjunction with local Civil Defense authorities, participated in a statewide c.d. alert on Sept. 14th. Four operators were on duty at NCS W1WKM, with four mobiles in the field and one portable emergency relay station. W1WKM maintained contact with the NCS at neighboring Fairhaven, which also had four mobile stations. Our mobiles covered the airport, fire stations, power stations and large defense plants. We amateurs as operators made a good account of ourselves.

— *W1AVY, EC New Bedford, Mass.*

We have twelve August SEC reports, representing 3133 AREC members. No new sections represented. We wish also to add South Dakota to the 100% list for 1953, their one missing report having since turned up.

A.R.R.L.-AFFILIATED CLUB HONOR ROLL

It is with great pleasure that we here present the second section of our Honor Roll listings for 1953 in accordance with the Board policy for special recognition of all affiliated clubs whose *entire membership* consists of members of the League. Refer to page 67 of June *QST* for the earlier listing of additional active clubs with 100 per cent ARRL membership. Our honor list is based each time on analysis of data received in the '53 Annual Information Survey conducted to meet Board requirements. In early '54 a new survey will be initiated, a form sent each active affiliate for the filings on which continued affiliation and new Honor Roll listings will be based. Very many clubs will now be engaged in mid-season activities, code and theory classes for newly-interested persons, civil defense, building and technical programs for members. The '54 survey will ask reports on all such matters for ARRL information and bulletin purposes. The following clubs now will receive "100% ARRL Club" certifications following publication of this *QST*.

Amateur Radio Transmitting Society, Louisville, Ky.
Astoria Amateur Radio Club, Astoria, Ore.
Cedar Valley Amateur Radio Club, Charles City, Iowa
Coastal Plain Amateur Radio Club, Tarboro, N. C.
Fountain City Radio Club, Fountain City, Tenn.
Haven Radio Club, New Haven, W. Va.
Helix Amateur Radio Club, La Mesa, Calif.
Hi-Plains Amateur Radio Club, Plains, Kansas
Illinois Valley Radio Association, Inc., La Salle, Ill.
Indianapolis Radio Club, Inc., Indianapolis, Ind.
Kaw Valley Radio Club, Topeka, Kansas
Lower Columbia Amateur Radio Association, Longview, Wash.
Lower Yakima Valley Radio Amateurs, Sunnyside, Wash.
Maui Amateur Radio Club, Kahului, Maui, T. H.
Norfolk County Radio Association, Norwood, Mass.
Odessa Amateur Radio Club, Odessa, Tex.
Pacifico Radio Club, Los Angeles, Calif.
Racine Megacycle Club, Racine, Wis.
Reading Radio Club, Reading, Pa.
Rock River Radio Club, Dixon, Ill.
Sandhill Amateur Radio Club, Hamlet, N. C.
Weldon Springs Amateur Radio Club, Clinton, Ill.
Westlake Amateur Radio Association, Fairview Park, Ohio
York Road Radio Club, Philadelphia, Pa.

ELECTION RESULTS

Valid petitions nominating a single candidate as Section Manager were filed by members in the following Sections, completing their election in accordance with regular League policy, each term of office starting on the date given.

Indiana	George H. Graue, W9BKJ	Oct. 14, 1953
South Carolina	T. Hunter Wood, W4ANK	Oct. 15, 1953
Northern Texas	T. Bruce Craig, W5JQD	Oct. 15, 1953
Western Florida	Edward J. Collins, W4MS/W4RE	Oct. 15, 1953
Western New York	Edward Graf, W2SJV	Nov. 21, 1953
Eastern New York	Stephen J. Neason, W2ILI	Dec. 14, 1953
Quebec	Gordon A. Lynn, VE2GL	Dec. 15, 1953

In the West Virginia Section of the Roanoke Division, Mr. Albert H. Hix, W8PQQ, Mr. Shadric A. Whitt, W8YPR, and Mr. J. Bernard Dodd, W8ETF, were nominated. Mr. Hix received 50 votes, Mr. Whitt received 43 votes, and Mr. Dodd received 36 votes. Mr. Hix's term of office began September 18, 1953.

ELECTION NOTICE

(*To all ARRL members residing in the Sections listed below.*)

You are hereby notified that an election for Section Communications Manager is about to be held in your respective Sections. This notice supersedes previous notices.

Nominating petitions are solicited. The signatures of five or more ARRL full members of the Section concerned, in good standing, are *required* on each petition. No member shall sign more than one petition.

Each candidate for Section Communications Manager must have been a licensed amateur for at least two years and similarly a full member of the League for at least one continuous year immediately prior to his nomination.

Petitions must be in West Hartford, Conn., on or before noon on the closing dates specified. In cases where no valid nominating petitions were received in response to previous notices, the closing dates are set ahead to the dates given herewith. The complete name, address, and station call of the candidate should be included with the petition. It is advisable that eight or ten full-member signatures be obtained, since on checking names against Headquarters files, with no time to return invalid petitions for additions, a petition may be found invalid by reason of expiring memberships, individual signers uncertain or ignorant of their membership status, etc.

The following nomination form is suggested: (Signers will please add city and street addresses to facilitate checking membership.)

Communications Manager, ARRL [place and date]
38 La Salle Road, West Hartford, Conn.

We, the undersigned full members of the.....
.....ARRL Section of the.....
Division, hereby nominate.....
as candidate for Section Communications Manager for this Section for the next two-year term of office.

Elections will take place immediately after the closing dates specified for receipt of nominating petitions. The ballots mailed from Headquarters to full members will list in alphabetical sequence the names of all eligible candidates.

You are urged to take the initiative and file nominating petitions immediately. This is your opportunity to put the man of your choice in office.

— *F. E. Handy, Communications Manager*

Section	*Closing Date*	*SCM*	*Present Term Ends*
Alaska	Nov. 13, 1953	Glen Jefferson	Jan. 15, 1954
Yukon *	Dec. 15, 1953	W. R. Williamson	Mar. 17, 1949
West Indies	Dec. 15, 1953	William Werner	Aug. 15, 1952
Maritime *	Dec. 15, 1953	Arthur M. Crowell	Oct. 16, 1952
Illinois	Dec. 15, 1953	H. F. Lund	Dec. 14, 1953
North Dakota	Dec. 15, 1953	Everett E. Hill	Resigned
Virginia	Dec. 15, 1953	H. Edgar Lindauer	Resigned
Oklahoma	Dec. 15, 1953	J. M. Langford	Feb. 15, 1954
Utah	Dec. 15, 1953	Floyd L. Hinshaw	Feb. 18, 1954
Georgia	Jan. 15, 1954	James P. Born, jr.	Mar. 8, 1954
Washington	Jan. 15, 1954	Laurence Sebring	Mar. 10, 1954
Connecticut	Feb. 15, 1954	Roger C. Amundsen	Apr. 15, 1954
Arizona	Feb. 15, 1954	Albert Steinbrecher	Apr. 15, 1954
Tennessee	Feb. 15, 1954	Mark M. Bowelle	Apr. 15, 1954
Alberta *	Feb. 15, 1954	Sydney T. Jones	May 1, 1954
Louisiana	Mar. 15, 1954	Robert E. Barr	May 31, 1954

* In Canadian Sections nominating petitions for Section Managers must be addressed to Canadian Director Alex Reid, 169 Logan Ave., St. Lambert, Quebec. To be valid, petitions must be filed with him on or before closing dates.

TRAFFIC TOPICS

The boys in Chicago are making good use of the two-meter band, not only for emergency and c.d. (RACES) purposes, but also for the purpose of local delivery of traffic. Operating every night at 1945 CST on 145.6 Mc., the net, called the Watch Dog Net, covers Chicago and suburbs from Lake Forest on the north to Oak Park on the west and Chicago Heights on the south. Close coöperation with W9YIX and W9BUK of ILN, and W9LXD and W9KCW of IEN, will assure the steady flow of traffic in and out of the Chicago area.

Use of the v.h.f. bands for local traffic handling is a natural in large metropolitan areas. We all know that in the past it has often been harder to get traffic delivered to New York, Boston, St. Louis, Baltimore and other big cities than to smaller places; just why this is so we have never been able to figure out. At the same time there is bound to be a heavier v.h.f. population in these areas than out in the country. If it can be put to use in urban or suburban traffic nets, including mobiles who might deliver traffic to doorsteps (think of it!), it would really be worth while. How about it, fellows?

—•••—

National Traffic System. We need some volunteers for Transcontinental Corps jobs. It's really not so tough, and you can help out just on a once-per-week basis. What we need most are good c.w. operators with good signals (which doesn't necessarily mean high power; the better the operator, the less power he needs). We know the bands are full of them, if they would only help us out on TCC. Since needs and requirements will change by the time this reaches you, we'll not detail them here; but if you would be willing to devote a couple of hours one or two nights a week to handling some long haul traffic, let us know, eh?

September reports:

Net	Sessions	Traffic	High	Average	Most Consistent
EAN	22	668	64	30.4	3RN, 4RN
CAN	21	627	84	29.8	All
PAN	22	897	96	40.7	RN7
1RN	22	325	27	14.7	E. Mass., Me., N. H., W. Mass.
2RN	44	165	14	3.7	NJN
2RN (Aug.)	21	146	20	6.9	NYS, NJN
3RN	22	213	43	9.7	MDD
4RN	40*	213	41	5.3	E. Fla.
RN5	25*	129	31	5.0	Ark.
RN6	44	367	26	8.4	BAN
8RN	13	23	8	1.8	Ohio
9RN	26	1485	159	57.1	Ill.
TEN	44	1302	86	29.3	Ia., Kans.
TRN	22	40	8	1.7	OSN
LSN (Los. A.)	26	354	40	13.6	
Minn. ('Phone)	26	55	14	2.1	
NYC/LI	18	81	10	4.5	
NYC/LI (Aug.)	13	75	17	5.8	
WSN (Wash.)	22	233	25	10.6	
QKS (Kans.)	13	108	17	8.3	
Total	472	7285	159	57.1	
Record	472	7285	159	57.1	

* Sessions reported out of 44 scheduled.

This was a record-breaking September, largely due to the fact that a good many NTS section nets are now reporting their statistics. Nice going, gang. While NTS progress may not seem to be fast enough to a lot of us, the respective figures in the above columns for Sept. 1952 are as follows: 455–4772–134–28. So you see, the progress since last year has been considerable. We have a long way to go.

W2ZRC has earned his EAN certificate. W6s IPW OFJ JZ HC and UTV have received PAN certificates. Four sections had perfect attendance on 1RN during September. W1BVR reports that the new system of section net liaison is working well and will be made permanent. Manager of 2RN, K2BG, is recovering from a serious illness. W3ONB is taking over as 3RN manager; the above is W3BIP's last report, although he will continue to participate. W5MRK reports for RN5. W6IPW, RN6 manager, says "Too many nets and not enough traffic or traffic handlers." Our 8RN is not getting much representation from Mich. or West Va. W4TAV takes over as acting 9RN manager while W9TT vacations. TEN certificates have been received by WØBZK, WØPZO, KØFCR and VE4AZ. The Fall TRN Bulletin issued by Manager VE3BUR indicates that TRN wants to keep trying; therefore, no further action will be taken on partition for the time being.

Following is the roster of operators in the Transcontinental Corps: *Eastern Area* — W1NJM (Mgr.), W2ZVW, W2RUF, W8DSX, W8FYO, W8UPB, W8YCP, VE3EAM, VE3GI. *Central Area* — W4AGC, W4TAV, W5KRX, WØBVE (Asst. Mgr.), WØSCA. *Pacific Area* — W6EFD, W6CMN, W6HOR, W6JZ (Asst. Mgr.), W6OFJ, W6YHM, W7EAU, W7NH, WØKHQ, WØZJO.

The Pacific Area Staff now consists of W6JZ (Chairman), WØKHQ (Alt. Chairman), W6HC (Secy.), W6IPW, W7NH, W6ELQ and W7PKX. They meet on the air once per week to discuss NTS problems. The upturn of NTS fortunes in the Pacific Area attests the success of this experiment.

1954 FIELD DAY DATES

ARRL is pleased to announce that its next Field Day will be held June 12–13, 1954. Whether your preference is club, group, or individual participation, start planning for your annual FD outing *now*.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for September traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
KG6FAA	532	3375	3254	121	7282
W3CUL	261	2796	1971	811	5839
WØHKE	250	1692	1942	43	3927
W6IAB	70	1852	1893	41	3856
KA7LJ	422	1619	963	656	3660
KL7AIR	78	1353	1270	84	2785
W4USA	53	1303	1291	65	2712
K6FCA	46	1346	1211	61	2664
W4PL	16	143	830	982	1971
W5MN	64	926	635	286	1911
KH6FAA	156	784	672	78	1690
KH6AHQ	44	772	739	31	1586
K6FAL	641	402	378	39	1460
KH6AJF	60	640	596	48	1344
W3USA	30	618	565	51	1264
W7BA	22	610	569	38	1239
W4YIP	16	576	567	24	1183
K4WAR	115	495	447	48	1105
WØKHQ	9	532	520	7	1068
K5FFB	29	500	473	23	1025
WØBDR	12	502	489	7	1010
W5GPI	7	468	425	43	943
KV4BD	202	316	158	216	892
W9NZZ	218	327	3	324	872
WØQXO	14	399	331	67	811
KØFCR	105	343	317	7	772
WØSCA	12	378	370	8	768
W7PGY	15	343	324	19	701
W3VR	87	293	288	9	677
W9JUJ	55	332	254	28	669
W4TAV	12	333	293	9	647
W6KYV	52	299	26	270	647
K2WAO	22	307	269	38	636
W2JOA	48	307	202	16	573
W6YDK	41	253	145	112	551
W4PFP	14	292	234	4	544
W8SRF	0	267	229	38	534
W4WHC	497	17	4	9	527
W6SWP	27	250	166	73	516
W7CZX	10	249	222	23	504
Late Reports:					
W3CUL (Aug.)	279	3642	2706	927	7554
WØHKE (Aug.)	156	1282	1572	19	3029
KA7RC (Aug.)	65	473	408	65	1011
W4TAV (Aug.)	17	359	312	30	718

BPL for 100 or more *originations-plus-deliveries:*

K5NRX 220	W9SWM 112	W9LHB/Ø 104
KA2KS 124	W1AW 107	
K5WBA 114	W8RO 107	

The BPL is open to all operators who report to their SCM a message total of 500 or more, or 100 or more originations-plus-deliveries for any calendar month.

Station Activities

• All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

EASTERN PENNSYLVANIA — SCM, W. H. Wiand, W3BIP — SEC: IGW. RM: AXA. PAM: PYF. E. Pa. Nets: 3610, 3850 kc. Eastern Pennsylvania regrets the passing of PSH, who was killed in the accidental crash of a private airplane Sept. 25th near Line Lexington, Pa. Henry, the son of QV, was president of the Abington Township ARA and active on 20-meter 'phone and c.w. as well as the E. Pa. Net. May I express, for all of us, our most sincere and deepest sympathy to the Martin family in their great loss. York ARC now meets at the Naval Reserve training center, with LUD assuming the duties of president since the resignation of DJF. RAF, secretary, reports the Club had a very successful summer schedule including a 2-meter transmitter hunt, Field Day participation, and annual family picnic, while talks on various phases of amateur radio and electronics kept interest high during the summer club meetings. The DX Club elected the following new officers to serve for a term of one year: DWA, pres.; GHS, vice-pres.; SDE, secy.-treas. The Pottstown ARA just missed having its annual picnic during the heat wave, and with temperatures in the lower 60s a chilly time was had by all. The Phil-Mont Mobile RC reports several new members: IEJ, VCY, TMY, and VCE. During the Club's last transmitter hunt, nobody could find the hidden transmitter, with DSG doing the fine hiding job. OY, secretary of the Lancaster RTS, reports George Hart, National Emergency Coördinator, addressed a special meeting of the LRTS on the service aspects of amateur radio and civil defense. Eight mobile units of the club provided communications for the County Fire Police participating in a c.d. drill held at York, while the 2-meter emergency net of Lancaster provided the county with communications during the State-wide c.d. drill Oct. 6th. The Hilltop Transmitting Assn. of Red Lion, the new radio club mentioned in this column last month, has a most significant name, being located 950 feet above sea level. IMV's 15-year-old YL, passed her General Class exam and now is WUH. Her first contact was a DL4 on 20-meter 'phone. TEC graduated from Novice to General Class and now is active on all bands. BES still is adding new countries to his now FB list. Traffic: (Sept.) W3CUL 5839, VR 677, BFF 177, ONA 117, NOK 92, BIP 49, AXA 47, GES 44, KAG 35, TSY 31, PDJ 30, UWP 24, QOL 19, QLZ 18, TEJ 18, SHP 14, UOE 14, VN 12, PVY 9, DUI 7, AEQ 5. (Aug.) W3CUL 7554, SSU 10, QLZ 8, ELI 5, BES 3.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, Arthur W. Plummer, W3EQK — On Sept. 25th the Eastern Shore Amateur Radio Club was organized by about 60 hams and would-be hams from the Eastern Shore of Maryland and Virginia and the Delaware Counties of Newcastle, Kent, and Sussex. The meeting was attended by 27 hams, including your SEC W3PRL and the SCM. SBR of Bridgeville, Del., was elected pres.; TCQ, of Seaford, Del., vice-pres.; and FU, of Denton, Md., secy.-treas. A steering or activity committee of PVO, DOG, and BM was named to assist the club officers. CDQ has returned from her European trip and reports while over there she worked W3WV from IIER, Milano, Italy, on 20-meter c.w. HC now is ready for traffic nets. WN3VOZ/VOZ, Tech. Class, has a BC-788 on 420 Mc. AYS is up to 156 countries with 30 watts. His latest — CEØAA, Easter Island! BM, who is about the most active station on the Eastern Shore of Maryland, expects to go mobile soon. Jerry is Worcester County EC, OBS, OPS, ORS, and OO Class III and IV. The first October meeting of the BARCS saw FQR and HKJ speaking on transistors and single side-band. WN3WAF worked his first Georgia and New Hampshire stations. HC is ready for net work. The State of Maryland c.d. amateur radio station call is WPB. BWT/AKB report the MDD Net is running fine. HKS has his Lysco going great guns again. Gates, at USA, reports plenty of activity in ESN and MDD. WKB is a new ham at Foxville on 20 and 40-meter c.w. The S.E.T. held at Hagerstown Sept. 13th in conjunction with the Red Cross and CIQ-CSX/M, RAH/M, SKN/M, SQA/M, TJV, and VAM was very successful. CIQ handled the direction of activities by land line from Red Cross Headquarters and was patched into CJ's transmitter while mobile units handled traffic at the hospital, fire department, and telephone company headquarters. ARA set up a message center at the Hagerstown Fair Sept. 21st through Sept. 26th under CIQ/8. Those participating were CIQ, CSX, EHA, NZT, OXL, OYX, RAH, RFL, RIF, RVN, SCC, SKN, SQA, TJV, VAM, and WN3WTO. VQZ is newly-appointed OO. Class III-IV. ASE has been at Perrin AFB, Sherman, Tex., where he operated K5FEO. MCG, back from the Arctic Regions, again is active on 40 and 80 meters. WN3WVK is a new call at CARC. MCG has been very busy at K5WSP. The Washington Mobile Radio Club Hamfest held at Palisade Park Oct. 4th was a howling success. MARS had the 4USA mobile 600-watt job on hand which attracted a lot of interest. At the first October meeting of the BARCS FQR spoke on the subject of transistors. He was accompanied by GHX and HKJ, who gave a good bit of information on s.s.b. PZW is back in the States from Northern Greenland. WSE is active in NLI, 3RN and TAN. VAA reports into MDD, 3RN, and EAN. ONB is new manager of 3RN. HC reports new HQ-140X and vertical for 20, 40, and 80 meters. QFC reports his classes at George Washington are QRMing his net skeds. EEB is working on postwar DXCC with half confirmed so far. KMA is building 500-watt Pi-network final with 4-125A. EQK manages to be heard on MEPN with 28 watts mobile and 52 ft. piece of wire hooked to the end of the mobile whip and tied to a tree branch. JTK and RNY are new ORS appointees and JTK is OO Class III-IV. Traffic: (Sept.) W3USA 1264, PZW 377, CVE 209, WSE 107, COK 75, JE 66, VAA 62, QCB 56, CQS 23, AKB/BWT 22, MCG 21, ONB 21, JZY 15, QFC 12, NOE 7, EEB 6, OYX 5, NNX 4, HC 2. (Aug.) W3BM 101, CQS 20, HC 2.

SOUTHERN NEW JERSEY — SCM, Herbert C. Brooks, K2BG — SEC: UCV. Nine stations holding appointments in the section reported their activities on Form 1 this month. I would appreciate reports from all appointees each month. BAY reports that the 50-Mc. boys still are keeping their weekly skeds and are doing a fine job. ZVW expects to QNI more nets with the coming of the winter season. ZQ made 55 contacts using 5 watts on 147 Mc. in the recent V.H.F. Contest. ZI expects bigger and better things with a new transmitter feeding a new all-band off-center-fed antenna. Ed is very active on ham and MARS frequencies. RG, NC of the C.W. New Jersey Civil Defense Net, continues to keep the weekly drills interesting and instructive. ORA, our OES, active on 50 Mc., raised the old beam to a greater height and added a new rotator. I also am indebted to ORA for a fine report of his activities. The SJRA monthly publication, *Harmonics*, and the Hamilton Twp. Radio Association's *Scuttlebutt* are a great source of information on the activity in the section. If there are other similar papers in the section, please place your SCM on the mailing list so that he can do a better job of reporting. Traffic: K2WAO 636, W2RG 105, ZVW 89, ASG 16, ZI 6, ZQ 6, HAZ 3.

WESTERN NEW YORK — SCM, Edward G. Graf, W2SJV — Asst. SCM, Jeanne Walker, W2BTB. SEC: UTH. RM: RUF. PAM. GSS. NYS meets on 3615 kc. at 7 P.M., 3980 kc. at 6 P.M.; NYSS on 3595 kc. at 8 P.M.; NYS C.D. on 3509.5 kc. and 3993 kc. at 9 A.M. on Sun. 8LF, of FCC, spoke at the NYS Convention. ZHU is mobile on 2 meters. DHU, ISI, AZA, and K2BNC dropped the "N" from their calls. New ECs: CLX for Saratoga County and VDF for Washington County. FE has finished de-TVI-ing the rigs. UHI was auctioneer at the KBT auction. K2BNC has HQ-129X. HSI is on 75-, 40-, and 10-meter 'phone. ZPC and KN2DGP are on 80-meter c.w. UTH made an SEC trip through Northern New York. K2AHH/2 added another audio stage to the Viking II. The Erie County AREC Net now operates on four frequencies. The Broadcasters Net now operates on 7090 kc. at 10 A.M. Sun. Contact SVC for details. K2EE, who has held a license continuously since 1910, is back on the air. QNA has a temporary four-element 2-meter beam up. RUF toured the western states and New Mexico. New officers of the Niagara Radio Club are UMS, pres.; SYM, vice-pres.; OVP, secy.; RLN, treas. New officers of the Binghamton Amateur Radio Assn. are VIQ, pres.; UWD, vice-pres.; FJB, secy.; RXG, treas. SCY now is with VOA. SEG has a Viking. SVC will take traffic from the BC Net to NYS. DOD worked CEØAA, Easter Island. Directors 2OBU, 3GEG, and 8SPF were present at the NYS Convention. The TCPN presented BTB with a plaque for her devotion to amateur radio in traffic handled for servicemen and their families and emergency traffic. Presentation was made by 1SJO, Net Manager. FBA and PHT walked off with prizes at the RARA DX-Fest. New

officers of the RARA v.h.f. group are ALL, pres.; VIE, vice-pres.; AKM, secy.-treas. YIE has 10/10 beam on 2 meters. YUE is mobile on 2 meters. ALL gave a talk on new tubes and 420-Mc. converter at the v.h.f. meeting. The Rochester Mobile group held a hidden transmitter hunt, with YPR the winner. The Novice traffic net operates on 3720 kc. at 10 A.M. Sun. and 5 P.M. Tues. MSI is NCS. ORI spoke at the RARA v.h.f. meeting on the application of noise generators. CZT attended the ARRL Convention in Houston. CRD, the official Red Cross station in Syracuse, is linked directly to Washington, D. C. with teletype. OLH has an S-40 receiver, 6AG7-807 transmitting at 45 watts on 80- and 40-meter c.w. QQ has an HQ-140X. Traffic: (Sept.) W2ZRC 163, HKA 107, COU 84, OE 68, BNC 65, EMW 51, KEL 35, UTH 34, SJV 27, IPC 22, RQF 19. K2DG 18, W2RJJ 14, ZHU 6. (Aug.) W2KEL 12, SVC 10. (July) K2AAH/2 7.

WESTERN PENNSYLVANIA — SCM, R. M. Heck, W3NCD — SEC: CA. RMs: NUG, GEG, UHN. PAMs: AER, LXE. I am happy to report that several applications for AREC have been processed since last month, but we still need many more, especially in active and organized groups, one member of which I will be glad to make the EC. Let all active clubs form such a group for their particular county or community. Send for full information to our SEC (see Oct. *QST* page 72). He will be glad to assist you in your planning. The BARC, Emporium, through TCP, the new correspondent for *The Bucktail Hamster* sends the latest news: Newly-elected officers of the BARC are WN3VEE, pres.; RVS, vice-pres.; TCP, secy.; 2QLR, treas.; and 3OLB, sgt. at arms. NMJ has been appointed program chairman. KUN has a new vertical radiator. PTU is working mobile on 40 and 75 meters. RMX also is mobile. DNO is now a resident of Chicago. TYC and IIX are working on new equipment. From the SCARC we hear of the plans for winter activities beginning with officer elections and that big kw. on 2 meters just as soon as RXT and his advisors get the bugs removed. We are glad to hear that NRQ has recovered from a recent illness and is back in circulation. The MCRA has changed its club meetings to the 2nd and 4th Wed. nights each month, and extends an invitation to all amateurs to come and join in the activities. The WPA Traffic Net is back on 3585 kc. Mon. through Fri. at 7 P.M. EST. NCSs are as follows: UVD, NUG, LXQ, UHN, and SIJ. Net certificates were issued the following: AAX, GEG, KNQ, KUN, KWL, LXE, LXQ, MEF, MIE, MIZ, NCD, NRE, NUG, SIJ, UHN, and UVD. Let all who can join this net if only regularly once a week; it will give our section that much more coverage. Traffic: (Sept.) W3GEG 114, UHN 27, AER 20, SIJ 20, CA 17, KUN 11, LSS 10, NCD 10, NUG 6, MIZ 5, KNQ 4. (Aug.) W3NRE 153, GEG 80.

CENTRAL DIVISION

INDIANA — SCM, Clifford C. McGuyer, W9DGA — I would like to take this opportunity to thank you for giving me the honor of serving as your SCM for the past two years. Thanks to LOs LZI, TT, BKJ, DOK, NTA, JUJ, JBQ, WWT, QLW, and YWE; also to those who reported regularly. Your new SCM is BKJ. Mail reports to George Graue, 824 Home Ave., Ft. Wayne. OGX replaced his screen modulation with 811 Class B modulators. PPS and STC have a cabin at Flat Rock. VNV has 10 watts on 3910-kc. mobile. SWH received an RFN certificate. PQA has a new Viking. The DARA has a station at the local high school under the calls DUK and YUE and also a code class for students. JUJ has dropped most of her traffic schedules, but will stay on QIN and CAN. BDP is an old-time Morse operator. DKR reports the Kokomo Club has a code theory class for newcomers. WIN has a new 75A-3 receiver. The Mobile Amateur Radio Club of South Bend has affiliated with ARRL. BPLs this month include NZZ, JUJ, and SWM. YWE joined MARS and is taking his traffic on a mill. KLR visited the New England states. CMT has a new folded dipole antenna. NTR has a code class with 40 students. HDB got married. DHJ finds 80 meters very good early in the morning. IFR has a new shack. KLR worked 148 stations in 12 states in the last V.H.F. Contest. SWM is working DX on 40-meter c.w. WN9YIG has worked 42 states. WN9ZSK has a new Heath transmitter. New Novices in Martinsville are ZSK, ZRS, and ZRC. TT vacationed in Wisconsin. JBQ handled the S.E.T. for the RFN Net. BKJ reports FWRC S.E.T. activities were down from last year. DGA and UHV were delegates from TARS for IRCC at Wabash. KDV has moved into a soundproof shack in the basement. KDV ranked 9th in the nation in the July C.D. 'Phone Party. DUD is working on 813 rig. BKJ visited QYQ, BOC, KDV, and NTA. NH has a new Viking and worked ZL1WW and VP4LZ on 160 meters. NH also is WAS on 160 meters. LQE still is the most active OBS. The TARS Annual Hamfest found 144 registered. PQR, UHV, and FJI made all arrangements and should be congratulated on a fine job. JFJ is in the printing business. EZB reports the Richmond Club held a successful mobile drill in coöperation with the police and fire departments. EUC and BOF have new cars. BKJ is rebuilding. NH received a microphone from his XYL for his birthday. SWM won a soldering iron at the Cincinnati Hamfest. New appointments this month include WIN and NH as OPS; ZSC, EC for Henry County; RDJ, EC for Vanderburgh County; JVF, EC for Hancock County; and JIP, EC for Hamilton County. WBA is station manager for AB. ZIB has a new all-band Viking mobile rig including 2 meters. Traffic: (Sept.) W9NZZ 872, JUJ 669, SWM 447, YWE 348, TT 294, UQP 94, QYQ 93, ERB 88, NTA 70, AB 52, STC 46, DHJ 40, DOK 40, UMS 38, SKP 36, OLX 32, LZI 26, VNV 26, PPS 22, CMT 20, FYM 20, LQE 18, STW 18, WBA 18, DKR 10, BDP 8, ZIB 4, KDV 3, DGA 2, IFR 2, QLW 2, KLR 1, NH 1, NTR 1, WIN 1, YVS 1. (Aug.) W9OGX 50.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — SEC: OVO. PAM: ESJ. RMs: MQV, UNJ. Nets: (WIN) 3625 kc. 7 P.M. Mon.–Fri.; (BEN) 3950 kc. 6 P.M. daily. State mobile and c.d. frequency: 29,620 kc. VBZ uses a Viking I with VFO, and an NC-125. Net certificates (BEN) were issued to VBZ and WIR. VKR built an 811 modulator for 'phone operation. A new club has been formed at Globe-Union in Milwaukee and includes LCD, pres.; VYX, FSZ, VTZ, GNW, YAX, OQF, and WNs WZL, ZCH and ZGI. IXA is NCS on TLJ-9RN Mon. OOF is building a 4-125A final with variable inductance tank. SDK expects to have antennas back up for the winter. NWRC held its annual banquet at Eau Claire Sept. 24th. TKY has Elmac transmitter and Gonset Super Six converter for mobile operation. WN9ZAD had 58 contacts in 5 sections in the last V.H.F. Contest. The N.E.W. V.H.F. Club has started a net on 146.25 kc. with ZJA, OPA, UMJ, GFL, WN9ZIX, and WN9VGL participating. A heavy schedule at school prevented UNJ from making BPL. KXK is working DX again with the benefit of a new three-element 20-meter beam. WN9AEM took his General Class exam. CGO is back in Antigo following his release from active duty in the Navy. IZE/M has been checking into the BEN from Nebraska. New appointments: RKT as EC, VKR as OBS, and LGR/9 as ORS. EWC, ANM, APU, NRP, and SZL renewed EC appointments. OVO has a new Elmac receiver for mobile operation. VKR ran up 3800 points in the W/VE Contest. Traffic: W9LGR/9 392, MQV 334, UNJ 201, CXY 185, VBZ 170, RTP 80, ESJ 63, SAA 24, GMY 19, RQM 14, KWJ 12, VKR 11, CFP 10, NUW 8, IFS 6, FCF 4, IXA 2, VYX 2.

DAKOTA DIVISION

SOUTH DAKOTA — SCM, J. W. Sikorski, WØRRN — Asst. SCMs: Earl Shirley, ØYQR, and Martha Shirley, ØZWL. SEC: GCP. PAMs: UVL and NJQ. RM: OLB. The Prairie Dog ARC, Sioux City (Iowa) ARC, and Sioux Falls ARC held a joint picnic at Union County State Park. OLB has a new modulator, running TZ40s. NGM is moaning over a blown HV transformer. KØFCR made BPL the third month in a row. NEO is newly-appointed OPS and OBS. The newly-organized Black Hills 75-meter net (3885 kc.) meets daily at 1700 MST and Sun. and holidays 1230 MST. OJQ, HWB, and QEK are NCSs. FCR has moved to a new location at Ellsworth AFB. OJQ is building an 813 rig with 811 modulators, and QEK is going wild with grounded grid amplifier with 833A. The SFARC has acquired a new 2.5-kw. emergency generator through the efforts of WNØOOZ. OOZ has completed the 75-watter in Dec. '52 *QST*. Traffic: KØFCR 772, WØOLB 199, OJQ 164, PHR 67, NEO 29, QEK 22, BNA 17, NGM 2.

MINNESOTA — SCM, Charles M. Bove, WØMXC — Asst. SCM: Vince Smythe, ØGGQ. SEC: ZDU. RM: OMC. PAMs: JIE and UCV. SZJ now is mobile using a BC-457 and running 50 watts input. K6EA/Ø is back on the air at Bemidji. Transmitter hunts are again in full swing in Minneapolis with the coming of winter activities. WNØQDP and WNØQDR are new Novices in Winona. HBE is planning high power using a 4-125. The St. Paul Radio Club, Inc., of St. Paul, is sponsoring code and theory classes at Room 108, Mechanical Arts High School, between 7 and 9 P.M. Wed. The MJN now can boast of having a YL as co-manager. She is Lydia, KJZ. The Net Manager of the M8N C.W. Net is looking for new outlets in Southern Minnesota. He also would like news of station activities for the net paper, the *Trumpet*. Mail all news to DQL, the publisher. CSG is the new Asst. SEC. Anyone having an EC certificate that needs endorsing, please send it to Bob Coons, ZDU, in care of Northern State Power Co., 51 So 5th St., Minneapolis, Minn. The Mobile Amateur Radio Corps is setting up a complete radio station at the civil defense headquarters in Minneapolis. This equipment will consist of a new Collins 75A-3 and a 32V-3. GVA has entered the service of our country. Traffic: WØHFY 188, UCV 128, DQL 126, CGK 51, K6EA 40, WØDYD 33, TJA 31, HUX 25, HNV 23, IKJ 20, OMC 18, KFN 16, GTX 15, BUO 14, TKX 13, GGQ 12, EQS 10, HBE 10, KLJ 10, OPA 10, KMI 9, HAH 5, EMH 4, FFU 4, JNC 4, LUX 4.

DELTA DIVISION

ARKANSAS — SCM, Fred Ward, W5LUX — Things are about back to normal after the summer low. We have one BPL certificate going to K5WBA, and RWJ just barely missed one. The S.E.T. was responsible for a lot of activity and next year we should have our plans perfected with

(*Continued on page 84*)

Help Fight TB *{Number two hundred thirty-six of a series}*

Buy Christmas Seals

★

Merry Christmas

and

Happy New Year

from NATIONAL COMPANY

C. L. Gagnebin.....W1ATD
Herman Bradley.....W1BAQ
James Ciarlone.....W1BHW
Calvin Hadlock.....W1CTW
Seth Card.....W1DRO
Frank Bartlett.....W1EU
William Osborne.....W1EXR
George Ringland.....W1EYZ
Dave Smith.....W1HOH
Vincent Pelrine.....W1HOX
Vincent Messina.....W1HRW
Joe Rossi.....W1HXY
Edmund Harrington.....W1JEL
Gustave Jacobson.....W1JDG
Victor Rossi.....W1JHI
Alfred Zerega.....W1JMK
Robert Williams.....W1KOX
Victor Jarvis.....W1KKQ
Frank Lopez.....W1KPB
John Stanley.....W1LFF
Leo Green.....W1LML
Frank Waden.....W1LNV
Richard Thurston.....W1MFZ
Sam Beverage.....W1MGP
Thomas Benard.....W1MLL
Victor Penney.....W1MTS
Ralph Hemeon.....W1MWX
Donald Poulin.....W1MXC
Dexter Atkinson.....W1MYH
Martin Oxman.....W1NYU

Ralph Hawkins.....W1OEX
John Prusak.....W1OPT
William Bartell.....W1PIJ
Charles Coyle.....W1PME
Harry Paul.....W1PMS
Hyman Kana.....W1PSJ
Raymond Jordon.....W1QIU
S. W. Bateman.....W1RX
William Sullivan.....W1RYE
Redmond Sheets.....W1SYA
Frank Finnegan.....W1TAO
Ted Smith.....W1TPB
William S. Doyle.....W1TV
Henry L. Flood.....W1TVY
Frank Santangelo.....W1ULB
Bob Snowman.....W1VXE
Domenic Demarco.....W1WTS
Dick Gentry.....W2AEK
Edward Braddock.....W2BAY
Carroll Banfield.....W2BLS
Arthur Stengel.....W2JZH
Arthur H. Lynch.....W4DKJ
Everett Chapman.....W4OIM
J. E. Joyner, Jr.....W4TO
Andrew H. Elsner.....W6ENV
Herb Becker.....W6QD
Arle H. Anderson.....W7LPN
Clyde Schryver.....WØRPE
Robert Lundeen.....WØVVX

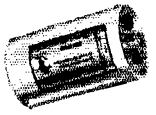
★ It is a privilege to reproduce the 1953 Christmas Seal of the National Tuberculosis Society as a token of our contribution

NC

ADVERTISEMENT

Just in TWO

SWR BRIDGE

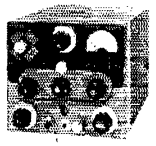


Provides accurate measurement of standing wave ratios to insure most effective use of a low pass filter and antenna coupler for ultimate in TVI suppression. 52 ohms impedance can be changed to 70 ohms or other desired value. Equipped with SO-239 connectors and polarized meter jacks. **250-24 SWR Bridge, $9.75 Amateur Net.**

JOHNSON KEYS

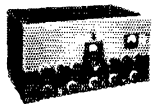
Practice sets, semi-automatic, standard, and practice keys. Semi-automatic models adjustable from lowest to highest speeds. Standard and practice keys feature coin silver contacts and operate with a light keying touch. **$1.45 to $21.00.**

VIKING MOBILE KIT



Power packed mobile. 807 amplifier, 60 watts maximum input, 100% amplitude modulated with PP807's. Gang-tuned, band-switching, 5 bands (75, 40, 20, 15 and 10) with VFO provision. Series tuned output links . . . solve loading problems. Dash mounting—easily accessible—illuminated meter. **240-141 Viking Mobile Kit Complete, less tubes, microphone, power supply and antenna, $99.50 Amateur Net. Also available wired and tested.**

VIKING II TRANSMITTER



TVI suppressed. All amateur bands from 10 to 160 meters. 100 watts phone output, 130 watts CW. Instant bandswitching—VFO input provision—dual power supplies. All stages metered. Pi-network coupling output amplifier. Self contained—no plug-in coils. 100% amplitude modulation. **240-102 Viking II Transmitter Kit, complete with tubes, less crystals, key and mike. Amateur Net $279.50. Available wired and tested, $337.00 Amateur Net.**

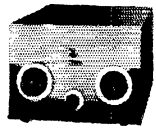
JOHNSON BI-NET

Dual mobile antenna loading network for 10 and 20 meter amateur bands. Mounts in center of standard mobile whip—enables operator to change bands in motion. Operation is completely automatic, no relays or mechanical control required. After initial adjustment, BI-NET requires no further attention. Enclosed in streamlined, weatherproof plastic housing—equipped with 3/8"x24 female threads for antenna mounting. Size, 4 7/16" high, 5 5/16" long, 2 3/8" width, weight 14 oz. **250-22 Johnson "Bi-Net" $10.95 Amateur Net.**

JOHNSON ROTOMATIC ROTATOR

All-weather antenna rotator designed for rugged service. Light weight cast aluminum housing with 5/16" steel rotating table. Unit tilts for simplified beam adjustment. Safely supports dual beams weighing up to 175 pounds. Reversible 360° rotation. Slip rings handle up to 2½ KW. Assembly includes control box with selsyn operated, illuminated dial. Controls, rotation switch, power switch and antenna relay switch. **138-112 Johnson Rotomatic Rotator, $324.00 Amateur Net.**

JOHNSON "MATCHBOX"



"Matchbox" loads an almost infinite variety of antennas from 3.5 to 30.0 mcs. Matches balanced antennas from 25 to 1200 ohms resistance. Loads unbalanced, or single wire antennas of approximately 25 to 3000 ohms resistance. Tunes out large amounts of reactance. Self-contained antenna changeover relay. Bandswitching—front panel controls—no internal adjustment required to change bands. **250-23 Johnson "Matchbox", assembled, wired, tested, $49.85 Amateur Net.**

JOHNSON SIGNAL SENTRY

Designed for monitoring either CW or phone signals without regard to operating frequency, the JOHNSON Signal Sentry is energized by transmitter RF. Receiver audio muted for break-in operation. Unit may be used as a code practice oscillator, with slight modification. Size: 3 7/8"x3 3/8"x3 3/4". Tubes required, but not furnished: one 12AX7 and one 12AU7. Weight: approx. 3 pounds.

250-25 Johnson Signal Sentry, completely assembled, less tubes; installation instructions included.

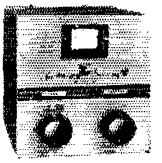
$14.70 AMATEUR NET

VIKING MOBILE VFO

A diminutive variable frequency oscillator designed specifically for mobile use. Compensated for an extremely wide range of ambient temperatures, the JOHNSON Mobile VFO is only 4"x4 1/4"x5". Output is sufficient to drive any straight pentode crystal stage as an amplifier. Circuit design, rigid construction, and heavy aluminum cabinet minimize frequency shift due to road shock and vibration. Tube line-up consists of a 6BH6 oscillator, 6BH6 isolation amplifier/frequency multiplier, 0A2 voltage regulator.

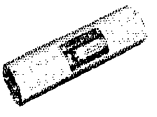
250-152 Viking Mobile VFO in complete kit form, less tubes; assembly and operating instructions included. $29.45 AMATEUR NET. Available factory assembled, less tubes; wired and tested, 250-152-2

$44.95 AMATEUR NET.



VIKING VFO

Accurately calibrated for all amateur bands from 10 to 160 meters. Excellent stability, vernier tuning, clean keying, and perfect "break-in" on all bands. **240-122 Viking VFO kit complete, less tubes, $42.75 Amateur Net. Available wired and tested, $63.75 Amateur Net.**

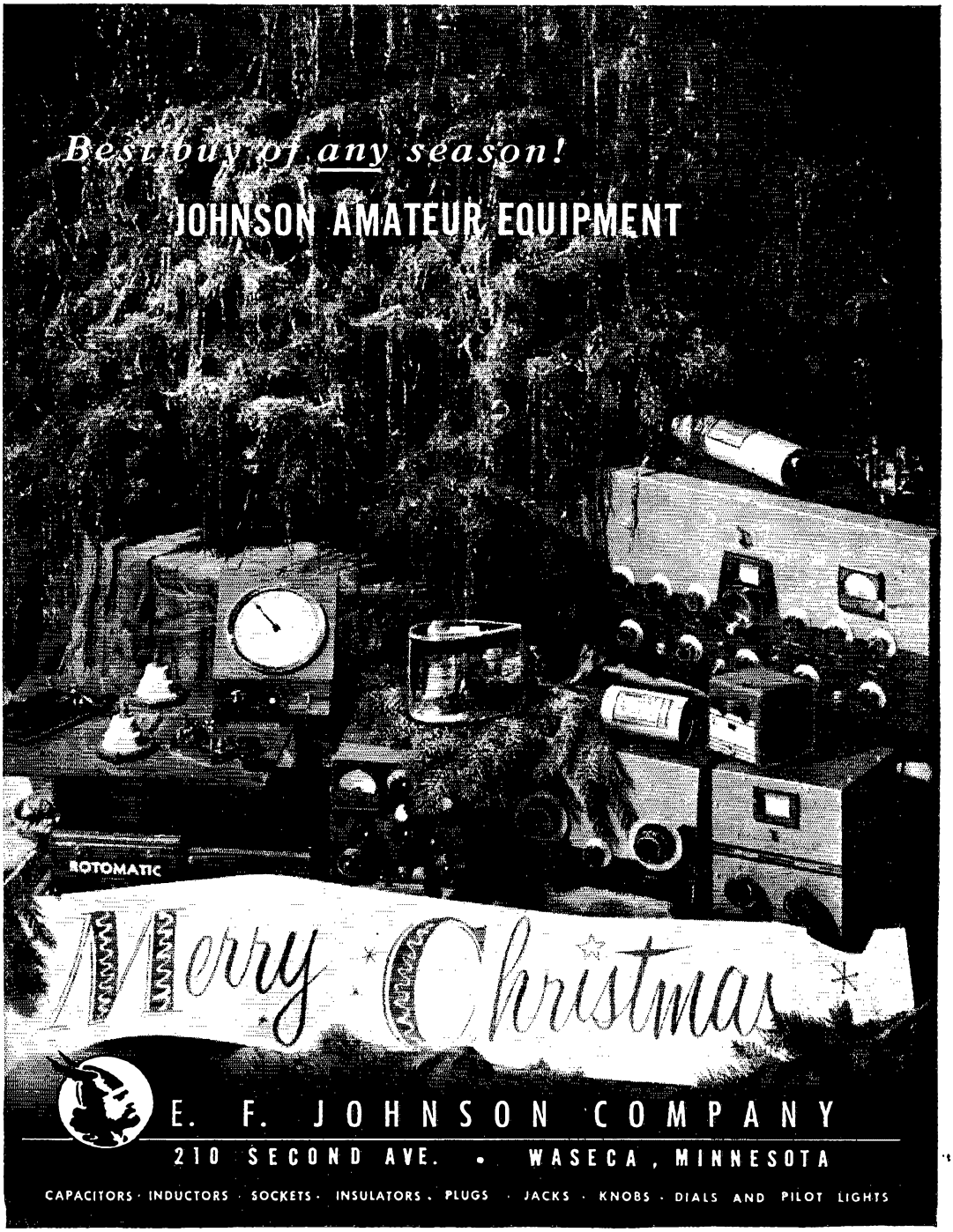


LOW PASS RF FILTER

Consists of four individually shielded sections, capable of handling more than 1000 watts amplitude modulated RF. Provides 75 db harmonic attenuation in the antenna circuit. SO-239 coaxial connectors, assembled and pre-tuned. **250-20 Low Pass RF Filter, $16.50 Amateur Net.**

time for Christmas...

NEW JOHNSON PRODUCTS!

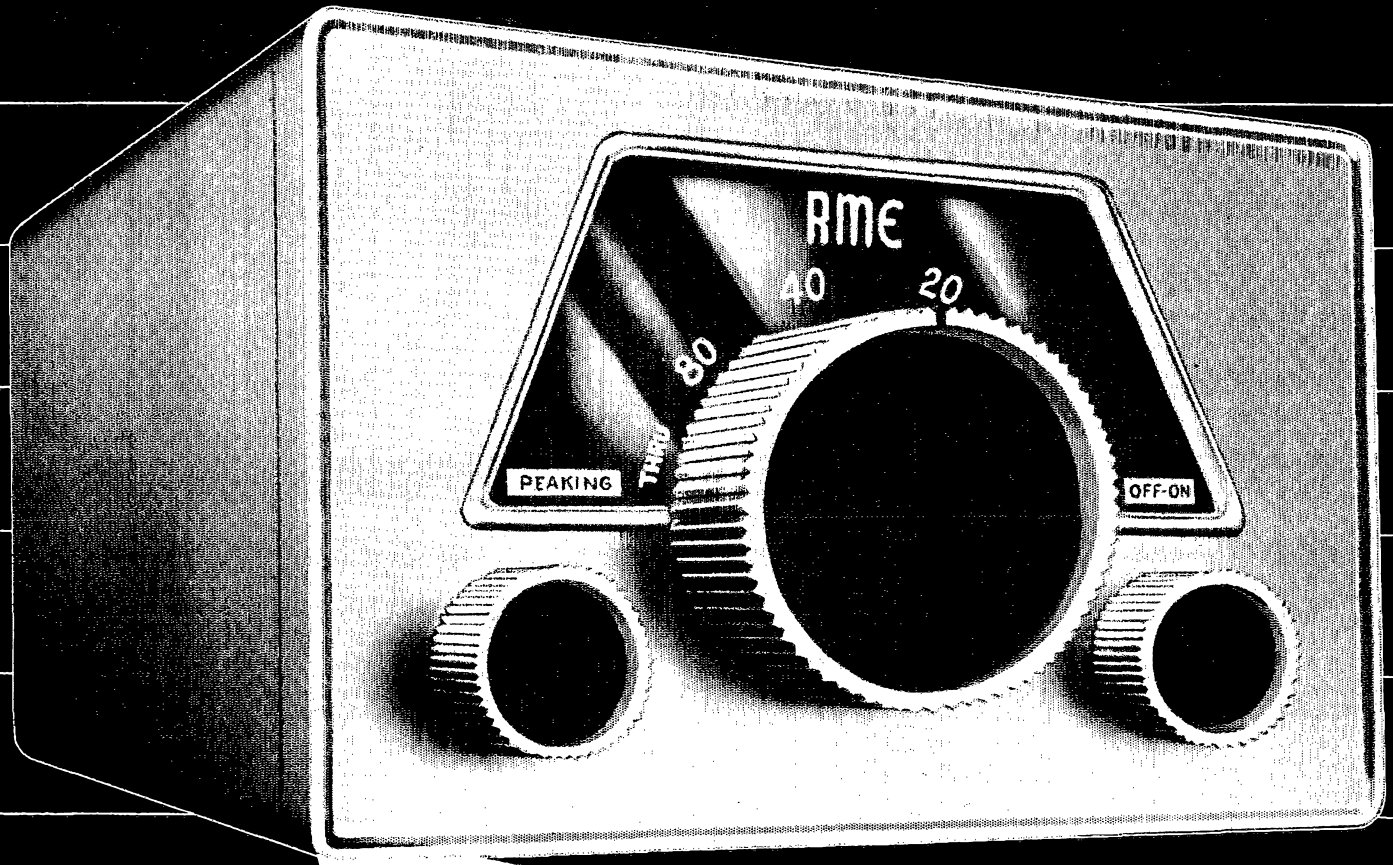


E. F. JOHNSON COMPANY

210 SECOND AVE. • WASECA, MINNESOTA

CAPACITORS · INDUCTORS · SOCKETS · INSULATORS · PLUGS · JACKS · KNOBS · DIALS AND PILOT LIGHTS

THE RME DB-23 PRESELECTOR



"S" READING
WITHOUT PRESELECTOR

YOUR "S" METER TELLS THE STORY...

"S" READING
WITH DB-23 PRESELECTOR

The DB-23 provides a minimum gain of 25 db in signal strength. Weak signals become good . . . good signals pin the needle!

SUBSTANTIALLY IMPROVES PERFORMANCE

OF ANY RECEIVER!

How many times have you heard a down-in-the-mud signal that you just couldn't copy? How many QSO's were "almost" 100% because the other signal just didn't have it? How many times have you wondered how the fellow down the street was copying a signal you couldn't even hear?

Here, at last, is a piece of electronic equipment that takes advantage of every single advance in the art of receiver gain . . . usable gain that can actually make previously unreadable signals stand out sharply above the noise. This amazing new preselector, the RME DB-23, will substantially improve performance of any receiver! *Greater gain permits optimum use of mechanical, crystal or audio filters.*

The RME DB-23 employs a unique application of high-gain low noise tubes. Three neutralized push-pull stages employing 6J6 twin-triode tubes are used in a novel combination of selective and wide-band rf amplifiers. Minimum gain of 25 db is provided throughout all ham bands from 3.5 to 30 mc with substantial image rejection. Signal-to-noise ratio improvement can be as much as 7.5 db over that of the receiver itself.

Necessary input terminals are provided to accurately match any type of standard antenna to the preselector. The DB-23 is completely self-contained with power supply. Cabinet finished in blue-grey. Small, compact and attractive. Comes complete with tubes, cable and instructions.

RADIO MFG. ENGINEERS, INC. ● PEORIA 6, ILLINOIS

RME DB-23 Preselector, Amateur Net Price..... $49.50

INSTALLATION of the DB-23 is accomplished by merely wiring in series with the receiving antenna and receiver. A band selector chooses the operating range and a peaking control is set . . . only once for average operation. There is a control position that permits straight through operation if desired. Once used, your RME-23 will go on with the filaments of your receiver . . . it's that good!

WRITE FOR RME EQUIPMENT RELEASE NO. 171

RME

DIVISION OF Electro-Voice

(*Continued from page 78*)

the civil defense well organized. The meeting at Jonesboro was attended by a good number and enjoyed by all. VTZ set up at the Craighead County Fair and accepted messages from the public. They got a front-page picture in the local paper and did a fine job. ZZK is a new call at Siloam. DYF is now a married man. Hope he didn't sell the rig to buy the ring. DRW is surrounded with a forest of TV antennas and is keeping pretty quiet while he looks over the s.s.b. rigs, and farms for sale. VUL is the new EC for Clarksville. BGV and BQJ are new calls at Stuttgart. Traffic: W5RWJ 420, K5WBA 247, W5EA 21.

MISSISSIPPI — SCM, Dr. A. R. Cortese, W5OTD — You fellows didn't give me enough for a report last month, so I did not make one. The c.w. net meets every evening on 3795 kc. AMZ is NCS. TXK reports 25 members in a new radio club at Hardie Junior High in Jackson. The Hurricane Net has a flower fund. UTK is treasurer. The N. E. Mississippi Amateur Radio Club will meet at Legion Hut, Tupelo, Miss. the 1st Sun. in December starting at 12 noon. Bring your own lunch. We need more OOs in the section. 5YBG and YXZ have dropped the "N." ACS is president of the Gulf Coast Radio Club. SRT is DXing on 20 meters. OTD has a new mobile rig on 10, 20, and 75 meters. VMD's rig shorted out and burned. RIM is busy on MARS nets. QYX has a new shack. WZ has a new TVIed exciter. If you fellows like these reports, let's have some news. Traffic: W5JHS 134, UTK 128, KYC 83, RIM 58, AMZ 24, BX 10, OTD 2, WZ 2, YBH 2.

TENNESSEE — SCM, Mark M. Bowelle, W4CXY/WLG — SEC: NJE. PAM: QT. RM: SCF. 'Phone net frequency, 3980 kc.; c.w. net frequency, 3635 kc. Day and night some of the gang can be found around the State net frequencies and your Tennessee traffic can be moved. For the opening month of the traffic season it looks like we are going to have a good year with 18 reporting and 3 making BPL. MQV is holding a fine T-55 transmitter that was purchased by the Tennessee Net gang for a handicapped amateur who has passed on. This rig is not for sale but MQV would like to have nominations for a handicapped person who you consider needs it. UWA is back at Tenn. Tech. and will cover the nets when his school work permits. LKG is working lots of DX with his new 20-meter beam. RBL is getting out FB with his new sky hook. BMI is new in Dresden. HFO has joined the 6-meter boys and UZY has gone back to U.T. ZJY is a new Cookeville man who, we predict, is going to make a mighty fine traffic man. Traffic: (Sept.) W4PL 1971, YIP 1183, PFP 544, OGG 218, AGC 148, OEZ 63, VJX 56, WQW 44, VUA 41, APC 35, UWA 34, ZJY 31, UVS 24, DTI 9, FLW 8, WGJ 6, RET 4, HPA 3. (Aug.) W4OGG 130, VKE 82, IWV 66, ZJY 30, OEZ 29, W5GOH/4 26, W4PHQ 18, TYU 16, RHO 14, BAQ 11, WGJ 11, ZJA 9, RMJ 6, FLW 5, YRM 4, PMR 3.

GREAT LAKES DIVISION

KENTUCKY — SCM, Ivan C. Kelly, W4TUT — With the fall months here traffic is picking up on KYN and KFN. Morning Corncrackers are handling their part of it, too — mostly "grab as grab can." WHC still runs up those traffic scores; he also got his mobile going and is working up a 6-meter transmitter. He is trying to start a club at Fort Campbell. The Louisville Red Cross Net is back in operation. WNH now is OPS and ORS and mixing the new school year with DX. KKG is active again with dual 10–20 beam. WXL now is General Class. SBI still is trying to get his one-gallon on the air. DXer KZF is resting and sending code to a new jr. operator. TAV is full of school and traffic. AHL is farming and working nights but sometimes makes the Corncracker Net. JUI still is building frequency measuring equipment. UWA now is in college after the E.E. degree. WN4ZLK, W4CAB, and WBL are new AREC members. SKE, who was made happy by Kentucky and neighboring hams, says, "Thanks, gang, you are all wonderful guys." QJU has swell new roof-top vertical. Traffic: (Sept.) W4TAV 647, WHC 527, YZE 90, SBI 50, UWA 34, WXL 17, WNH 10, JPP 8, AHL 4, KZF 4, JUI 2. (Aug.) W4TAV 718.

MICHIGAN — SCM, Fabian T. McAllister, W8HKT — Asst. SCMs: Bob Cooper, W8AQA; Joe Beljan, W8SCW; Mickey Wills, W8CPB. SEC: GJH. New appointment: FSZ as OPS. Fall weather ushered in more activity on the nets, but there is still room for improvement. Especially needed are reliable stations to take a turn as NCS. New officers of the Genesee County Radio Club are FPO, pres.; YKW, vice-pres.; KLZ, secy.; JAX, treas. The Blossomland Amateur Radio Club elected JFW, pres.; NSA, vice-pres.; ORM, secy.-treas. The Great Lakes Net now operates on Mon., Wed., and Fri. at 7:30 P.M. EST as a "call-in" net. HML, IJL, and AHV are NCS, with HMX, ISE, and 9KOY as Alternates. Two-meter activity has been high with the Genesee County boys, and they have staged a couple of successful transmitter hunts. The gang in the Huron Valley Club came up with something new. Last year they coöperated with the local police in Ann Arbor by furnishing Halloween prankster mobile patrols. The idea went over so well that they repeated it this year. Careful, fellows, this may lead to a Goblin Net, with wrist-watch mobiles! SJF is sporting a new Viking II. Wonder if SCW will get to use it too! EGI got a change

(*Continued on page 86*)

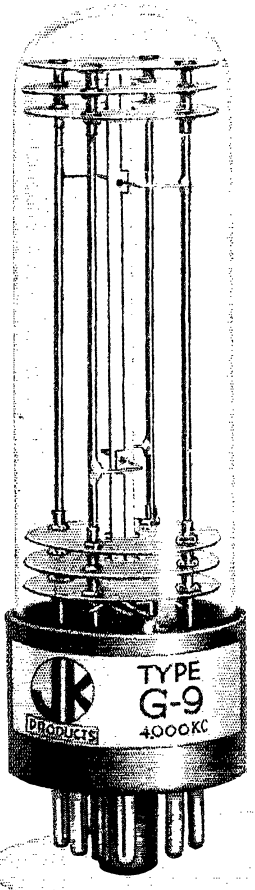
in working hours and it upset both his family skeds and his network skeds. FX writes about a dream of a vacation in New England; he attended the New Hampshire ARRL Hamfest and other club meetings and didn't win a thing. What a dream! GTM has moved into town and is looking for a good vertical requiring no guys, something that will go on the 2 x 4 lot. We haven't seen the reports on the Simulated Emergency Test yet, but from the sound of things it went over well. In our own corner of the State we had a minor actual test. A car plowed into a ditch right near the SCM's home. The incident was reported to MAI, located in the County Jail. The sheriff got the word immediately, but the first car on the scene was SCS operating mobile. Note to appointees: Please look at the appointment date on your certificates and mail them in to the SCM for endorsement before expiration. Traffic: (Sept.) W8RTN 147, URM 142, NOH 112, NUL 87, JYJ 66, IKX 57, QIX 46, FSX 30, IV 26, SPF 23, HKT 21, SCW 17, AHV 15, CPB 15, SWG 15, EGI 12, HSG 7, FX 6, ZLK 6, AQA 5, FGB 5, GTM 4. (Aug.) W8ELW 135.

OHIO — SCM, John E. Siringer, W8AJW — Asst. SCMs: C. D. Hall, 8PUN, and J. C. Erickson, 8DAE. SEC: UPB. RMs: DAE and PMJ. PAM: PUN. BPL was made by RO and SRF, while UPB, our slugging SEC, racked up quite a healthy total. New appointments were issued to the following: MQR as OBS; HFE and SMA as OPS. The big event of the month was the Cincinnati Stag Hamfest with an official attendance of 655. It was a well-organized and interesting event. The Ashland Amateur Radio Club now is officially an ARRL Affiliated Club. A new group, the Cleveland V.H.F. Radio Club, meets every 3rd Mon. at the West Side YMCA. JLI is pres. and DOG secy.-treas. VRK, recent winner of the Avon Lake Fishing Derby, is seriously ill. We wish Max a speedy recovery. NGW has resumed his position as W8 QSL Manager and LJS has left to take up residence in Florida. Norm did a swell job during his two-year stretch and Walt, of course, gave us good service during his previous managership. Congratulations to 8PF, who again is our Director, and to EYE, our new Vice-Director. Also thanks to WZ, our ex-SCM and retiring Vice-Director. WE's XYL received her Novice ticket, WN8OTK, and already has QSOed 9 states in broad daylight on 3.5 Mc. OUK is a new amateur in Dayton. JAR, the teen-age traffic whiz, is building a 4-125A rig. We are pleased to learn that DAE's XYL, who recently underwent an operation, is coming along nicely. YGR worked all eight sections in the W/VE Contest. IFX is the Wednesday NCS of BN. DG is rebuilding p.p. 813 'phone transmitter bandswitch for 75 and 160 meters. DL reports HGH is not in Japan, as reported in Oct. *QST*. Wonder who started that rumor? HRN advises that MQR won the SVARC QSO Contest Trophy. AJH, Cuyahoga County EC, reports that 78 amateurs, including 46 mobiles, participated in the S.E.T. on Oct. 3rd and that 88 amateurs were active during the county-wide c.d. drill of Oct. 7th. We note that Ohio is more than holding its own in 8RN. Seems as how the Buckeyes are becoming more and more traffic-minded. The Canton bulletin informs us of two new Novices in their area, OJW and OJZ. The picnic on Sept. 20th produced an encouraging turnout. Dayton's *RF Carrier* relates that ZFO has resigned as EC; the Club's nominating committee for the coming election is composed of ZJM, PTF, AQT, DPW, and LJ; and the Club's fall picnic of Oct. 4th produced a large gathering. The Hamilton bulletin states that new Novices in town are OFL, OFK, and OUD; SMA will be the area's AEC; and MDY received his Tech. Class license. *Ham Flashes*, which covers the Youngstown Area, says that KAO is attending Capitol U.; KCA is residing in California; IIK has been commissioned 2nd lieut. in Electronic Ordnance; and DQH is home from Japan. The Springfield *Q-5* lists newly-elected club officials as HBJ, pres.; GLT, vice-pres.; YAC, secy.; OKB, treas.; and JRG, editor. Toledo's *Shack Gossip* mentions that CRA's son is stationed in Japan; MBI is awaiting her General Class ticket; SPU's daughter, Virginia, is OSD and the young lady is keeping the teen-age wolf pack on the prowl on 75 meters; and a sad note records the passing of LIJ. Our sincere sympathy to his family. Traffic: (Sept.) W8SRF 534, UPB 341, FYO 299, DG 270, RO 217, GDB 179, HNP 136, DAE 134, IFX 133, AMH 65, AJH 60, LMB 48, CTZ 37, WE 35, KNX 31, BN 28, AJW 24, AL 22, DL 20, IJH 16, NYY 16, TLW 14, HRN 12, HUX 11, KZM 11, WRL 10, UZJ 9, HOX 8, ET 7, RN 7, THJ 7, AQ 6, UPI 6, BLS 4, PUN 4, WYL 4, YGR 3, CUD 2, HZJ 2. (Aug.) W8LMB 38, AMH 25, JAR 18, GZ 10.

HUDSON DIVISION

EASTERN NEW YORK — SCM, Stephen J. Neason, W2ILI — SEC: RTE. RMs: TYC, KBT. PAMs: IJG, JQI. HSM, Putnam County EC, has moved to Mahapoc and is extremely busy organizing AREC. As a result of his efforts, a local net is operating on 3735 kc. K2BXD, K2BXE, KN2EKD, and KN2ELP are members. A satisfactory 144-Mc. test was held between Dutchess C.D. Headquarters and Carmel recently. Carmel and Mahapoc are on 144 Mc. VDZ has a new jr. operator and a new home in Poughkeepsie. BXE is on 3.8 and 144 Mc. from his new QTH in Fishkill. RTE is using a new 2.5-kw. motor generator for

(*Continued on page 88*)



Speeding Electronic Progress through

PRODUCTS

crystal RESEARCH

The JK type G-9 is available with flexure mode crystals from 4 to 80 kc, providing rugged, precise frequency control at temperatures in the −40° to +70° C. range. These crystals have a high ratio of capacities (C_o/C) resulting in a high degree of isolation from associated circuitry. Consult us for application and engineering information.

JK STABILIZED G-9 CRYSTAL
in the 4 to 80 kc range

Did you know?

Crystals such as this are made over two inches long but less than 1/8" wide with four separate 24K gold electrodes. The performance of JK Crystals requires mechanical tolerances so close that they must be checked with equipment that will measure one part in ten million. Produced in an immaculate, airconditioned plant, JK Crystals for the Critical are hermetically sealed in an evacuated glass holder to maintain their precise frequency accuracy.

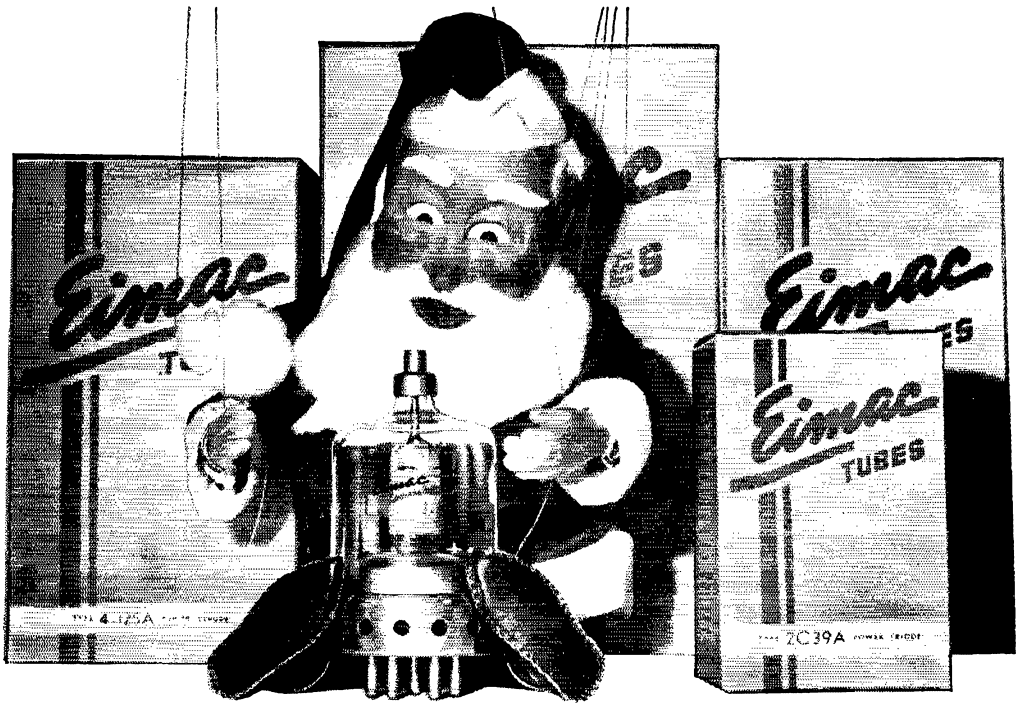
THE JAMES KNIGHTS COMPANY
SANDWICH, ILLINOIS

emergency power. Ted has just completed a 32-element horizontal and 32-element vertical back-to-back beam for 144-Mc. operation. Our section was alive with activity during the V.H.F. Contest on 144 Mc. Some of the reports are as follows: JFB, operating from Windham Mountain, worked all of New England except Rhode Island. ILI was mobile from three states. K2CXP was active from Point Lookout and MHE was assisted by K2BEK from Mount Beacon. K2NAG will be active on NYS with WZQ as the operator. K2ATG is on 144 Mc. from Yonkers. UKA, GTC, and EFU conducted tests on 6 meters in Hudson for our AREC-c.d. set-up in Columbia County. KN2EKS has secured his ticket with the help of BSH and is active on 3.7 Mc. with nine watts. It seems that some of us request appointments to secure wallpaper for the shack. This not only makes your SCM hot under the collar but also makes a dead section. Let us keep our section alive by sending in your activity reports together with some news for this column. OKI is working on 21 Mc. with 15 watts and a half-wave doublet. John is working out FB and claims it is a great band. Traffic: W2IFP 140, TYC 71, EFU 66, ILI 62, K2BSD 51, W2LRW 48, APH 9, OKI 7, K2NAG 4. (Aug.) W2IFP 183, MRQ 14.

NEW YORK CITY AND LONG ISLAND — SCM, Carleton L. Coleman, W2YBT — Asst. SCM: Harry Dannals, 2TUK. SEC: ZAI. RM: VNJ. PAM: JZX. The Northern Nassau Amateur Radio Club conducts both code and theory lessons the 2nd and 4th Tue. at 8 P.M. at the Roslyn High School. For information contact NFU. VNJ reports traffic totals are down because of a heavy flying schedule and that the NLI c.w. net meets Mon. through Fri. on 3630 kc. JZX visited Headquarters, N. Y. State Convention, and has nominated BTB for the Edison Award. The NLI 'phone net meets Mon. through Fri. on 3943 kc. Both nets operate at 7:30 P.M. and have liaison between them and with outside area nets and the National Traffic System. RWQ is on 7 Mc. after years of 20-meter operation. OMG received the BRAT Award for July and August on NLI, made WAS, and now is back at school. IVS is active in five nets. IN is working MARS skeds as well as being sparkplug of the Bronx 2-meter net. The Sunday Rag Chew Net operates at 10 A.M. on 3943 kc. KJG, NJL, and SNA are new OPS. The Smithtown Civil Defense ARA has a new 10-meter rig at WALK, in Seldon, under the call GSW. JOA makes the BPL again with over 500. OGX has a new three-element 10-meter beam. The Suffolk County Primary Election returns were cleared via GSW/2 to 1WKW/1 at WICC and put on a.m. and TV using the 10- and 2-meter bands. WL is active with a Collins 310 on 80- and 40-meter c.w. We are sorry to report JSV, EC for Queens, passed away Sept. 30th. Brooklyn EC KGN operated the S.E.T. patterned after the Nassau plan originated by FI, Nassau EC. A very successful meeting of borough and county ECs was held recently at the home of ZAI. AOD, an active OES, reports five QSOs with Northern New Jersey stations on 435 Mc. and is constructing 2-meter gear to operate from either 6 v.d.c. or 110 v.a.c. IIG has the new 100-watt all-band rig completed. OBU is moving to a new 2nd-floor shack and looking for a Viking. PF is continuing as chairman of the First Army Area MARS advisory committee. CLG visited W6s AAO, OE, and WDR, operating 2 meters while on another West Coast trip. UCB, the Rag Chew Net NCS, is on a Washington vacation. IRY has a new 3-stack co-ax antenna. GF is back from W4-Land, where he has been teaching at W.U. school. DYP is on 75-meter 'phone and 80-meter c.w. for the first time in 15 years. OBU and TUK are setting up traffic-handling gear at Mineola Fair with KFV looking out for the 2-meter c.d. equipment. YBT worked ten countries while on vacation in W1-Land. KCV is working 75-meter 'phone while on active duty at Cape Cod. QOW is back in action with NYS C.D. Net. SIM and OME are active as NCS on the NLI 75-meter 'phone net. Congrats to VBT on the new twins; FWV is the grandpa. BJR is back on 2 meters, having sold the big low-frequency rig. OXM is giving up his EC job because of the pressure of business. NYSS now is on its winter schedule of Mon. through Fri. operation at 8 P.M. on 3595 kc. Please try to get reports to SCM and SEC in on time and include station activities and news. Traffic: W2JOA 573, OMG 283, LPJ 240, EC 186, KJG 124, JZX 122, GXC 110, IVS 80, IIG 56, AEE 51, CLG 21, VNJ 20, JXM 18, PF 16, OME 14, K2BBS 11, W2IN 9, MUM 8, SIM 7, GP 5, BMK 3.

NORTHERN NEW JERSEY — SCM, Lloyd H. Manamon, W2VQR — SEC: NKD. PAM: CCS. RMs: NKD, CGG, WCL. FPM is TVI-proofing the main rig and will be on with an 813 final soon. CXW has completed over 400 contacts with G6BY on 20 meters since Nov. 1950. KN2EMI is a new ham in Hasbrouck Heights. CVF reports July and August attendance on the Bergen and Passaic County C.D. Nets far exceeded last year's figures. K2DIH, of Orange, made General Class in July. John has an ARC-5 cooking on 80 meters. YKX worked good DX on 10 meters during September. He reports the band good to the east, having worked VQ4AC with good reports both ways. Section Net certificates were issued to K2EB and W2FPM. OXL is getting back in traffic work after moving to a new QTH. VYB was home on leave from the Navy. K2DOX is heard regularly on 7 Mc. K2CCI is having good luck with 21-Mc. DX. ADP is QRL work but gets on 20 meters now

(*Continued on page 90*)



Eimac crystal ball shows a very Merry Christmas and a Prosperous New Year in store for you!

From the Eimac Gang

K6AFL	W6DUW	W6MBK	W6RWI	W6TXT	W7SLC
KN6ANN	W6DVB	W6MUC	W6RXW	W6ZGV	
K6BJ	W6DWM	W6NBD	W6SC	W6ZLB	W1KKP
W6AY	W6FKS	W6NGP	W6UF	W6ZPH	W2CN
W6BAX	W6FXB	W6ODT	W6UFU	W6ZZL	W4TO
W6BET	W6HB	W6OMC	W6UOV	W6TVS	W6QD
W6BMU	W6HUB	W6ONQ	W6VQD	WN6SCZ	W6ENV
W6CBN	W6INJ	W6OS	W6VW	W6OHU	W9AIO
W6CEO	W6IUZ	W7SIF	W6VYH	W6YSX	W ØNWW
W6CHE	W6JFV	W6QIT	W6WC		W Ø RPE
W6DJI	W6KFQ	W6QQV	W6WSL		

Eimac TUBES

EITEL-McCULLOUGH, INC. SAN BRUNO CALIFORNIA

and then for a bit of DX. NIY is running morning skeds on 20 meters with VK3MH. The State Line Radio Club of N. Y. & N. J. meets the 1st Wed. of each month in technical session. ZTZ is act. mgr. The group is working on a code proficiency program for both the Novices and the old-timers, reports K2BPG, secy.-treas. CCS expects to have the new 20-meter beam atop the tower in time for the winter season. EWZ submitted his 60th monthly report without a miss. JCO is active on 80 meters with 40 watts to an 807. Ron is active in local nets as well as the W. Mass. Net. and the N. Y. C.-L. I. Net. K2BIF, K2CRE, and K2BYB, of the Irvington Radio Amateur Club, recently made the grade from the Novice ranks. QLF now is commercial operator aboard a ship on a four-month trip around the world. The Irvington Club invites all Novices and beginners to join the Mon. night code classes. For further details contact K2BYB. While on a vacation trip to Maine YLS operated W2BTG/1 at North Pond near Smithfield. KXD is active on 75 meters with 30 watts. HJD and VAV visited Washington recently. 1BIG was a recent visitor to RVRC. FQN was a speaker at a recent RVRC meeting. YGP is a new member of RVRC. C.w. operators at QW during the CD QSO Party were HJD, K2BJP, KN2CAR, and KN2CHI. K2BJP now is General Class. New Bloomfield Radio Club officers are HWH, pres.; ANG, vice-pres.; KN2ETH, rec. secy.; UWN, treas.; GC, corr. secy.; YOG, chief op.; and FNM, custodian. A new Novice net operates on 3737 kc. week days at 1700 hours. The Teen-Agers Net now operates on 3630 kc. daily at 1815 hours. JOA is Net Manager. KN2CTL is awaiting General Class license. MCARA has changed headquarters to the Monmouth County Red Cross Bldg. EGM's XYL has her Novice ticket. Much credit goes to CBT for his fine work as Net Control of the New Jersey State C.D. Net, on 3993 kc., Sun. at 0930 hours. IIN reports fine work recently was done by the newly-formed Elizabeth TVI committee in coöperation with the FCC. DME was heard working some good 2-meter DX. K2DHE is going mobile on 160 meters. NUI was presented an honor award by the American Legion for his work in handling traffic to the boys overseas. Traffic: (Sept.) W2CGG 190, CCS 140, WCL 137, NKD 63, EAS 60, CXW 58, K2BWP 55, EB 50, W2JCO 46, FPM 16, ZDH 16, OXL 7, K2WAH 6, W2HIA 6, CJX 4, NIY 2. (Aug.) W2CGG 194.

MIDWEST DIVISION

IOWA — SCM, William G. Davis, WØPP — QVA reports that TIU got his hand caught in a belt on some farm machinery but now is getting along OK. 9TKX was transferred from Rockford by the Naval Reserve and now is ØQWN. K2P has moved to Hannibal, Mo. 8ICB is in Burlington and has a new call, ØQEE. TY has left for a 4-month cruise around the world as radioman in the merchant marine. FYN and WRM have new 10A s.s.b. exciters. SEF is at home in Des Moines. VFM has won his WAS and is now with WHBF as technician. YTA reports his only activity for the past 2 months has been mobile. The Des Moines Club had a super-duper transmitter hunt Sept. 27th. The Club had an antenna-raising party and as a result AUL and PZO are sporting new flattops. KRL moved his surplus equipment with a bang; the Club now has a fine rack-mounted 300-watt rig to be used as an emergency rig on 29.6 Mc. WNØPAN is going right into the traffic game. New licenses in Spencer are WNs PIN, PIM, and PIX and Ws KGX, QNA, and PZF. The Western Union honored UHC, GEL, and TTT for their help when an ice storm on Jan. 15th took out their wires. YBV reports the Cedar Valley Club has been very active running transmitter hunts, checking the set-up to assist police, with various organizations such as the Red Cross, civil defense, etc., invited to witness the demonstration. Thanks to SCA for his fine job on the August SCM report. Traffic: (Sept.) WØBDR 1010, SCA 768, CZ 200 PZO 174, QVA 63, LCX 48, ERP 37, BBZ 34, BLH 6, SEF 4, FSX 3, NYX 3. (Aug.) WØLCX 88, BBZ 33.

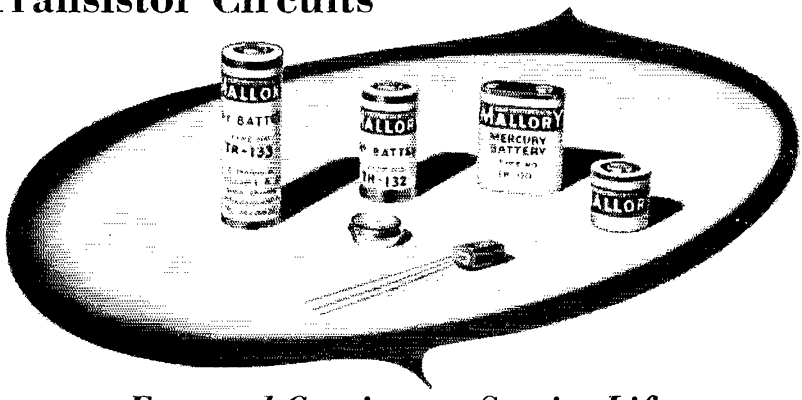
KANSAS — SCM, Earl N. Johnston, WØICV — SEC: PAH. PAM: FNS. RM: NIY. The SeKan Radio Club of Southeastern Kansas put on an outstanding hamfest at Independence Sept. 13th. Its organization resembled that of a small convention and the members can be proud of a job well done. More than 160 were registered from Texas, Oklahoma, Nebraska, Iowa, Missouri, California, and Kansas. The Lawrence Amateur Radio Club held an impromptu picnic for its members at Lake Shawnee Sept. 12th. Club members are working on 6-meter gear and hope to get in on some State contacts this winter. MXG, of Topeka, has his General Class ticket and is building a Viking II. Charley already has a TBS-50 to put in his car when he gets the Viking finished. WGM has just refinished his FB shack with knotty pine, acoustical slab ceiling, and rearranged operating position, getting set for lots of activity this winter on QKS and Kansas 'Phone Net. Activity and traffic reports are not in at this time and we're heading for XE-Land for a vacation. Traffic reports will go in next month.

MISSOURI — SCM, Clarence L. Arundale, WØGBJ — SEC: VRF. PAMs: AZL and BVL. RMs: OUD and QXO. It is with sorrow and regret that we report the passing of DEQ, NNH, and GPC, the latter as the result of a motorcycle accident. The South St. Louis Amateur Radio Club

(*Continued on page 92*)

MALLORY HAM BULLETIN

Mallory Mercury Batteries in Transistor Circuits



Expected Continuous Service Life in Audio Oscillator/Clipper Combination is Two Years!

The desirability of adequate shelf-life in transistor batteries was demonstrated pretty clearly to us recently when we had occasion to analyze the results obtained from a personal exploration into the transistor field. Here is what happened.

A breadboard model of an audio oscillator/clipper combination consisting of two junction type transistors, five Mallory RM4000 Mercury Batteries, and a small handful of other parts had been thrown together to produce a reasonable facsimile of a square-wave generator.* After preliminary tests with an oscilloscope had convinced us that the unit really worked, an estimate was made (based on a measure of the load current) of how long the Mallory Batteries might be expected to last when used in this manner.

The figure of time arrived at was just short of phenomenal! Almost 2 years of continuous . . . day and night . . . operation could be expected from those cells!

Theoretically, intermittent use of the generator could be expected to increase the service life of the batteries proportionately. Practically, however, the service life of any battery cannot extend beyond its shelf-life. No matter what!

And that is one good reason why experienced transistor investigators have been specifying Mallory Mercury Batteries for transistor applications, because they know from experience that Mallory Batteries provide a shelf-life characteristic of almost ideal proportion for this service. It is not unusual to learn that satisfactory performance has been obtained from these units after more than two years on the shelf. Another and even more important feature of the Mallory Mercury Batteries for transistor circuits is the constant discharge characteristics.

Obviously, the battery with the most uniform electrical characteristics, that is, constancy of voltage, or constancy of current, with respect to time, longest shelf-life and smallest size is the best buy for transistor applications. That is exactly why you will want to select Mallory Mercury Batteries as well as other Mallory components, from your Mallory Distributor for all transistor experiments. Check with him soon.

**A few copies of the circuit of this gadget are available on a first-come-first-served basis. Just address Box 1558, Indianapolis 6, Indiana.*

P. R. MALLORY & CO. Inc.
P. O. Box 1558
INDIANAPOLIS 6 INDIANA

P. R. MALLORY & CO. Inc.
MALLORY

Photo courtesy Herbert Smith (W8AIU), South Euclid, Ohio

meets monthly at the home of one of its members. JRR and RSZ are stationed at the Amarillo A. F. B. in Texas. ECE has resumed his traffic activities. BUB is taking a 7-week radio course in Kansas City. LUW now has his General Class license. CDW is keeping a schedule with her father, KJC. BVL reports that the Early Bird Net is back in operation. QMF is trying out a new antenna. BAF is busy setting up two mobile stations in house trailers for Corps of Engineers use in flood work. 9LHB/Ø now is taking some additional school training, so his traffic activities will suffer for a while. CPI had a new cabinet made for his 310B1 exciter to improve TVI conditions. VRF is busy building the back porch into a ham shack. FIR built a ham shack in his garage and is in the process of setting up his equipment in the new shack. BPI, certificates go to CPI, QXO, and 9LHB/Ø. New hams reporting: WNØs PYD and QWS. Ex-5MED now is ØQWB and is located in Springfield. The call PNA has been issued to the radio club at the Central Bible Institute in Springfield. New AREC members: WNØs QXM and OIV. EVN is operating portable from Rolla. DTF is moving to Illinois. Traffic: (Sept.) WØCPI 943, QXO 811, W9LHB/Ø 350. WØGAR 119, IJS 71, GBJ 61, JSR 56, CKQ 55, BZK 52, HUI 46, BVL 33, ETW 28, OUD 28, EBE 19, QMF 12, BAF 11, BUL 10, KIK 8, MRQ 8, ECE 3. (Aug.) WØBVL 11.

NEBRASKA — SCM Floyd B. Campbell, WØCBH — Asst. SCM: Thomas S. Boydston, ØVYX. SEC: JDJ. RM: EUT. The C.W. Net is back in operation on 3520 kc. at 7 P.M. with LJO as RM. Rotation NCS, JDJ, RDN, LOD, and IXL. MAO is NCS of the Slow Speed Net. The Net handled 7 messages and a lot of informals. The NSS meets Mon. through Fri. at 5:15 P.M. on 3750 kc. WNØOMH is Alternate NCS. The boys in North Platte have offered their services to the Lincoln County sheriff in his capacity as c.d. director and will be issued deputy sheriff's cards. KXD has a new Viking mobile rig. KDW has his new Viking II with VFO and a nice signal in North Platte. KWQ is a grandpa for the first time. RDN is getting requests for traffic to Germany. LGN has a new beam on 10 meters and has offered to monitor 29,640 kc. Plans are to have this frequency monitored twenty-four hours a day from Omaha. IOS is trying to convince his neighbors that the new 10-over-20 beam is only a TV antenna for Channel 1. QHG is having trouble keeping awake since overhauling that noisy relay. NET had a nice rest in the hospital. Traffic: WØRDN 100, VYX 34, ZJF 22, HTA 18, EGQ 16, NAA 15, CBH 11, MAO 11, LRK 10, QHG 10, KDW 9, HQN 7, HQQ 6, RYG 6, IAY 5, ISV 5, OFL 4, ORW 4, BPF 3, MJK 3, TIP 3, KØWBF 3, WØBEA 2, DJU 2, GTW 1, IRW 1.

NEW ENGLAND DIVISION

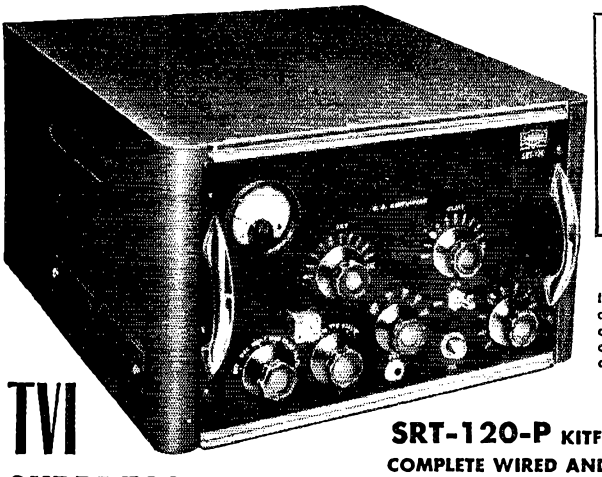
CONNECTICUT — SCM, Roger C. Amundsen, W1HYF — SEC: LKF. PAM: FOB. RM: KYQ. CN-3640, CPN-3880, CEN-29,580 kc. This month breaks all records in number reporting traffic and in news! CPN and CN had an FB meeting at GB on Sept. 19th. CN now meets at 6:45, both A.M. and P.M. ZGZ and YZY want AREC membership. TWZ has a Viking II. EFW is real active, converting from CAP. EOB has 400 watts in Dayville. WPR is on with 10 watts. QO is new Chief of Police in Winsted. RAN received the top French DX award. HA was awarded WNH. RWS says married life keeps him off the air. SJO helped TD get his antenna up. BDI went on a trip. CUH had sickness in the family. BFS wants antenna-tuner information. AKG is mobile. So is YKU. FWX has a 400-watt Globe King. VQH is building a home. YMY is on 2 meters. NFG also is building. BVB, EFW, RRE, RFJ, HYF, and YYM are regulars in the CN A.M. session. The Hamden gang patrolled on Halloween for SET. LIG sends enough news for three columns. The Bridgeport gang has been getting lots of good publicity in the *Bridgeport Post*. WZV, TCW, VJG, and WKW demonstrated during the Air Fair at the Bridgeport Airport Oct. 1st. LIG says to look at page 6 of October *American Magazine*. YU reports best prospects in years. RTB/IPQ is moving to Easton. WZV was laid up in the hospital. RGP is mobile. KML is on 40 and 20 meters. Bridgeport c.d. is getting 5 Gonset Communicators. BRL is collecting rocks. JMI is building mobile. FOB is planning to join and ABZ already has joined the mobiles. NZM is getting back on. NOM is on 2 meters. KGT is busy rebuilding. VJG has been boosting hams on WICC. RY encased his rig. HYF, ABZ, NLM, EBO, UBM, YYM, WPO, WPR, and HDQ were among those at Concord. SJO went to Buffalo. RTG lost a leg by amputation. Traffic: (Sept.) W1AW 249, SJO 223, KYQ 158, NJM 117, RRE 91, LIG 86, UNG 82, CUH 76, EFW 70, FTM 57, EOB 55, HYF 52, RFJ 36, KV 25, VOV 23, LV 19, BDI 16, QV 16, SJ 13, TNX 12, YU 10, BFS 9, BVB 8, QJM 7, ODW 4, RWS 2, WPR 1. (Aug.) W1BDI 46, RAN 21, ODW 20, VOV 20, ORP 4. (July) W1CUH 32.

MAINE — SCM, Bernard Seamon, W1AFT — SEC: BYK. RM: LKP. PAM: BTY. The Sea Gull Net meets Mon. through Fri. at 5:30 P.M. on 3960 kc. The Pine Tree Net meets at 7 P.M. on 3596 kc. Mon through Fri. QEK recently got his old call, BHA, reassigned to him. Congratulations to our good neighbor RNA upon the arrival of a bouncing harmonic. PTL worked VOI mobile in Missouri on his way to California on 75-meter 'phone.

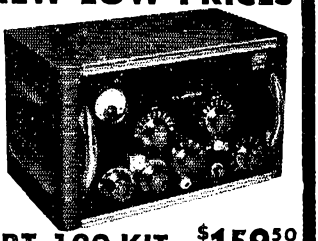
(*Continued on page 94*)

Proven Performance

MOBILE OR FIXED • NOW IN KIT FORM AT NEW LOW PRICES

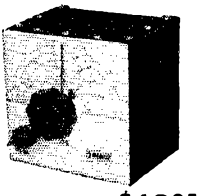


CLASS "B"
HIGH LEVEL MODULATION



SRT-120 KIT $159.50
WIRED AND TESTED $198.50

The SRT-120-P is the SRT-120 transmitter and PS-501 power supply complete in one shielded cabinet ready to plug in and use.

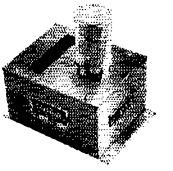


V-120 $19.95
MOBILE VFO UNIT

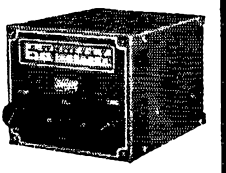
TVI SUPPRESSED

SRT-120-P KITFORM $198.50
COMPLETE WIRED AND TESTED $279.50

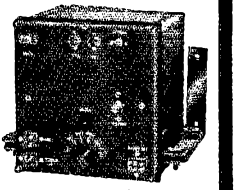
. . . CATALOGS FREE ON REQUEST — COMPARE



V-32 $27.00



SR-9 $72.45



MB-26 $72.45

LOW PASS FILTER
LP-7 $16.50

SONAR PRODUCTS ARE SOLD BY THE BEST —

ACK RADIO SUPPLY
Birmingham 3, Ala.

ADIRONDACK RADIO SUPPLY
Amsterdam, N. Y.

ALLIED RADIO
Chicago 80, Illinois

ALMO RADIO CO.
Phila., Wilmington, Salisbury, Camden, Atlantic City

ARROW ELECTRONICS
New York City 7, N. Y.

GEORGE D. BARBEY CO.
Reading, Lebanon, Pa.

DELAWARE ELECTRONICS SUPPLY
Wilmington, Delaware

M. H. DOSSETT CO.
Frankfort, Indiana

M. N. DUFFY & CO.
Detroit 26, Mich.

EVANS RADIO
Concord, N. H.

FT. ORANGE RADIO DIST. CO., INC.
Albany 7, N. Y.

R. C. & L. F. HALL
Galveston, Beaumont, Houston, Texas City, Texas

HARRISON MARINE SERVICE
Rochester, N. Y.

HARRISON RADIO CORP.
New York 7, N. Y. and Jamaica 3, N. Y.

HARVEY RADIO
New York 36, N. Y.

HENRY RADIO
Butler 1, Mo.
Los Angeles 64, Calif.

HUDSON RADIO
New York 7, N. Y.

LAFAYETTE RADIO
Plainfield, N. J.

NEWARK ELECTRIC
Chicago 6, Ill.

NIAGARA-CONCORD
New York 7, N. Y.

OFFENBACH & REIMUS
San Francisco 2, Cal.

OLSON RADIO WAREHOUSE
Cleveland, Akron, Ohio

PAYETTE RADIO, LTD.
Montreal, Canada

RADIO CENTRE
Montreal, Canada

RADIO ELECTRIC SERVICE
Phila., Easton, Allentown, Pa.

RADIO EQUIP. CO.
Lexington, Kentucky

RADIO EQUIP. CORP.
Niagara Falls, N. Y.
Buffalo, N. Y.
Batavia, N. Y.

RADIO SHACK CORP.
Boston 8, Mass.

RADIO WIRE
Newark, N. J.

RADIO WIRE
Boston, Mass.

RADIO WIRE
New York 13, N. Y.

E. A. ROSS & CO.
New Bedford, Mass.

REED RADIO & SUPPLY
Springfield, Missouri

SPECIALTY DISTRIBUTING
Atlanta, Ga.

SREPCO, INC.
Dayton, Ohio

STAR ELECTRONIC DIST.
Chicago, Ill.

J. V. STOUT CO.
Baltimore 12, Md.

SUN RADIO & ELEC. CO.
New York, N. Y.

SUN PARTS DISTR.
Washington 4, D. C.

TAB
New York, N. Y

TERMINAL RADIO CORP.
New York 7, N. Y.

TRI-CITY RADIO
Rock Island, Ill.

TYDINGS COMPANY
Pittsburgh, Pa.

UNIVERSAL SERVICE
Columbus 15, Ohio

VAN SICKLE RADIO
Ft. Wayne, Indiana

WARREN RADIO
Kalamazoo, Mich.

WORLD RADIO
Council Bluffs, Iowa

SONAR
RADIO CORPORATION

3050 W. 21 ST., BROOKLYN 24, N. Y.

Your SCM received an excellent report of the activities of the Androscoggin Amateur Radio Club from Director Mabel Balis, VFL. The Club station was set up at the Maine State Fair in conjunction with c.d. and handled 138 messages. TVI has SEJ feeling mighty low. OLT has a new Elmac Mobile. MFU has a new Hallicrafters transmitter. The Rockland Amateur Radio Club has been given a new lease on life and is establishing a club station and is closely coöperating with Mr. Farnsworth, director of c.d. in that area. It was good to see 6MDV, ex-RLE, on his recent vacation. The Abusive Net held a Sunday Hameat at Chief Abuser ARV's QTH. Among those present were OHT, ITH, TKV, BAD, UZR(!), PTL, BEU, RUZ, and several XYLs. VV is building a power supply for SSF's VFO. Doc Powell, who used to be IXE, is back in Damariscotta after a sojourn in New Mexico. Please keep the news coming, gang. We'll do our best to report it. Traffic: W1LKP 185, TVB 125, VYA 71, TWR 67, OHT 44, BX 31, BAD 28, VV 28, SUK 27, UZR 17, AFT 14, BOC 10, EFR 10, LHA 6, BTY 5.

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — New appointments: As ECs — TQS Provincetown, TVZ Hopkinton, LJT for Region 6 of Mass. C.D. As OPSs — AVY and MEG. As OO — WLV, VRI, PID, and WCB are on 10 meters. DFE is heard on 2 meters. 5HNW/VXS now is living in Hingham. GAG'S XYL has her call, YPH. The Quannapowitt Radio Assn. now holds meetings at the Howard Johnson Restaurant on the Wakefield-Reading line. PKW and QZV gave talks at recent meetings. The South Shore Club had movies from ARRL and a talk by VOU and WNN. MKW broke his beam rotator. LLY reports that the Arlington 6-meter mobile net worked with auxiliary police on Halloween. TY has WANE certificate No. 6 and WNH No. 43. BB says that c.d. crystal transmitters developed by WJZ are being built by net members. Net certificates have been issued to the following Framingham Radio Club Emergency Net members: MEG, MHC, NIL, RKD, RVA, RXH, SBW, SNJ, SQY, SRG, TRC, VJE, and RCJ. YYN is interested in 420 Mc. STA has resigned as EC for Haverhill. ATP has 6 hams in his town banded together for emergency work. VYS has some new hams coming along in his town. WN1ZAR is on 80 meters. WN1ZGL is on 80 and 40 meters. New officers of the Framingham Radio Club are MEG, pres.; SBW, vice-pres.; TRC, secy.; SQY, treas.; RXH, act. mgr. The Wellesley Amateur Radio Society had BGU as a speaker. UTH is alternate for 1RN. UUH, now in Hingham, is on 40 and 20 meters. RSY has gained 11 new hams in his town with new classes starting in Bedford. Two old hams in Ipswich are back on the air: GL on 80 meters and HNC on 80 and 40 meters and mobile on 2 meters. WNK is building a modulator. YRO is on 40 and 80 meters, c.w. and 'phone. RZZ, DOX, RYJ, JOT, and HQO helped the police in the Jimmy Parade. OPI worked 12 states on 2 meters in only 15 days. AVY and his group took part in the Simulated Emergency Test, relaying traffic to c.d. Red Cross, and ARRL. OQT, secy. of the Martha's Vineyard Radio Club, reports the following at the Club's picnic: UTU, NXH, WTY, SLW, HLL, UXG, VDB, OJE, PMC, MBQ, DJK, SGL, UGH, SLM, UNU, LYV, TJU, WN1YEB, 2OOG, BDS, CUD, and 4LNW. Sector 5 of Region 5 held a meeting in Quincy with QKY, MD, UXN, THY, SMY, ADM, FWS, CQN, SH, GNK, MB, MME, QVN, ALP, and the c.d. directors of Norwood and Randolph present. NBS reports the death of his uncle, GNP. The Bedford Radio Club had a civil defense meeting with a film and talks by Mr. Thayer of the Federal Civil Defense and Mr. Argentini of the State C.D. Agency. A Region 5 Committee meeting was held in Cambridge with NJN, BL, DFS, DOF, KTG, RM, and TQP present. SUV, Reading EC, is on with the c.d. group. UIR is on all bands, 2 through 75 meters. JJY, EC for the National Guard Plan, says that all the armories in the State will have stations that can be used on amateur, MARS, and military bands. AVY reports that the Southeastern Massachusetts Amateur Radio Assn., in conjunction with the New Bedford C.D., took part in state-wide c.d. alert. PWL, WGN, UID, and LAZ were at WKM, the c.d. headquarters; AVY, HPH, BMQ, and UIE were mobile; CTZ was fixed-portable. New Bedford Area hams on 10-meter mobile are AVY, BMQ, APN, WAY, ONK, BLX, HMS, UIE, AZY, OH, AGG, JKT, UCO, ZHC, VDF, QJR, HPH, and TZU. The Sector 5 Committee of MME, OSX, FWS, MD, SH, and ALP took part in ARRL's Simulated Emergency Test. With the Town of Hull turned into five islands by a simulated tidal wave, the following checked in to offer assistance: TYN Braintree, VPR Hingham, SH Dedham, DW Westwood, CQN Norwood, THY Cohasset, FWS Milton, ALP Quincy, KWD Weymouth, MME Hull, and AUU and BNS Quincy. MUD is back on 2 meters after being in the hospital. Traffic: (Sept.) W1LYL 100, UTH 70, TY 55, AVY 48, NUP 24, BY 20, LLY 17, LM 16, BB 15, EPE 14, WU 10 UE 9, WLU 7, JJY 6, MX 5, ALP 4, AHP 2, EMG 2. (Aug. & Sept.) W1UPZ 325. (Aug.) W1LYL 66, TY 43, BY 29.

WESTERN MASSACHUSETTS — SCM, Roger E. Corey, W1JYH — SEC: KUE. RM: BVR. PAM: RDR. WMN meets at 7 PM. Mon. through Fri. on 3560 kc. JRA,

(Continued on page 96)

30 *Engineered* BEAMS BY GOTHAM

All beams use any standard transmission line. Full data supplied with each beam. All GOTHAM 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.**

Satisfied Users Say:

"Worked England, Italy, and Ireland my first three QSOs, with only 42 watts. Well pleased with the beam, it assembles easily and really kicks out a signal.

W4 - - -"

"Your beams are an excellent value.

W1 - - -"

"Glad to recommend this beam to any interested amateur. The results have been more than I expected and as I run low power (100 watts) I can work DX with this beam where it was not attempted in the past with other antennas.

W9 - - -"

"I have assembled the 2-element beam and tried it out on the air and I am very pleased with it.

W6 - - -"

6-10 M. BEAMS

D64N • DeLuxe 6m 4-El. (No T), $25.95. 1 — 12' Boom, 1" Alum. Tubing; 4 — 6' Center Elements, 1" Alum. Tubing; 8 — 2' End Inserts, ⅝" Alum. Tubing; 1 — Beam Mount.

D64T • DeLuxe 6m 4-El. T match, $28.95. 1 — 12' Boom, 1" Alum. Tubing; 4 — 6' Center Elements, 1" Alum. Tubing; 8 — 2' End Inserts, ⅜" Alum. Tubing; 1 — T Match (4'), Polystyrene Tubing; 1 — Beam Mount.

S102N • Std. 10m 2-El. (No T), $11.95. 1 — 5' Boom, ¾" Alum. Tubing; 2 — 6' Center Elements, ¾" Alum. Tubing; 4 — 6' End Inserts, ⅝" Alum. Tubing; 1 — Beam Mount.

S102T • Std. 10m 2-El. T match, $14.95. — 5' Boom, ¾" Alum. Tubing; 2 — 6' Center Elements, ¾" Alum. Tubing; 4 — 6' End Inserts, ⅝" Alum. Tubing; 1 — T Match (4'), Polystyrene Tubing; 1 — Beam Mount.

D102N • DeLuxe 10m 2-El. (No T), $18.95. 1 — 5' Boom, 1" Alum. Tubing; 2 — 6' Center Elements, 1" Alum. Tubing; 4 — 6' End Inserts, ⅞" Alum. Tubing; 1 — Beam Mount.

D102T • DeLuxe 10m 2-El. T match, $21.95. 1 — 5' Boom, 1" Alum. Tubing; 2 — 6' Center Elements, 1" Alum. Tubing; 4 — 6' End Inserts, ⅞" Alum. Tubing; 1 — T Match (4'), Polystyrene Tubing; 1 — Beam Mount.

S103N • Std. 10m 3-El. (No T), $16.95. 1 — 8' Boom, ¾" Alum. Tubing; 3 — 6' Center Elements, ¾" Alum. Tubing; 6 — 6' End Inserts, ⅝" Alum. Tubing; 1 — Beam Mount.

S103T • Std. 10m 3-El. T match, $18.95. 1 — 8' Boom, ¾" Alum. Tubing; 3 — 6' Center Elements, ¾" Alum. Tubing; 6 — 6' End Inserts, ⅝" Alum. Tubing; 1 — T Match (4'), Polystyrene Tubing; 1 — Beam Mount.

D103N • DeLuxe 10m 3-El. (No T), $22.95. 1 — 8' Boom, 1" Alum. Tubing; 3 — 6' Center Elements, 1" Alum. Tubing; 6 — 6' End Inserts, ⅞" Alum. 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.

S104N • Std. 10m 4-El. (No T), $21.95. 1 — 12' Boom, 1" Alum. Tubing; 4 — 6' Center Elements, ¾" Alum. Tubing; 8 — 6' End Inserts, ⅝" Alum. Tubing; 1 — Beam Mount.

S104T • Std. 10m 4-El. T match, $24.95. 1 — 12' Boom, 1" Alum. Tubing; 4 — 6' Center Elements, ¾" Alum. Tubing; 8 — 6' End Inserts, ⅝" Alum. Tubing; 1 — T Match (4'), Polystyrene Tubing; 1 — Beam Mount.

D104N • DeLuxe 10m 4-El. (No T), $27.95. 1 — 12' Boom, 1" Alum. Tubing; 4 — 6' Center Elements, 1" Alum. Tubing; 8 — 6' End Inserts, ⅞" Alum. Tubing; 1 — Beam Mount.

D104T • DeLuxe 10m 4-El. T match, $30.95. 1 — 12' Boom, 1" Alum. Tubing; 4 — 6' Center Elements, 1" Alum. Tubing; 8 — 6' End Inserts, ⅞" Alum. Tubing; 1 — T Match (4'), Polystyrene Tubing; 1 — Beam Mount.

15 M. BEAMS

S152N • Std. 15m 2-El. (No T), $19.95. 1 — 12' Boom, 1" Alum. Tubing; 2 — 12' Center Elements, ¾" Alum. Tubing; 2 — 5' End Inserts, ⅝" Alum. Tubing; 2 — 7' End Inserts, ⅝" Alum. Tubing; 1 — Beam Mount.

S152T • Std. 15m 2-El. T match, $22.95. 1 — 12' Boom, 1" Alum. Tubing; 2 — 12' Center Elements, ¾" Alum. Tubing; 2 — 5' End Inserts, ⅝" Alum. Tubing; 2 — 7' End Inserts, ⅝" Alum. Tubing; 1 — T Match (6'), Polystyrene Tubing; 1 — Beam Mount.

D152N • DeLuxe 15m 2-El. (No T), $29.95. 1 — 12' Boom, 1" Alum. Tubing; 2 — 12' Center Elements, 1" Alum. Tubing; 2 — 5' End Inserts, ⅝" Alum. Tubing; 2 — 7' End Inserts, ⅝" Alum. Tubing; 1 — Beam Mount.

D152T • DeLuxe 15m 2-El. T match, $32.95. 1 — 12' Boom, 1" Alum. Tubing; 2 — 12' Center Elements, 1" Alum. Tubing; 2 — 5' End Inserts, ⅝" Alum. Tubing; 2 — 7' End Inserts, ⅝" Alum. Tubing; 1 — T Match (6'), Polystyrene Tubing; 1 — Beam Mount.

S153N • Std. 15m 3-El. (No. T), $26.95. 1 — 12' Boom, 1" Alum. Tubing; 3 — 12' Center Elements, ¾" Alum. Tubing; 2 — 5' End Inserts, ⅝" Alum. Tubing; 2 — 6' End Inserts, ⅝" Alum. Tubing; 2 — 7' End Inserts, ⅝" Alum. Tubing; 1 — Beam Mount.

S153T • Std. 15m 3-El. T match, $29.95. 1 — 12' Boom, 1" Alum. Tubing; 3 — 12' Center Elements, ¾" Alum. Tubing; 2 — 5' End Inserts, ⅝" Alum. Tubing; 2 — 6' End Inserts, ⅝" Alum. Tubing; 2 — 7' End Inserts, ⅝" Alum. Tubing; 1 — T Match (6'), Polystyrene Tubing; 1 — Beam Mount.

D153N • DeLuxe 15m 3-El. (No T), $36.95. 1 — 12' Boom, 1" Alum. Tubing; 3 — 12' Center Elements, 1" Alum. Tubing; 2 — 5' End Inserts, ⅝" Alum. Tubing; 2 — 6' End Inserts, ⅝" Alum. Tubing; 2 — 7' End Inserts, ⅝" Alum. Tubing; 1 — Beam Mount.

D153T • DeLuxe 15m 3-El. T match, $39.95. 1 — 12' Boom, 1" Alum. Tubing; 3 — 12' Center Elements, 1" Alum. Tubing; 2 — 5' End Inserts, ⅝" Alum. Tubing; 2 — 6' End Inserts, ⅝" Alum. Tubing; 2 — 7' End Inserts, ⅝" Alum. Tubing; 1 — T Match (6'), Polystyrene Tubing; 1 — Beam Mount.

20 M. BEAMS

S202N • Std. 20m 2-El. (No T), $21.95. 1 — 12' Boom, 1" Alum. Tubing; 2 — 12' Center Elements, 1" Alum. Tubing; 4 — 12' End Inserts, ⅝" Alum. Tubing; 1 — Beam Mount.

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, ⅝" Alum. Tubing; 1 — T Match (8'), Polystyrene Tubing; 1 — Beam Mount.

D202N • DeLuxe 20m 2-El. (No T), $31.95. 2 — 12' Booms, 1" Alum. Tubing; 2 — 12' Center Elements, 1" Alum. Tubing; 4 — 12' End Inserts, ⅝" Alum. Tubing; 1 — Beam Crosspiece, 1" Alum. Tubing; 1 — Beam Mount.

D202T • DeLuxe 20m 2-El. T match, $34.95. 2 — 12' Booms, 1" Alum. Tubing; 2 — 12' Center Elements, 1" Alum. Tubing; 4 — 12' End Inserts, ⅝" Alum. Tubing; 1 — T Match (8'), Polystyrene Tubing; 1 — Beam Crosspiece, 1" Alum. Tubing; 1 — Beam Mount.

S203N • Std. 20m 3-El. (No T), $34.95. 1 — 12' Boom, 1" Alum. Tubing; 3 — 12' Center Elemeuts, 1" Alum. Tubing; 6 — 12' End Inserts, ⅝" Alum. Tubing; 1 — Beam Mount.

S203T • Std. 20m 3-El. T match, $37.95. 1 — 12' Boom, 1" Alum. Tubing; 3 — 12' Center Elements, 1" Alum. Tubing 6 — 12' End Inserts, ⅝" Alum. Tubing; 1 — T Match (8'), Polystyrene Tubing; 1 — Beam Mount.

D203N • DeLuxe 20m 3-El. (No T), $46.95. 2 — 12' Booms, 1" Alum. Tubing; 3 — 12' Center Elements, 1" Alum. Tubing; 6 — 12' End Inserts, ⅝" Alum. Tubing; 1 — Beam Crosspiece, 1" Alum. 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, ⅝" Alum. Tubing; 1 — T Match (8'), Polystyrene Tubing; 1 — Beam Crosspiece, 1" Alum. Tubing; 1 — Beam Mount.

NEW! VEE-D-X BEAM ROTATOR

Rotates full 365 degree traverse at the flick of your finger. Positive control with no over travel assures that you beam directly in desired direction for maximum signal strength. Tempered, long life gearing, positive mast alignment, easy mounting, guyed at top for extra strength. Rugged and powerful, will support 200 lbs. Decorator designed control console provides instantaneous reversible action, ever-dependable compass indication. **Price, $29.95.**

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.

GOTHAM HOBBY 107 E. 126 Street New York 35, N. Y.

the Amherst College station, is a new OBS and will transmit Official Bulletins as follows: Mon. and Wed. on 3555 kc. at 0930; Tue. and Thurs. on 3830 kc at 1600; Fri. and Sun. on 3700 kc. at 1500. TVJ won an HT-20 at the New Hampshire Convention and used it to again lead the section's traffickers. He also has a new BC-312 receiver. HRC is sporting a complete new station, too, his being an HRO-60 and a home-wired Viking II. COI limited his new equipment purchases to a GDO, and RVW was satisfied to win a transistor at the HCRC meeting. Nine other WM hams took home transistors from this meeting. The PRC, WCRC, and CMARA were well represented among the guests. LPF has built an emergency 'phone/c.w. rig for the low frequencies. YSB is a new ham in Clinton and is after WAS with 15 watts to a 6L6. NNI has converted a fire-truck transmitter into a 10-meter mobile rig. EFN, JYH, KFV, and WDW took part in the very lively New Hampshire QSO Party. RRX and VNH are now proud papas. TTL is on 220 Mc. but claims his phonetics are "One Technician That's Lonely" until a V.H.F. Contest comes along. GUI and JTL are prime movers and NCS of the Region 9 6-meter net. EHH, GUI, JTL, ODS, LLN, RRX, BVR, WCG, NLE, and OBQ participated in the S.E.T. ARA is back on the air with a new Viking II. Traffic: W1TVJ 123, HRV 102, BVR 87, UKR 86, RRX 35, HRC 20, WCG 14, MVF 13, JYH 11, GVJ 7, OBQ 1.

NEW HAMPSHIRE — SCM, Carroll A. Currier, W1GMH — SEC: BXU. RM: CRW. PAM: UNV. Your SCM still is seriously ill so this report has been written by CRW. The New Hampshire QSO Party sure was a howling success with plenty of action. SAL is trying 75-meter 'phone. COC now is on NHN. RCEN meets on 3685 kc. Sun. at 10 A.M.; NHEN on 3850 kc. Sun. at 1 P.M. VGX, SWO, and YEY, trustee of the Choate School Radio Club are organizing a "prep school net." Operation is expected shortly. The Concord Hamfest was tops in anyone's language. TXK and his XYL did well in prizes. The Manchester Radio Club building is getting its face lifted. The club received good publicity in the *Manchester Leader* and *Sunday News*. TVJ, of Sterling, Mass., took the first prize at Concord, an HT-20. VGX is back at Andover Academy operating SW. A Merry Christmas and Prosperous New Year to one and all. Traffic: W1CRW 155, CDX 30, POK 18, QJX 11, SAL 9.

RHODE ISLAND — SCM, Merrill D. Randall, W1JBB — SEC: MIJ. RM: BTV. RIN meets Mon. through Fri. at 7 P.M. EST on 3540 kc. The R.I. C.D. Nets meets every Sun. at 10 A.M. EST on 3993 kc.; the R.I. 'Phone Net every Sun. at 11 A.M. on 1890 kc. Speaking of the new 'phone net, we all want to extend a few posies to TRX for the yeoman service he has rendered not only to this net but to all of amateur radio. It has been a pleasure to welcome UOP to the Rhode Island air during his too-short leave from the Army Signal Corps at Atlanta — 100 QSOs in that short time was quite a record. TGD has got his pair of 807s modulating and is doubling his output power. If this is incoherent, blame it on the fishing at Moosehead Lake; we've been on a three-week vacation and haven't exactly hit the groove yet. Much is expected from the meeting of Rhode Island club representatives held at PRA Oct. 8th. According to *Zero Beat*, BIL and MIJ DX scores show more countries than there are listed. Only two reports were received this month. Come on, you guys and gals, you can do better than that! Traffic: W1VXC 85, BTV 33.

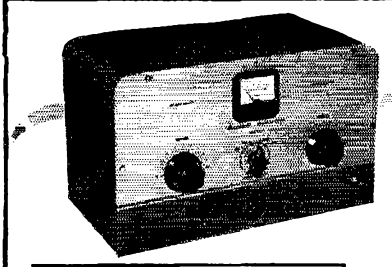
VERMONT — SCM, Robert L. Scott, W1RNA — SEC: NLO. PAM: AXN. RM: OAK. RPR took over from AXN as PAM October 15th. Howie has given Paul an excellent record to maintain. WN1ZEK is a new Novice in Cuttingsville. CUN is the proud possessor of a new first-class radiotelephone ticket. The Rutland Amateur Radio Club is out of summer hibernation. BJP, IT, and RLS attended the Montreal Hamfest. PZX is back on 75 meters. VZE completed modulator and put it to use. The c.d. c.w. net has a better attendance (3501.5 kc.) than the 'phone (3993 kc.). Or are the 'phones just lost in the heavy QRM?! WANTED: News items, etc., for your *QST*. Does everyone believe no news is good news? Traffic: W1RNA 208, OAK 189, AVP 33, VZE 24, TAN 16, VVP 15, IT 10, BJP 9, ELJ 2.

NORTHWESTERN DIVISION

ALASKA — SCM, Glen Jefferson, KL7NT — KL7AIR is still doing a fine job as Sourdough NCS and also works in the Fareast Net on 14,295 kc. daily. 10 meters opened very briefly a couple of days in September but has been blank since. KL7AA will be relocated soon, probably to the communication room of the Anchorage office of the Alaska Highway Patrol. KL7DG writes from Kodiak that the Kodiak Amateur Radio Club has been organized with the station call KL7AWR. The Club is running code classes twice weekly. KL7ANE, at Aniak, makes a report of long-haul emergency contact. KL7AWB now is running 1 kw to an 80-meter ground-plane vertical and reports some good DX and a solid local signal but not as good results in between. Traffic: KL7AIR 2785.

IDAHO — SCM, Alan K. Ross, W7IWU — Our Boise Club was honored by F. E. Handy, 1BDI, who also appeared on KIDO-TV. The S.E.T. went off quite well

(*Continued on page 98*)



Heathkit AMATEUR TRANSMITTER KIT

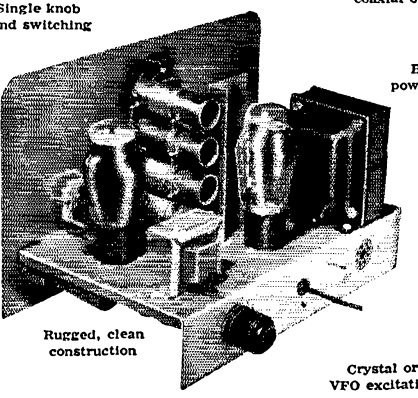
Range ..... 80-40-20-15-11-10 meters
6AG7 ..... Oscillator - Multiplier
6L6 ..... Amplifier - Doubler
5U4G ..... Rectifier
105-125 volts AC 50/60 cycles 100 watts
Size — 8⅛" high x 13⅛" wide x 7" deep

MODEL AT-1

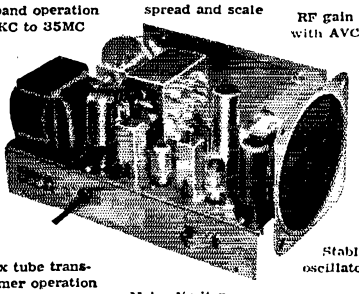
$29.50

SHIPPING WT. 16 LBS.

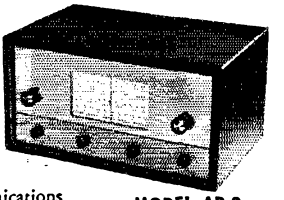
Here is the latest Heathkit addition to the Ham Radio field, the AT-1 Transmitter Kit incorporating many desirable design features at the lowest possible dollar-per-watts price. Panel mounted crystal socket, standby switch, key click filter, AC line filtering, good shielding, etc. VFO or crystal excitation-up to 35 watts input. Built-in power supply provides 425V @ 100MA. Amazingly low kit price includes all circuit components, tubes, cabinet, punched chassis and detailed construction manual. (Crystal not supplied.)



New HEATHKIT COMMUNICATIONS RECEIVER KIT



Range.....535KC to 35MC
12BE6.....Mixer oscillator
12BA6.....IF amplifier
12AV6....Detector - AVC - Audio
12BA6.....BFO oscillator
12A6.....Beam power output
5Y3GT.....Rectifier
105-125 volts AC 50/60 cycles 45 watts



A *new* Heathkit AR-2 Communications Receiver. The ideal companion piece for the AT-1 Transmitter. Electrical band spread 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. Ship. wt. 5 lbs. No. 91-10. **$4.50**

THE IMPROVED Heathkit GRID DIP METER KIT

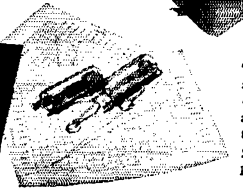
- **Pre-wound coil kit**
- **Range — 2MC to 250MC**
- **Meter sensitivity control**
- **Compact one hand operation**
- **Headphone monitoring jack**
- **Transformer operated**

The invaluable instrument for all Hams. Numerous applications such as pre-tuning, neutralization, locating parasitics, correcting TVI, etc. Receiver applications include measuring C, L, and Q of components, determining RF circuit resonant frequencies, etc. Thumbwheel drive for convenient one hand operation. All plug-in coils are wound and calibrated (rack included). Headphone panel jack further extends usefulness to operation as an oscillating detector.

MODEL GD-1A

$19.50

SHIP. WT. 4 LBS.



Two additional plug-in coils are available and provide continuous extension of low frequency coverage down to 355KC. Dial correlation curves included. Shipping Wt. 1 lb. Kit 341. **$3.00**

HEATH COMPANY
BENTON HARBOR 9, MICHIGAN

State-wide, on 1995, 3935, and 3638 kc. 1995 proved very good at night to cover the State. I personally urge joining into one of the nets. IPE, ACD, and ASA are Net Controls. New Emergency Coördinators are RSP, Grangeville; RFM, Orofino; and NLJ, Bonner County. We now have 14 ECs in Idaho. FIS traded in his '47 Jeep for a '51 model. IQG, SHN, and IWU sport new Grid Dippers. Wonder when 10 meters will be good again. Minimum is with us, we know; the *CD Bulletin* says the winter of '56-'57 will be the maximum, with a slow falling off to minimum again 10½ years from now. Traffic: W7NH 104.

MONTANA — SCM, Edward G. Brown, W7KGJ — The only reports received on the recent emergency test were from Laurel, Harlowton, and Billings. Emergency Coördinator NPV reports that among the stations in the S.E.T. at Harlowton was a steam-driven rig running about 120 watts. OPM, Billings EC, conducted a very fine drill with 20 members checking in, about half of them mobile. LBK, Laurel EC, tied in his drill activities with the Billings gang. Section Emergency Coördinator KUH reports that the Great Falls gang has GCS, BOZ, JGG, LWR, PCZ, OEI, and KUH on mobile. New Emergency Coördinators are JFR for Butte and BXL for Thompson Falls. CT still wants more stations to check in on the MSN C.W. Net and says a 5-w.p.m. operator is just as welcome as anyone. RDM was appointed Assistant EC for Laurel and is working on new 6Y6 modulator. With the death of LCM amateur radio has lost one of its most active and enthusiastic operators. Earl was always an inspiration to all of us with his bright and cheerful outlook. Traffic: W7MM 66, OPM 42, TDW 8, LBK 6.

OREGON — SCM, John M. Carroll W7BUS — Mobile activities still are going strong all over the State despite the beginning of fall activities. HRV reports in from Canada late evenings on 3940 kc. TVW works KLs and KH6s on his mobile. RKL has rebuilt his mobile with good results. CZ is going s.s.b. mobile. Interest in s.s.b. is mounting with FLS and BUS. FLS purchased a multiphase exciter with slicer. NTN is recovering from a car accident. While he was in the hospital his XYL presented him with a YL harmonic. MQ is wiring up a new Viking. APD still is in Ranier despite static from the XYL. WQ is moving to W5-Land. IGI is out hunting wild game for the State and is missing from his nets. QBR is plumbing his house as experience for u.h.f. NFC lost his beam and antenna pole in a high wind. PRA has a new 32V-2. QJ reports a fine European opening on 14 Mc. in the middle of the month; he logged 31 stations in 80 minutes. IEY is in a veterans' hospital recovering nicely. WL is ill in the hospital. FNX advises the Astoria Club has two YL Novices, 12 and 13 years old. Traffic: W7AJN 95, QPS 80, PRA 20.

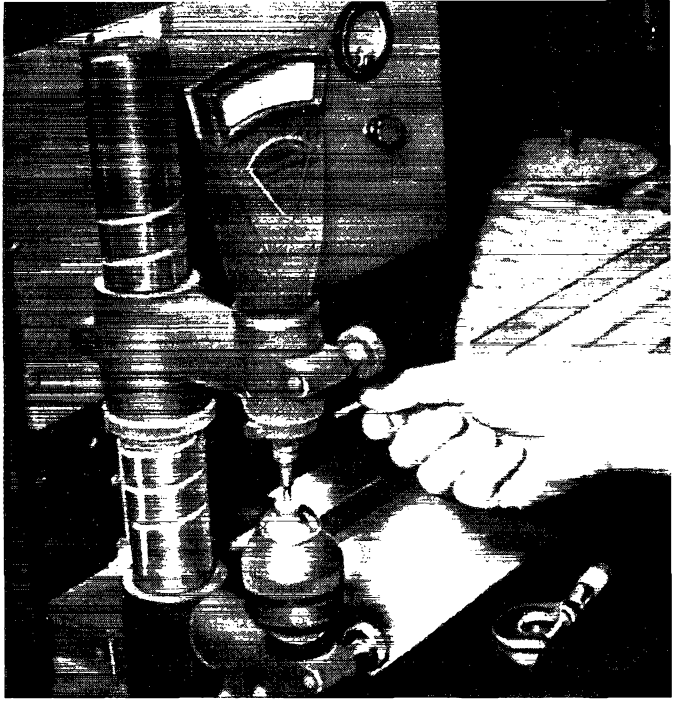
WASHINGTON — SCM, Laurence M. Sebring, W7CZY — SEC: BTV. RM: FIX. PAMs: EHH, PGY. BG has emergency supply rig all ready for any emergency. LVB lost horizontal antenna in the big wind. SJL is transmitter maintenance engineer at KVOS-TV in Bellingham. MSR/7 is the National Guard station at Camp Murray. HDT is busy installing new Gonset Super Six in his car so he can work cross-band from 10 meters. He has just finished a Heathkit grid dipper. OVJ is attending Washington State College. Another new ham in the Spokane Area is WN7TNM. RFP is back at Gonzaga. PUL has new 30-ft. ground plane that works FB. OPR has Elmac and Super Six installed in brand-new 98 Olds. Mr. F. E. Handy, 1BDI, visited several clubs and ham gatherings in this section during September and October. FLQ and GPT have wide-spaced 20-meter beams using 4-inch irrigation pipe (aluminum) for the boom. The VARC had an amateur radio exhibit at the Western Washington Fair in Puyallup again this season with 134 hams logged in the guest book, including KM6, KJ6, KH6, F7, and KL7. IYU and TGO are attending the College of Puget Sound. LEC is on the job again after recovering from severe burns. KL7CG is at radio station KPUY. SMB has logged some 396 QSOs with his mobile 6AG7/829B combo. WN7UIW and TKJ are new members of the VARC. The AREC/c.d. gang from the VARC relayed traffic for the local Red Feather Drive Oct. 5th. Traffic: W7BA 1239, PGY 701, CZX 504, FRU 239, FIX 182, RXH 108, TH 101, APS 92, RAQ 86, KT 83, QYN 58, OE 53, CMH 42, AIB 33, JFC 29, QOU 29, EHH 28, LVB 25, BG 22, AMC 21, FTR 17, FWD 13, SJL 11, GAT 10, BLX 7, CWN 5, PQT 5, EVW 4, OVJ 4.

PACIFIC DIVISION

HAWAII — SCM, James E. Keefer, KH6KS — KH6AVO announces the formation of the Kona Amateur Radio Club on Aug. 7th, with five charter members. AVO is president. The Maui Club requests the appointment of KH6ABY as EC for that Island. Congratulations to the Hilo Club on turning out newcomers WH6BAI, WH6BAD, WH6AZL, and WH6BAR. The Honolulu Club wishes to remind all Hawaiian Area amateurs that regular meetings are held on the 3rd Mon. of every month. Please attend! BPLs reporting for this month are KG6FAA, KA7LJ, KH6FAA, KH6AHQ, KH6AJF, and KA2KS; for August, KA7RC. FEARL members, please forward your reports as early as possible. I would like to see you get recognition

(*Continued on page 100*)

Finest grade quartz crystals are imported from Brazil. After careful X-ray analysis, diamond-edged saws slice them into thin wafers

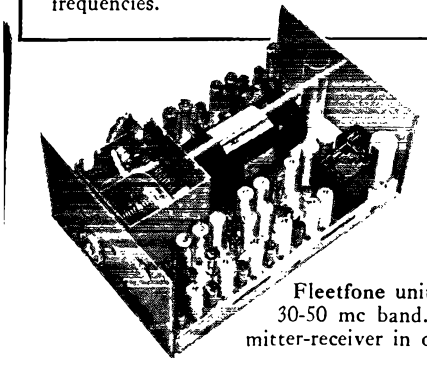


Precision gage checks accuracy of wafers to .0001" after they are sawed, machine-diced and ground to correct diameter—and ground to desired thickness by "lapping" process

Greater crystal stability *without ovens*

—one of 3 reasons why RCA 2-Way Radio rates an expert's recommendation

1. Greater crystal stability without ovens —over entire temperature range.
2. Complete copper power circuit—eliminates voltage loss caused by using frame as ground return.
3. Splatter-proof clipper circuits—eliminate spurious noise, interference on other frequencies.



Fleetfone units cover 30-50 mc band. Transmitter-receiver in one case

RCA 2-Way Radio crystals are sawed, ground and lapped to stay within .001% or .003% (as required) of basic frequency over the entire temperature range—*without ovens*. Only the finest Brazilian quartz goes into their manufacture. To assure stability and activity over broad temperature limits, orientation of each crystal (before cutting) is determined by X-ray diffraction.

That's how an operator knows he will stay on correct operating frequency in Arctic cold or tropic heat.

RCA 2-Way Radio systems are available for the 30-50, 152-174 and 450-470 mc bands. Units can be quickly installed in any convenient location . . . are easy to service . . . and built for long-term performance.

Mail coupon below for further details

RCA

RADIO CORPORATION of AMERICA

COMMUNICATIONS EQUIPMENT

CAMDEN, N. J.

RCA Engineering Products
Communications Equipment
Dept. 000, Building 15-1
Camden, New Jersey

Please send me, without obligation on my part, your new *free* booklet on RCA 2-Way Radio.

Name_____

Address_____

City_____ Zone_____ State_____

for the work you are doing. Traffic: KG6FAA 7282, KA7LJ 3660, KH6FAA 1690, KH6AHQ 1586, KH6AJF 1344, KA2KS 266. (Aug.) KA7RC 1011.

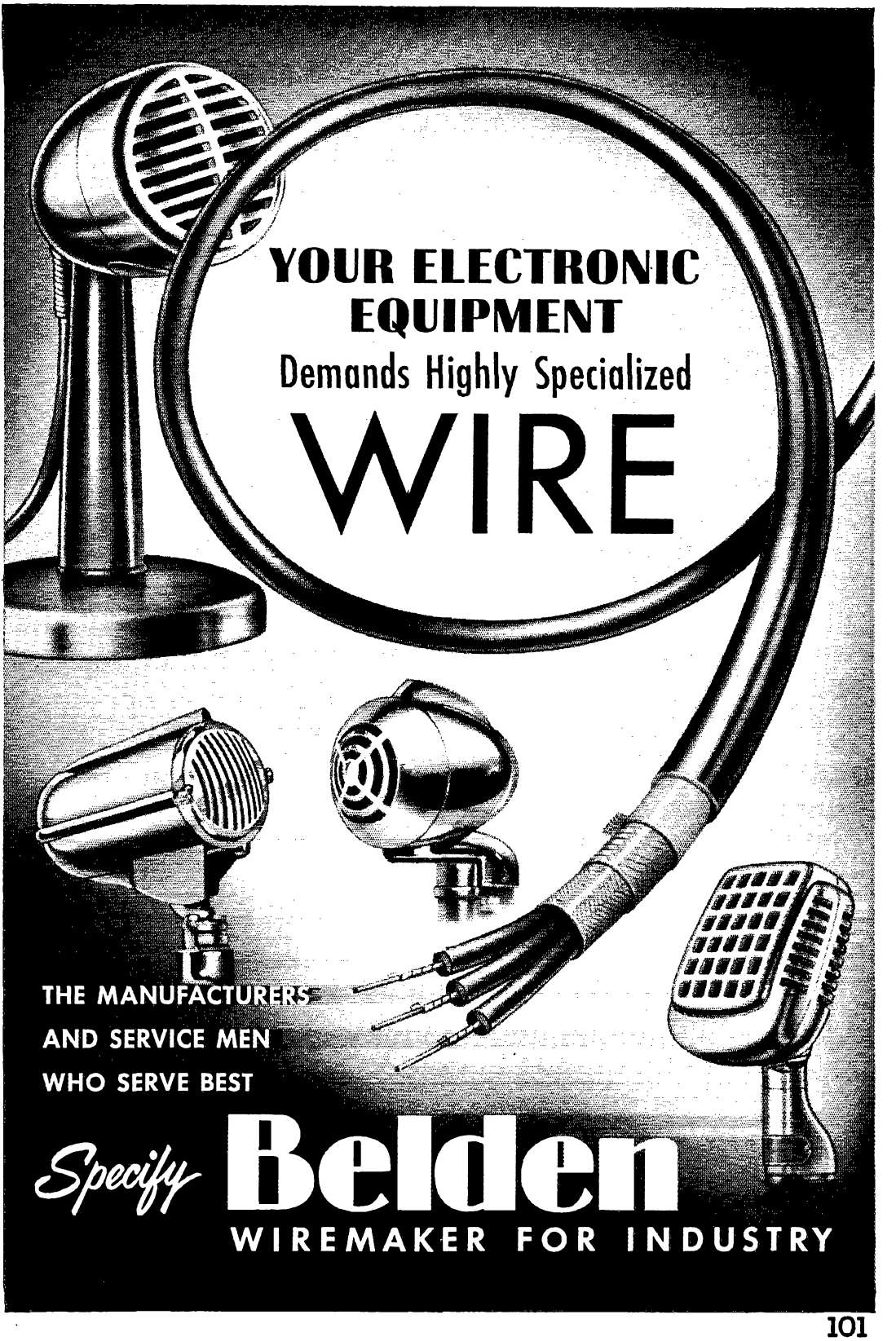
NEVADA — SCM, Ray T. Warner, W7JU — SEC: HJ. ECs: KOA, LGS, NWU, OXX, TJY, VO, and ZT. OPS: JUO. ORS: MVP. BJY received his ARRL 35-w.p.m. Code Proficiency sticker. Howard made his copy using a STICK! NWU was a recent visitor in Southern Nevada. LGS and JU made their annual pilgrimage to Needles, Calif., to assist in furnishing communications for the Colorado River Out-board Marathon. The Southern Nevada Amateur Radio Club had its annual picnic on the shore of Lake Mead Sept. 27th. 9SWO and 9KJM are now permanent residents of Las Vegas. TKV, PRM, and RKE, of Boulder City, gave up ham radio long enough to go deer hunting. BVZ moved and is now a neighbor of PGD. CNG, of Carlin, is heard doing a fine job with 75-meter mobile. OXX and JU took in the ARRL Southwestern Division Convention in Los Angeles.

SANTA CLARA VALLEY — SCM, Roy I. Couzin, W6LZT — Reorganization is going on in the San Mateo County Area by the SEC. AEV hopes that plans for a new inter-city control will be the answer. The Mountain View Radio Club had a representative from Elmac give an interesting talk on tetrodes. The new club call is K6CKQ. The Monterey Peninsula Radio Club had Frank Roach of the State C.D. as guest speaker. The SCCARA had JDD, the representative of Pacific Tel. & Tel., who spoke on transistors. The North Peninsula Electronics Club had a business and organizational meeting. The PAARA also had JDD as guest speaker. The latest on license plates, if you haven't been informed already, is send a post card to ACN, 3234 Prentiss St., Oakland, Calif. Include your name, call, address, and the number of your license plate on the car now, not the small tab number. Do this right away if you want your call letter license soon after the first of the year. CAZ is active on 7-Mc. A-3. OTS is busy with his studies but keeps active with the mobile rig. YHM is back from KL7-Land and hopes to stay awhile. AIT is back on the day shift and hopes to have better traffic totals. NTQ finally finished off his WAC and WAS. WMM finally has 144-Mc. mobile and still is working on all-band exciter. MMG is keeping busy but manages to check into BAN. Traffic: W6CAZ 4, WMM 4, AIT 3.

EAST BAY — SCM, Ray H. Cornell, W6JZ — Asst. SCMs: Guy Black, 6RLB, and Harry T. Cameron, 6RVC. SEC: WGM. RMs: IPW, JOH. PAM: LTI. ECs: AKB, CAN, CX, DNX, FLT, NNS, QDE, TCU. Our congratulations to the new SCM of the San Francisco section, Wally Buckley, GGC, and his able and hard-working first assistant, Rose. Traffic activities in the Pacific Area will benefit from the newly-formed Pacific Area staff which plans to iron out the problems of net coördination and cut down on lost motion in traffic handling. JZ is chairman. New officers of the Skyriders Net are ELP, pres.; Mrs. ANK, vice-pres.; NCL, secy.; RSH, treas. ACN reports that he can save a great deal of delay in getting license plates for those hams who send him their call, QTH, and car license number. Among those taking part in the mock air attack and civil defense drill in Castro Valley on Sept. 13th were ANK, BNB, BSY, EKF, GGS, IDB, JLG, JNY, JOP, KKB, KNJ, LGE, NDN, OAO, PUH, STV, TUN, TQJ, VJS, and YUS. The Mt. Diablo Emergency Net meets at 8 P.M. Mon. on 28.68 Mc., reports YDI. The Mt. Diablo gang once again took part in the annual Walnut Festival. Among those providing communications were HYV, JYZ, NHT, QEN, and RVC. Their OMs are finding out that KN6BQV and PIR are tough competition on the air. LTI, our new PAM, has a pair of 4-250As nearly ready to go. HRZ is attending Chico State and working at KHSL-TV. JWG is attending Contra Costa J. C. and working at KRE. BFZ now lives in Oakland. JOH reports his activity is 100 percent traffic. Mission Trailers in the East Bay section are AKB, ASJ, EIG, EKF, K6FAL, GIP, LL, OEI, PIR, QZ, RDA, VJN, WSH, and YDI. JK reports hearing some fairly good DX on 20 meters. DSZ is having a lot of fun with antennas at U. C. ZA now is on 2 meters. CA is new secy. of EBRC. The new refreshment committee is WZR, RDA, YSX, and DNX. The V.H.F. Party was a big event for EBRC members, with VSV and RLB on Mt. Rose, Nev., MXQ in Oregon, CDT on Mt. Vaca, OHQ on Mt. Diablo, and JHV in San Luis Obispo. 1BDI visited the CCRC at the QTH of the EBRC on Oct. 7th after visiting EE and the Oakland c.d. center. He stated that the c.d. work of Bay Area hams compared with the best anywhere. Napa Valley ARA meets the 2nd Fri. in the Napa City Hall. The SARO had hidden transmitter hunts in September and October. Oakland RC repeated its annual auction. Traffic: K6FAL 1460, W6JOH 123, JZ 102, IPW 90, RLB 9, RRH 9, YDI 6.

SAN FRANCISCO — SCM, Walter A. Buckley, W6GGC, JU 7-4902 — SEC: NL. EC: BYS. As my first assignment as SCM of the San Francisco section I would like to thank ATO for his assistance in helping me with the details and responsibilities of the office. The San Francisco Radio Club meets the 4th Fri. at 51 Lakeshore Plaza, San Francisco. K6BJ was the guest speaker at the September meeting. The topic, "Instrumentation," was enjoyed by all. The HAMS meets at 1675 Van Ness Ave. on the 2nd Fri. At the Club's recent annual banquet the following new offi-

(Continued on page 102)


YOUR ELECTRONIC EQUIPMENT
Demands Highly Specialized
WIRE
THE MANUFACTURERS
AND SERVICE MEN
WHO SERVE BEST
Specify Belden
WIREMAKER FOR INDUSTRY

cers were installed: NAC, pres.; JWF, vice-pres.; SDN secy.; and URA, treas. The San Francisco Naval Shipyard Radio Club had a wonderful steak dinner at its annual picnic held at Stevens Creek. Sound movies were taken and shown at the last meeting. The SFNSYRC meets the 1st Fri. at the Naval Shipyard and the 1st Fri. of odd months at CXO (Red Cross Bldg.). The Cathay Club meets the 2nd Fri. in Chinatown (San Francisco). The Sonoma County Radio Club, LOU EC, meets the 1st Wed. at the County Court House, Santa Rosa. Mobileers holds an 8:30 A.M. breakfast the 1st Sun. of each month at "Perculator," Oakland, and the 3rd Sun. at "Perkins," Redwood City. The 29ers, a fast-growing 10-meter mobileers group in Bay Area, held a get-together at the home of FCK. The Humboldt Amateur Radio Club holds meetings the 2nd and 4th Fri. in Civic Auditorium, Eureka. SLX is the EC. The Tamalpais Radio Club meets at the home of OZC, 7 Loma Ave., Tiburon. The Club has a new trailer and rig but needs the manpower to assemble it and get it rolling. The Marin Radio Club meets the 2nd Fri. in American Legion Hall at Larkspur. GCV has a new Cathode Follower and modulates 250-watt rig on MARS frequency. PW is back on the air after many years: he has 100 watts on all bands and 2TFD antenna. VS has invented a new mobile antenna using baby coils and a fishpole. UNF is putting up ground plane for his 20-meter rig. BUR is building a new beam for 20 and 15 meters. FXX and BMY are building a new version of mobile antenna using spiral center-loaded whip. SUP needs a 1400-foot-long wire 50 feet above ground. GQA reported 25 infractions for the month, mostly out-of-band stations and second harmonics. LOZ and GQK were active in the V.H.F. Party on Mt. Rose. BAZ worked Oregon. MXQ was on Ashland Peak from San Francisco. AJF worked Nevada and JHV/6 at San Luis Obispo. BYS took the green-eyed monster to Mt. Rose but was snowed under. Congratulations on the new calls to KN6BPD and KN6BZY. The November propagation centered on San Francisco can be obtained from the OES, NAC. Traffic: W6SWP 516, GGC 137.

SACRAMENTO VALLEY — SCM, Harold L. Lucero, W6JDN — SEC: AVZ. OBS: OMR and AKF. ORS: OMR. PAM: TYC. BIL reports that his 20-meter folded dipole broke its mooring at one end and decided to go vertical and that's when the DX started rolling in. ETT is visiting European hams during a tour of the Continent. SXF has a couple of natural tall tree masts at his new QTH. PZG has his 813 rig on the air for the first time with no TVI. K6FR, new in this area, is getting right into things here. K6FAV deserves a big bouquet for his untiring work with his classes for prospective hams. KKI pinch-hits for K6FAV when Walt can't make his code classes. HNL and DOA had a 15-minute program on the local TV station featuring amateur radio as a hobby. CGJ has joined the ranks of Viking owners. The Golden Empire Radio Club held its 6th annual barbecue with 36 attending. AVZ, our SEC, thanks you fellows for all the aid you have given him. REF fell and broke her leg but continues active in the Mission Trail Net, MARS, and MARS club code classes, as well as attending classes in radio and theory at Grant Tech. College evenings. BIL has been doing fine work with traffic from Japan; he also has worked 137 countries. Ken Hughes attended the last meeting of the Sacramento Amateur Radio Club. A civil defense surprise check-in was held Sept. 9th. Col. Kitchen, local c.d. head, was patched into 75 meters over DIE with ILZ at the operating console. JEQ checked in the 10-meter gang. KKI, a low-frequency man, is fixing for 2 meters. IEV is building a 2-meter rig and receiver. K6AKF and W6OJB were located in Lassen Park for the V.H.F. Contest. OJB worked 36 stations and 3 states from a point just below Emerald Lake on 2 meters. ZF reports the following: OPY is on the San Joaquin Net, 3532 kc. daily at 7 P.M. TYC says he is going back to c.w. ASI is nearly finished with new rig, 1 kw. to a pair of Eimac 250THs. HSB and HTS are new MARS members. GDO is mobiling. VBI licked the birdies in the VFO. JN has a nightly sked on 75-meter 'phone with an old friend in the Bay Area. PIV is hot on 144 Mc. KME is on 80-meter c.w. ZF still is rebuilding 4–400A final. Traffic: W6TYC 69, K6NAK 42, W6OPY 31, REF 30, ILZ 16, AVZ 15, JDN 4.

SAN JOAQUIN VALLEY — SCM, Edward L. Bewley, W6GIW — SEC: KRO. RM: EXH. I had a nice visit with EXH recently. Vic's many friends will be happy to hear that he is getting along fine and the doctor is pleased with his progress. While there I saw the new Globe King, a birthday present for GQZ from Vic. The same day I found BCL atop Mt. Diablo, getting very good results on 420 Mc. The Stockton Club has a new meeting place at COP, and is getting started on a big c.d. program. More details next month. LRS has a new QTH with less QRM. VPV is another s.s.b. convert. FIP moved to Stockton. The Turlock Club held its first meeting of the fall season and made plans for a transmitter hunt as its first fall project. OPU is back on the air after a long illness. BNP still is on the sick list, but is recovering satisfactorily. PIQ is back at his old QTH. KFC is new EC for Stanislaus County. PRA reports a total of nine hams in Lindsay, including newcomers K6BZS and KN6BUF, who are getting good results with a 117L7 running 1.7 watts. Traffic: W6OBA 29, GIW 25, EBL 14, MGP 11, TXM 8.

(Continued on page 104)

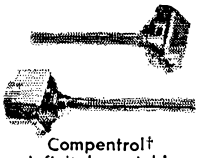
1 CONTROLS

Model B16 Radiohm® Miniature

Twin and dual concentric Radiohms

Model B Blue Shaft† Radiohms

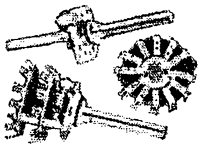
Type AB Adashaft® Radiohms



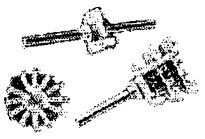
Compentrol† Infinitely variable loudness control

2 SWITCHES

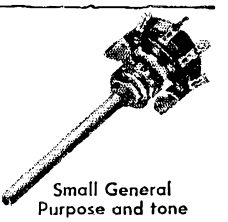
PA-2000 Miniature Rotary, Steatite Insulation



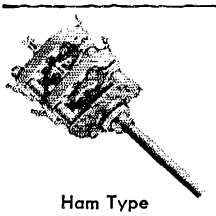
1400 Series, Standard Rotary, Phenolic Insulation



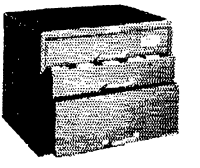
2500 Series Standard Rotary, Steatite Insulation



Small General Purpose and tone



Ham Type



Complete Switch Kits

FOR SALE!

These and 100,001 other Centralab quality electronic components

HERE'S a perfect check list to determine your electronic needs. And there are hundreds of variations available to you. Whether you need a few items or dozens — no other single manufacturer can offer you such a wide choice of standard fastest-for-servicing parts. That's why Centralab is the industry's No. 1 electronic component source . . . and keeps your distributor supplied with the latest developments in the fast-changing electronics field.

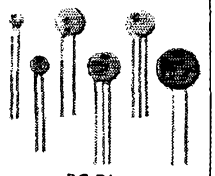
You know CRL parts are your best value because each is backed by a written guarantee. That means they're safest for servicing. And you'll agree that's mighty important for building consistent customer satisfaction.

So when you need parts, look for the familiar blue and white CRL package — the product inside is the result of more than 30 years of electronic experience. This experience has pioneered many profit-building "firsts" for you! For complete performance data and engineering specifications mail coupon.

†Trademark
P.E.C.—Printed Electronic Circuits

3 CAPACITORS

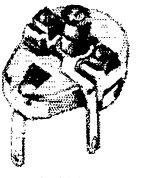
BC Tubular TC Tubular



BC Discs

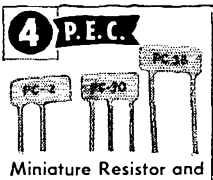
TV HI-VO-KAPS®

Transmitting Capacitors

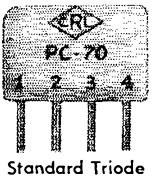


Ceramic Trimmers

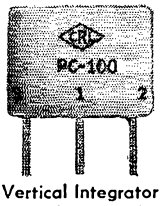
4 P.E.C.



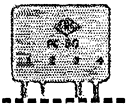
Miniature Resistor and Resistor-Capacitor Units

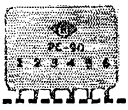


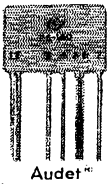
Standard Triode Couplate®



Vertical Integrator

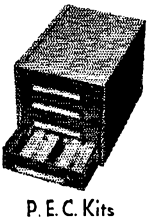






Audet® Audio-detector plate

Ampec® standard and miniature 3-stage amplifiers



P. E. C. Kits

Centralab
CRL®

A Division of Globe-Union Inc.
912-LE. Keefe Ave., Milwaukee 1, Wis.
804 Mt. Pleasant Road, Toronto 12, Ontario

Please send me Catalog 28 with information on Centralab products.

Name.....

Title.....

Company.....

Address.....

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

ROANOKE DIVISION

NORTH CAROLINA — SCM, J. C. Geaslen. W4DLX — Reports are very slim again this month, so a short column here. The Cramerton gang put on a junior-size ham-fest-party in honor of OXH. Although Oscar is blind he has become a fine active ham and the gang is rightfully proud of him. About 65 hams were present, including some 20 mobiles, and all had a big "yak-fest" and stuffed themselves with barbecue. IMH, at Plumtree, is back working traffic on NCN and TLAP. TMV, at Raleigh, is new NCS of the Tar Heel Net. Let's not forget, the SCM can't fill this column unless you write in. Traffic: W4VHH 71, IMH 40, PIC 17, YUW 14, DLX 4.

SOUTH CAROLINA — SCM, T. Hunter Wood, W4ANK — The Greenville Club reports the loss of Ann Fox, HTT, who passed away on Aug. 10th. The following mobile stations reported into the "Mobile Roundup" during September: ANK, BIZ, DX, DXW, LTF, NJG, NQP, NWB, OSC, SZG, TPE, TWW, TYS, ULH, UPK, ZVY, and 1PPA. The mobile net meets at 2:30 P.M. each Sun. on 3930 kc. Mobile activity in South Carolina is growing, with many reporting getting ready for mobile operation. Get on the bandwagon, it's a lot of fun. OSC is on 2 and 6 meters. UNO reports on Rock Hill participation in the Simulated Emergency Test. During the S.E.T. Charleston had 14 mobiles and emergency rigs on with a total score of 152. New officers of the Charleston Amateur Radio Club are ZRH, pres.; TWW, secy-treas.; and DFC, trustee. ZVY reports that 1PPA now is 4CAL. BJE is prepared for emergency operation from Walterboro on 3550- and 3525-kc. c.w. FM has demonstrated his battery-powered rig on 75-meter 'phone and 80-meter c.w. UFP will operate week ends only during the college term and reports that the damage to his big rig caused by fire has been repaired. Traffic: W4ANK 200, EDQ 10, YOS 2.

VIRGINIA — SCM, H. Edgar Lindauer, W4FF — As I write this (Oct. 25th) I find myself quite frustrated way out in Kansas City, Mo. Three and one-half weeks ago found me en route for this QTH on a business trip with HQN. It was to be for only 5 days. All the reports sent in by the faithful are resting expectantly at my home QTH. Therefore, I may have to rely on a fairy godmother in order to insert the traffic reports at the end of this epistle. If they don't appear it's because I was unable to forward them in time to make this issue of *QST*. LW really is producing a fat, juicy *VA Bulletin*. As you may have noted from its size, it is going to take continuous flow of financial support to keep it that way. 6BYV/4 is Net Mgr. of 160-Meter Net on 1895 kc. NCS will be on voice, but traffic reporters should be prepared to work c.w. on the frequency assigned to them by the NCS. The time is 1900 EST, same as VN, to allow proper liaison and reduce loss of service time in handling to give 160-meter stations an opportunity to clear traffic through established mediums. Elsewhere in this issue is an announcement of my resignation as SCM, brought about by a change of QTH to Maryland where I have retired for the duration of time or something. It goes without saying that this part of my life is regrettable as I have thoroughly enjoyed our associations and want to again repeat sincere thanks for the help, loyalty, and willingness of everyone to keep Virginia out in front, both community and hobby-wise. From Maryland I will always keep my hand on the "brass" and my tongue in the mike.

WEST VIRGINIA — SCM, Albert H. Hix, W8PQQ — ETF is new NCS and GEP Asst. NCS of the West Virginia 'Phone Net on 3890 kc. AUJ is continuing as NCS of the C.W. Net on 3570 kc. Both nets now meet Mon. through Fri. at 2100 EST. RKV gave a very interesting talk on s.s.b. principles at the last Tri-City Club meeting. CCN is new president of MARA. LBT bought 32V-1, Elmac A54-H, and PMR-6A mobile gear. QHG has new Viking rig and 40-ft. down-spout vertical in operation. SFT is on with a half-kw. on the 'phone bands. He and QHG are next door neighbors and share each other's antennas. HZA is Acting NCS of the C.W. Net on Tue. The Weston Club had 5 stations operating on 6 meters in the S.E.T. Oct. 3rd and 4th. VPO put up a new 75-meter antenna. HZH also has the call ORT and is active with two stations. Your new SCM would like to remind AREC members to watch the expiration dates on their cards and appointees to send in their certificates for renewal when required. LSG is in Brazil on business. GTQ is attending Marshall College. EOJ is building a new kw. all-band Pi-network final. PQQ got QSLs from CEØAA; he worked him on 3.5, 7 and 14 Mc. CLX is installing some commercial fixed station and mobile units. Traffic: W8AUJ 114, HZA 28, MBA 9, LBT 5, PQQ 5.

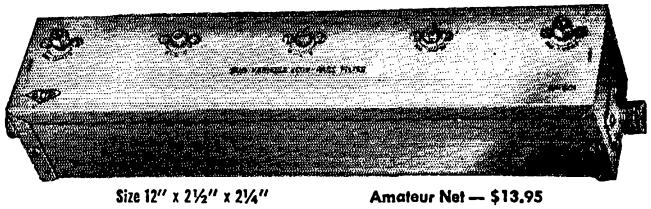
ROCKY MOUNTAIN DIVISION

COLORADO — SCM, Karl Brueggeman, WØCDX — SEC: AEE. The Denver Radio Club had a fine exhibit of amateur radio equipment at the recent local Hobby Show. Your writer, on behalf of all amateurs, wants to thank WLN for his fine job in organizing the exhibit and presenting it to the visitors at the show. Those who participated were HEW, OZE, FMV, OIS, GQY, LO, IC, CDE, JPI, OMG, LTL, CDX, ERR, and OM. New officers of the

(Continued on page 106)

be a SANTA CLAUS TO YOUR NEIGHBORS *INSTALL A* BUD LF-601 LOW PASS FILTER ON YOUR RIG

More and more of your neighbors will be buying TV sets, especially during the holiday season.



Size 12" x 2½" x 2¼" Amateur Net — $13.95

You can be a Santa Claus to your neighbors by giving them the gift of more trouble-free reception by reducing or eliminating T.V.I. caused by your transmitter. Install a Bud LF-601 Low Pass Filter today!

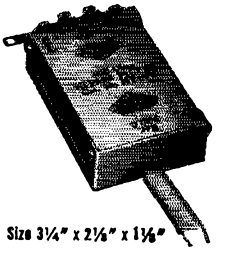
Harmonics can be greatly reduced or eliminated at the transmitter by the use of a BUD LF-601 low pass filter, which has the following characteristics:

1. Minimum attenuation of 85 decibels on all frequencies above 54 megacycles and a minimum of 93 decibels above 70 megacycles.
2. Maximum rejection is adjustable from 55 to 90 megacycles. This tunable feature provides two slots at least 100 decibels down on any TV channel.
3. The cut-off frequency is 42 megacycles.
4. The unit will easily handle a full kilowatt modulated on a reasonably flat line.
5. The insertion loss is less than one DB.
6. Since the design of this filter provides an adjustable feature, the unit can be used with either 52 ohm or 72 ohm coax.
7. Each inductance is in an individually shielded compartment.
8. All capacitors used are variable.

Point out to your neighbors that causes other than your transmitter are responsible for T.V.I. These are short wave broadcasters, diathermy and X-ray equipment, automotive and airplane ignition systems and other sources. SUGGEST THAT THE USE OF A BUD HF-600 HIGH PASS FILTER WILL ELIMINATE OR REDUCE INTERFERENCE FROM THESE SOURCES.

The HF-600 high pass filter is designed to have a cut off frequency at 42 megacycles, thus this filter rejects signals from 0 to 42 megacycles. It is within this range that the majority of signals causing interference would be received. Since there is no attenuation above 42 megacycles, picture strength or quality is not affected. This unit is easily installed on the T.V. set. Amateur Net — $3.00

See these highly efficient filters at your distributor. If he does not have them, write us, giving his name.



Size 3¼" x 2⅛" x 1⅛"

BUD — THE MARK OF PERFECTION

BUD RADIO, Inc.

DEPT. Q, 2118 EAST 55th STREET CLEVELAND 3, OHIO

Denver Radio Club are BON, pres.; LO, vice-pres.; ERR secy.; and GQY, treas. OMN, EDG, and WNØOYG were hosts at a picnic held Sept. 20th for the hams of Northeastern Colorado and the adjoining areas of Kansas and Nebraska. OMN and EDG are starting a class in radio for beginners. KHQ is trying to fill some of the TCC schedules so he won't have to handle them all himself. LCE spent the summer bouncing commercial 2-meter signals off those Colorado mountains with PXZ. GQY has an Elmac in the car with loading coils (plug-in) for all bands. SUP has a new Viking II and promises to spend more time on the air now that his driving schedule has eased up. CYT gets this month's bad luck prize — three contacts before his rig went out again. JPI is back from White Sands Proving Ground. He has a new Super Six and an all-band rig. Traffic: (Sept.) WØHKE 3927, KHQ 1068, BWJ 11, OTR 7. (Aug.) WØHKE 3029.

UTAH — SCM, Floyd L. Hinshaw, W7UTM — Now that the fall season is with us, it is hoped that all are ready to work to make the coming operating season the best in our history. We certainly have been given a fine incentive by Mr. Handy's visit in September. Thirty-six interested amateurs attended the meeting. CCC is keeping a triweekly sked with LA on 3900 kc. KH6OT, W7KGP, and TER are students at Radio Institute in Salt Lake City, where ONH and JHM are instructors, with CCC as chief instructor. LQP is working on his table-top kw. EWX and SP are deep in c.d. activities and have the control station equipment completed. GPN reports they have a room for c.d. in station KOPP and are receiving some support from the City of Ogden. The SCM would appreciate some news from amateurs in the southern part of this section for inclusion in these write-ups. Traffic: W7CCC 7, UTM 7.

SOUTHEASTERN DIVISION

ALABAMA — Acting SCM, Jack D. Gray, W4SXS — EW went to 2 meters and is doing all right, too. KAC is in the process of going on 2 meters. AUP is considering mobile operation. GQE and 5ONL/4 get the DX. FMW has the new low-power rig finished. Opelika has a new ham, AZX. PXM has a new 20-meter beam up. The A.P.I. Radio Club held its first meeting of this quarter Oct. 29th. Glad to have the boys back at Auburn and to hear UJJ on the bands again. From reports there is a nice crop of hams enrolled this quarter. MQK has been assigned overseas duty and his father, PWS, is getting up a vertical to keep in contact with him on 20 meters. Our best to GJW, who has been a swell and faithful SCM. His resignation leaves Alabama in need of an SCM. Traffic: (Sept.) W4KIX 75. (July) W4RLG 35.

EASTERN FLORIDA — SCM, John W. Hollister, jr., W4FWZ — Merry Christmas, gang. Congrats to the nets and members who did such a good job during the storm emergencies. All the NCS deserve credit. The AREC gang is especially commended. September also saw the Palmetto Net, the Gator Net, and the Novice Hurricane Net blossom out. Bradenton: TAS, new EC, got off to a good start with the AREC. Clewiston: Welcome home to PJU. Ft. Meade: AXY is building 300-watt s.s.b. for 3.9 and 7.2 Mc. Gainesville: WEM, new EC, needs help to revive the Alachua AREC. Holly Hill: AYD, ex-2GXP (P.O. Box 457), using Viking and 129X, reports into the Palmetto Net and says 21-Mc. DX is good. Jacksonville: The JARS highlights meetings with good films. Key West: ZBF reports the Club is running a 144-Mc. contest to benefit AREC. NQW is welcomed back. OPZ is on 3.9-Mc. 'phone. Lakeland: Vie reports MVY is trustee of the Club station, BOW, and the Club is now an ARRL affiliate. Miami: The Flamingo Net had a hidden transmitter hunt and plenty of success with direction loops. DEN has 35 members on 29,044 kc. IEH is on s.s.b. The Club (NVU) is getting the BC-610 overhauled for serious work. IYT says we need an S.E.T. twice a year. Sarasota: Welcome back to BU. 8ERU and his XYL are honeymooning around the old stomping grounds. TFP reports S.E.T. plans were made with the emphasis on mobiles. Tampa: Net members: Get ready for the Tampa State Fair starting Feb. 3rd. The usual 4000 messages are expected from DUG. LDM and KZT work in 8 'phone nets! The home QTH of LDM is Winter Garden and KZT hails from Powder Springs, Ga. Whee, at McDill, says his operating time is limited but look at his traffic count for himself and XYL. Traffic: W4DVR 288, TPN 189, DRD 164, LDM/KZT 122, IM 102, PZT 102, TJU 81, BMY 72, ZIR 68, FWZ 59, KJ 35, IYT 16, DES 15, VIE 15, TAS 11, TFP 9, TWR 7, LLO 6.

WESTERN FLORIDA — SCM, Edward J. Collins, W4MS/W4RE — SEC: PLE. Hurricane Florence kept the Western Florida gang hopping. Among those doing hurricane work were PTK, TTM, PQW, SZH, MS, RZV, ROM, AOK, and AXP. WN4AYS has a new Harvey-Wells. WN4BGG has a new NC-88. CCY is the newest Pensy ham. HJA has fired up the rig again. JBJ is working at WPFA-TV Channel 48. YFF, YFG, and YFH have a Viking II ready for the air. PQW had swell publicity and photos in the newspaper for his hurricane work. SZH is trying for a perfect transmitter. AXP has two new 30-foot masts. YRF is increasing power. UXW/VO6 passes his best to the gang. UCY is trying the lower frequencies. MS is working on a

(Continued on page 108)

TWO NEW STANDARDS
FOR AMATEUR MOBILE RECEPTION

MORROW
FTR

MORROW
5BR-1

Discriminating amateurs throughout the world are using more and more MORROW Converters because they recognize the economy and dependability afforded by these superior units. Constant research and quality-manufacturing have combined to produce in the MORROW 5BR series a mobile converter of unsurpassable amateur band performance. You can't beat their rugged durability and reliable operation. Dollar for dollar MORROW Converters are better because they are designed better, employ higher quality components and are manufactured with more care. Note these features:

1. IMPROVED SIGNAL/NOISE ratio obtained through use of Hi "Q" coils on Poly forms and high gain circuitry.
2. EXCEPTIONAL STABILITY assured by Temperature Compensated Clapp Osc. and Mixer.
3. THREE GANG TUNING and SEPARATE COILS for each of the 5 bands in RF, Mixer and Osc. sections virtually eliminates images and birdies.
4. BDCST TRAP built in to prevent break-through at IF frequency.
5. CALIBRATION ACCURACY ASSURED, with oscillator coils permeability adjusted, and maintained over wide temperature variations by O temp trimmers and compensating padders.
6. EXCELLENT BANDSPREAD on large, easy to read dial, spreads each band across the entire scale. Covers: 3.5-4.0, 7.0-7.3, 14.0-14.35, 21.0-21.45 and 28.0-29.7 Mcs.
7. MORROW NOISE LIMITER effectively reduces ignition and external pulse type noise.
8. DUAL DOUBLE-TUNED IF AMP affords good selectivity and accurate reset capability when used with auto radios. Output freq: 1525 Kcs.
9. SSB RECEPTION obtainable when used in conjunction with new MORROW FTR receiver.
10. LESS INSTALLATION FUSS, merely plugs in for all connections when used with FTR receiver.

Complete with mounting hardware, connecting cables and instruction manual for easy installation. Dimensions: H:4", W:5⅝", D: 7".

We predict the new MORROW FTR receiver will establish a new standard for mobile amateur communications. The FTR is engineered to achieve the optimum in stability, sensitivity and selectivity, comparable to the finest communications receiver. The ten tube circuit features 15 tube performance and is designed to replace the auto radio as a companion unit for the MORROW or any other converter with output between 1400 and 1600 Kcs.

Electrically the FTR is a crystal controlled, fixed tuned superhetrodyne combining time-proven circuits with many exclusive MORROW engineering accomplishments. The use of high quality components and materials, the excellent construction and the multi-purpose tubes in the FTR assures an initial and continued high degree of performance characteristics. The new receiver's compact size and multiple functions offer amateurs exceptional versatility of installation and operation. Here are the specifications:

HIGH SENSITIVITY is less than 1 mv when used with the MORROW or other good quality converter.

SHARP SKIRT SELECTIVITY of 3.0 Kcs. bandwidth is obtained with 200 Kc. IF amp.

EXTREME STABILITY is sufficient for good SSB reception. Silver mica or temperature compensating condensers in all LC circuits. Resistors and ceramic condensers are mounted on terminal boards.

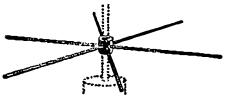
HERMETICALLY SEALED "S" METER operated by built-in VTVM in both AVC and Manual positions. Meter also used as FIELD STRENGTH METER for adjusting transmitter to maximum output.

SERIES NOISE SILENCER effectively suppresses pulse noise such as ignition interference.

ADJUSTABLE SQUELCH CIRCUIT that responds only to signals, never to noise alone.

THREE STAGE AUDIO amplifier affords ample loudspeaker volume even on weak signals.

Complete with separate power supply, connecting cables, mounting hardware and instruction book. Dimensions: H: 4", W: 5⅝", D: 7". Optional equipment: Model SH, 5" heavy duty PM speaker in cast aluminum case with universal mounting bracket.



MORROW TOP HAT
Mounts above loading coil of any standard whip antenna. Greater antenna efficiency.
$2.50 Amateur Net

MORROW GC10 & GC20
Tuned Generator Noise Filters for 28 or 14 Mcs. Tune for minimum hash level in receiver.
$3.75 Amateur Net

5BR-1 with built-in noise limiter.....$ 74.95
5BRLN-1 less noise limiter.....$ 69.95
5BRF designed specifically for new FTR.....$ 67.95

FTR RECEIVER
(Including Federal Excise Tax).....$128.40
SH 5 in. PM heavy duty speaker with case $ 7.50
Prices Amateur Net

MORROW
RADIO MANUFACTURING CO.
SALEM ORE.

sync. generator to improve the quality of the TV transmitter. ODO is experimenting with u.h.f. antennas for TV. DAO stays on 75 meters because of TVI. NJB will have an FB shack in the new QTH. NOX was heard doing an FB job during hurricane. IREV/4 keeps skeds with the folks up New England way. JPD had lightning burn up the TV antenna lead. UW is QRL/Sheriff radio. PAA is campaigning for Director. WN4ZPN works the rig in the early hours. VR lost half a tower at WCOA during the hurricane. AXF and UQZ are QRL school teaching.

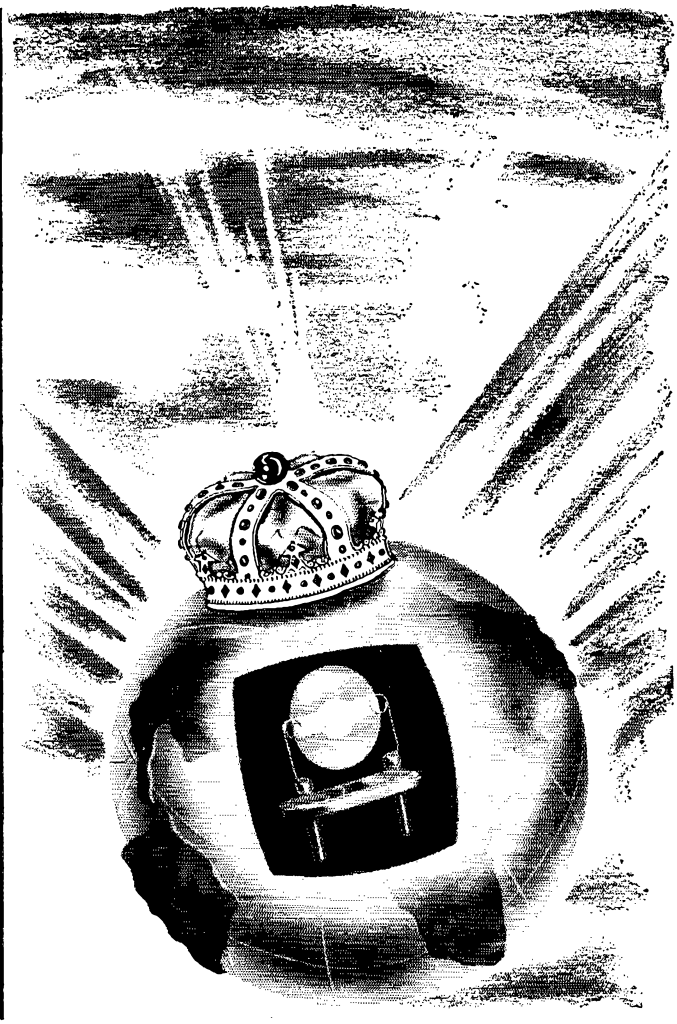
GEORGIA — SCM, James P. Born, jr., W4ZD — SEC: EJC. PAM: LXE. RM: MTS. Nets: GCEN on 3995 kc. at 1900 EST on Tue. and Thur., 0830 on Sun.; ATLCW on 7150 kc., 2100 EST Sun. State Mobile and C.D. frequencies: 3995 and 29,600 kc. WN4ZDG, WN4BPO, and WN4BQF are new hams in Valdosta. WN4ZPQ attended the Boy Scout Jamboree in California. Walt is active with a TBS50 on 7 and 3.75 Mc. WN4BXV is a new Novice in Quitman and is active with a Philmore NT200. IMQ has returned to work after recovering from a broken leg. ZHM is active on all bands with a new Globe Scout. VKK is building a higher power rig with an 813 final. TOU is active on 3.85-Mc. 'phone. YMV has a new Viking II transmitter. YTO is building a new ECO and has completed vertical for 7 Mc. LJB visited your SCM on his return from the Pacific, where his call was KR6GP. Elmo now is on his way to DL4-Land. It is with deep regret we report the passing of CMA. Gary was very active in ham radio and club activities in Cedartown. LNG has completed his 4-125A final for 50 and 144 Mc. However, he was slowed down because of the arrival of a new Ford and having to install mobile equipment. VMB is active on 3.85-Mc. 'phone and spends most of his time traffic-handling. Merry Christmas and a Happy New Year. Traffic: (Sept.) W4USA 2712, K4WAR 1105, W4VMB 114, OCG 62, ZD 45, FOE 27, MTS 15, IMQ 6, MA 6, WN4ZPQ 1. (Aug.) W4FOE 19.

WEST INDIES — SCM, William Werner, KP4DJ — SEC: HZ. RL visited ARRL Headquarters. KD has a new Heath AT-1 transmitter and reports a QSO with ZK1AB on 7 Mc. for DXCC No. 204. KD and KV4BD are new OOs. The VINET meets three times daily on 3865 and 7205 kc. DJ has a BC-221 for spotting schedule frequencies. The PRARC now is affiliated with ARRL. HZ has been appointed chairman of the Island TVI Committee. W4GXY/KP4 now is working in San Juan. OD now is W4YJW. RD has 32V-3 and 75A-3. GP is overhauling the BC-610. CV and CG frequently are heard on 3535 kc. getting up code speed. HX has gone back to the States. TF put up a new 80-meter antenna. WP4WD and WP4WE are heard nightly on 3735 kc. QA has a new three-element 20-meter beam. UK moved to Sabana Seca. RK and HZ manned NCS KP4ID at Red Cross Headquarters when a hurricane was expected. WP4UO now is KP4. DV is building push-push 304TL transmitter. UY is a new station on 3925 kc. Most consistent on the 3559-kc. Net are CY, DV, MV, PW, PZ, RC, RD, RK, TF, and NCS DJ. Traffic: KV4BD 892, KP4DJ 7, KP4ID 3, KP4DV 2, KP4QR 2.

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, Howard C. Bellman, W6YVJ — SEC: QJW. RMs are BHG and GJP. CMN resigned as RM to put in full time on the Southwestern Division Convention and other time-consuming things. MBA is a new ORS and was one of the members of the Convention Committee, which included our Director KW, EKM, CMN, QIR, NRK, NLM, QJW, KWL, HWM, CEE, YSK, MQN, and KGC. K6BVH reports for the first time after reporting into Macan-4 Net. RW, president of the Southern California DX Club, wants to be an Observer and KYV thinks it is a good idea. Dave Kennedy sure took a nose-dive in traffic with less than 1000, but promises it won't happen again. He is putting up a store-type bazooka-vertical that works automatically on 80 and 40 meters, he says. Dave received a beautiful certificate from the FEARL, along with a nice letter signed by President KA2HP. CFL is back in stride as OES. COZ reports as follows: GAE is a new dad, COZ is a new uncle, WLX is mobile 75 meters, KN6CEY and CHJ are brand-new at ham radio, DA is better after his operation. NCP received an ARRL Public Service Award for his part in the Tehachapi Earthquake work. ØHAW/6 writes from Upland College that ØEZT/6 and he are starting a school club and hope to affiliate with ARRL. BUK is building a 38-foot wood lattice tower for 10-20 beam. BLY says AWI was guest speaker at the Radio 50 Club, Whittier. MLZ, of the Lockheed ARC, came through with a two-page report on the work done by amateur radio involving the lost boy, Dana McClure, in Sequoia. HPV sent in a really complete report sheet on his excellent work as Official Observer. CAK is the new Assistant Manager of LSN and OFJ arises at 3 A.M. to clear traffic with BHG. Answering a letter I sent to 20 people, K6EA, W6FMG, and others really make me cringe. Okay, I'll get on the air. ISQ reactivated his ORS appointment. LZS is on 40-meter c. w. and is at new QTH, 7356 Hinds Ave., N. H. OGS is on 75-meter 'phone and 40-meter c.w. My old buddy, Jim Blick, a prospector by trade, is K6ATY, teaching at L.A. State College, and expecting his Ph.D. at U.C.L.A. in a year. The new club call for the Glendale c.d. boys is

(Continued on page 110)



- RESEARCH
- ENGINEERING
- CRAFTSMANSHIP
- PRECISION
- PRODUCTION
- DELIVERY
- QUALITY

THE INSIDE STORY

Top quality means top performance after long service. Bliley quality control far exceeds the perfunctory steps necessary to produce and ship crystals which meet a nominal specification.

Bliley precision process techniques, rigidly followed in orientation, slicing, lapping, and plating guarantee peak crystal performance. That extra touch of engineering and craftsmanship makes the big difference in your equipment.

That's the Bliley inside story!

Bliley CRYSTALS

BLILEY ELECTRIC COMPANY

UNION STATION BUILDING • ERIE, PA.

K6BLM. Traffic: (Sept.) K6FCA 2664, W6KYV 647, NCP 238, HLZ 218, LYG 216, ESR 129, FMG 105, BHG 80, MBA 79, K6BVH 48, W6NTN 33, HIF 28, GJP 24, JQB 18, COZ 9, AM 8, DPL 7, OKD 4, WØHAW/6 3, W6ISQ 2, BLY 1, WØEZT/6 1. (Aug.) W6DDE 90, FMG 35, CDU 16, K6BWD 7.

ARIZONA — SCM, Albert Steinbrecher, W7LVR — Asst. SCMs: Kenneth P. Cole, 7QZH; Dr. John A. Stewart, 7SX. SEC: OIF. RM: JGZ. PAM: KOY. Arizona 'Phone Net: Tue. and Thurs. 7 P.M. 3865 kc. Arizona C.W., Net: Nightly 8 P.M. 3515 kc. Arizona Novice Net: Tue. and Thurs. 6 P.M. 3704 kc. Arizona MARS Net: C.w., Tue. 7 P.M. 3497.5 kc.; 'Phone, Fri. 8 P.M. 4025 kc. Phoenix Net: Tue. and Thurs. 7 P.M. 29 Mc. Tucson Net: Nightly 8 P.M. 29 Mc. Tucson 6-Meter Net: Mon. 7 P.M. Listen for IRX on Tue. and Thurs. at 6:45 P.M. on 3865 kc. for important bulletins. Tune 3865 daily at 8 A.M., 12 Noon, and 4 P.M. for traffic, etc. A [hidden-transmitter hunt was staged in Tucson, with PLM hiding in the surrounding mountains, and was located by AIA mobile, with DRQ, HUV, JGZ, LVR, QHD, and QHT, mobiles and fixed, participating. A group from Phoenix made a mobile caravan to Keams Canyon to visit ROZ. NYT addressed the OPRC on mobile installations. NYK is broadcasting on TV for the Better Business Bureau. AH is TVI chairman for AARC in Phoenix. ROD and QZH have new 32V-3s. MAE and KOY have new Viking II with VFO to match. SUL has new Viking, and TPG now is mobile with Viking. ROZ is back on the air. ONO worked Chile with 10-meter mobile. New call: UAL, Tucson Senior High School. Traffic: W7LAD 87, LVR 58, IRX 18.

SAN DIEGO — SCM, Edgar M. Cameron jr., W6FJH — Asst. SCMs: Thomas H. Wells, 6EWU; Shelley E. Trotter, 6BAM; Richard E. Huddleston, 6DLN. SEC: VFT. Asst. SECs: FOP, WYA. ECs: DEY, HRI, QJH, SK. PAM: JPM. GDG raised a new 20-meter rhombic aimed at Japan so he can QSO with his son, now on duty with the Marines there. Ben and Dick, of IAB, Camp Pendleton, are civilians again. Sam Cribb, ex-KA2MB, now is chief operator at IAB. IAB now is on 20 meters with 800 watts s.s.b., and 813 rig on 75 meters. Corporal Larry, of the San Diego Marine Corps, chief operator at YDK, will become a civilian soon. AKY is the mainstay of North County AREC check-in Sunday mornings on 3825 kc. CAE is almost ready with one gallon de-TVId final. The kids at IAC have been handling lots of traffic on 75 meters since the opening of school. New IAC club officers are KN6BOR, prexy; UJO, vice-pres.; and Mona Mullins, secy.-treas. QBM has plans for 150-watt final in mind for physics project. UFE and dad, TZO, QSO IAC on the way to work and school in the A.M. The Palomar gang had a good turnout during the last meeting at the home of HAW. NLO is building high-power rig. GDG QSPd welcome traffic from 1YYM, operating IAW, to 6FJH. Sincere section congrats go to WØs VFT, PKV, BZC, BKZ, AKY, QJH, FOP, and MFT, all the 2-meter gang, and all the Red Cross officials for the excellent coöperation in making such a success of the recent S.E.T. drills! Traffic: (Sept.) W6IAB 3856, YDK 551, IZG 86, AKY 18, FCT 9. (Aug.) W6IZG 74.

SANTA BARBARA — SCM, Vincent J. Haggerty, W6IOX — Santa Barbara AREC stations served as traffic control aides for the police during Fiesta Week, with AMD, BVZ, DYX, HUT, JCQ, JMW, JRB, QBK, and REK participating. EC LKF reports the Paso Robles simulated emergency was expedited by BOZ, BRY, FYW, LKF, MSG, ORI, ZOJ, and WN6THA. MSW reports from Atascadero, where KSW, UEV, and USH are active. QIW reports the SB Net on 3600 kc. is growing. BOZ flew FYW to 10,000 feet on a 2-meter test. OXJ is our newest OBS. K6AUZ has applied for ORS appointment. PAM IHD attended the Buzzards Net party in San Luis Obispo on Oct. 3rd. KN6CIZ, KN6BVZ and KN6BVY are new Santa Barbara hams. Congratulations! Traffic: W6MSW 86, QIW 32, K6NBI 24, W6FYW 12, OXJ 6, K6AUZ 2, ASB 2.

WEST GULF DIVISION

NORTHERN TEXAS — Acting SCM, T. Bruce Craig, W5JQD — SEC: QHI. PAM: IWQ. RM: PCN. LEZ reports that amateurs of the Caravan Club are using their own cars, manned by themselves and a member of the Dallas Police Force, in the manhunt. The NETEN is considering moving its frequency. The Dallas RACES plan has been approved. VFH was appointed Alternate NCS for NWTEN. CTM and HBD are co-alternates for the NETEN. JQD has been appointed Assistant Director of the West Gulf Division. NDD reports formation of the Tri-City Amateur Radio Club at Borger. The 1953 Edison Radio Amateur Award should have plenty of candidates from our section. The Central Texas Amateur Radio Club at Waco reported a transmitter hunt on Labor Day on 75 Meters. The South Plains Amateur Radio Club at Lubbock had a huge S.E.T., using a newly-rebuilt city bus for the control, completely portable and mobile, with 3-kw. generator trailing. The Big Spring Club reports its receiver still is unheard of since its disappearance from the club house. BVG made WAC again. RRM and company have put out a North Texas-Oklahoma net bulletin. ROH had

(Continued on page 112)

CUSTOM MADE TECHNICAL CERAMICS

FOR ELECTRONIC AND ELECTRICAL USES
SOLD ONLY TO MANUFACTURERS

AMERICAN LAVA CORPORATION

Chattanooga 5, Tennessee

THE BEST IN UHF INSULATION

52ND YEAR OF CERAMIC LEADERSHIP

his OO appointment renewed. VHF has been appointed EC for Waco. WVV has been appointed EC for McCamey. SPP is the new EC at Lamesa. It's time to send in new registrations for nets (note NCS Job). NFO reports a club is being organized at Brownfield. Traffic: K5FFB 1025, W5PAR 162, UFP 66, TLW 60, RRM 30, JQD 22, TYX 22, CF 9, BVG 6, ROH 2.

OKLAHOMA — SCM, Jesse M. Langford, W5GVV — Asst. SCM: Ray A. Thacker, 5TFP. SEC: AGM. RM: MQI. PAMs: SVR and ROZ. I regret to report the passing of JHO and EAK. General Manager Budlong, 1BUD, visited in Oklahoma City Oct. 13th and Tulsa Oct. 14th. The ACARC Hamfest and Dinner was held in Oklahoma City Nov. 15th with Director Middelton as the main speaker. TFP, of Oklahoma City, has been appointed Asst. SCM. As he covers the State for his company he should be able to meet with and talk to amateurs in all parts of Oklahoma. YJ, the club station at Oklahoma A. & M. College, is reporting into OPEN and, with TKE/5 making the other nets, adds to our coverage. 4RCM/5 left for Ft. Bragg Oct. 23rd. VAX is attending a school on TV and radio and has had to let his traffic go by the wayside for the present. EHC spent part of his vacation building a 50-Mc. receiver and hopes to get the transmitter on this winter. KY, TFP, SCX, and myself have been appointed Asst. Directors by our Director and will have better access to pertinent information. We still need ECs in a number of counties and would appreciate inquiries regarding appointments. Check your appointment certificates and see if the yearly endorsement isn't about due. Traffic: (Sept.) W5MQI 182, MRK 101, YQO 64, WSQ 63, KY 58, MFX 47, SWJ 38, W4RCM/5 34, W5PML 32, FEC 27, SVR 24, TFP 24, VAX 22, TKE/5 21, VHP 12, EHC 7, IWJ 7, TKS 6.

SOUTHERN TEXAS — SCM, Dr. Charles Fermaglich, W5FJF — At a recent meeting of the HARC the following officers were elected: RPW, pres.; LSE, vice-pres.; VBW, secy.; FSK, treas.; KFY, parliamentarian; and NMG, program chairman. SDA is handling traffic on 3855 kc. and has a monitor going on that frequency to QSP and 'phone patch for mobiles. Ed is playing policeman, trying to keep the fixed stations off 3855 kc. TFA is building a pair of p.p. 813s. JYM is on 75-meter mobile. IX is on mobile. Lots of hams are going mobile in this section. DEW has a harmonic who recently got the call APC. BUZ just got his 2nd-class radiotelephone ticket. EYV is active on 160 and 75 meters with a good signal. Now that cool weather is with us again and vacations are over we must get down to the business of organizing better. Drop me a line by the first of the month with news to include in this report. The Kerrville Radio Club is now an ARRL affiliated club. FJF has an ART-13 mobile and is working on a new kw. Traffic: W5MN 1911, SDA 90, JFJ 14.

NEW MEXICO — SCM, G. Merton Savre, W5ZU — SEC: MYI. PAM: BIW. RM: NKG. ZM has four cadet operators: 6MVO, 7BIM, 5YFP, and WN5ZAJ, with a Globe Champion the newest gear in use. Active 2-meter hams in Albuquerque included FPB, NRX, RFF, RQK, UEO, and VWU. Forty-two stations reported into NMEP Net Oct. 4th. VTB and TVB reported in from Silver City and SUO as mobile from Los Alamos. 6KFD/5 now is operating from Cloudcroft. ARL, Gallup, formerly was KC6DX, on Truk. SUY and ARL helped in local Conelrad tests. SUY has 33-ft. beer-can vertical. BUO is a new call at ZU's cabin. The Pecos Valley ARC held a picnic at Black River Village Sept. 13th with a hidden transmitter hunt won by RWH. RWH has left for a two-year tour of duty overseas and will be missed greatly. The Sandia Base ARC made plans for a state-wide meeting of mobiles to discuss the Caravan Club. ADX, CTG, GWI, NSN, NWI, UAF, UWA, WBG, and WRS helped in the Albuquerque Conelrad test. CA and RFF are new OES. MYI is doing a fine job as SEC. Eight communities participated in the S.E.T. Suggestions will be welcomed for a state-wide 2-meter calling frequency. Traffic: K5NRX 316, W5NKG 128, K5WSP 59, W5VHW 43, UHK 41, ZU 23, IGO 18, BIW 12, NUN 11, RWH 10, JZT 8, YWG 8, OIA 7, WVA 7, K5FAB 5, W5WBC 3.

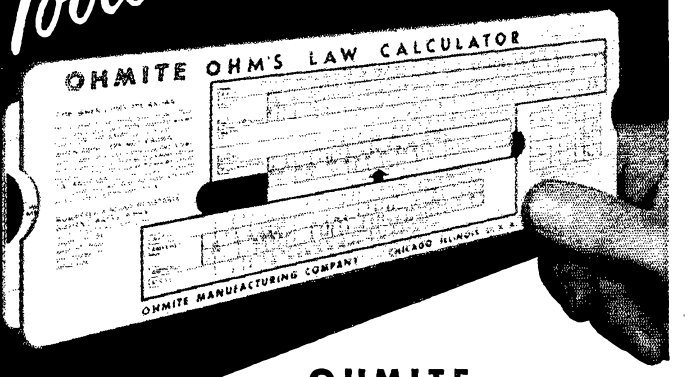
CANADIAN DIVISION

MARITIME — SCM, A. M. Crowell, VE1DQ — SEC: FQ. EC: EK. RM: OM. VO items head the list this month via VO6U. New officers of the GBRC are VO6AD, pres.; VO6X, secy.-treas.; VO6U, public relations. Twenty members celebrated the first anniversary of the Laborador Net, which started with VO6R and VO6U and now has 16 active member stations. VO8N is the new NCS. Active in the Goose Bay Area on 14 Mc. are VO6AD, 6N, 6U, 6X, W7RTS/VO6, WØWNI/VO6, W3TWO/VO6, W4KVM/VO6, and VO6AE. A 2-meter net is starting up with converters under construction. VO6T is coming along with his s.s.b. AD has a new rhombic. 6B is maritime mobile quite a bit. 6X is off 3.8 Mc. because of BCI. 6N is moving the rig to the club house. 6AE is running low power on 3.8 and 7 Mc. and getting out good. 6U has moved from the laundry room to the living room. VE1 items follow: An interesting note was received from ADT/3, who now is in Ottawa and will be on with TA-12. FQ got home from a trip

(Continued on page 114)

Two Useful Tools

EVERY AMATEUR SHOULD HAVE



OHMITE *Little Devil*® COLOR CODER

GIVES RESISTANCE VALUES FOR RETMA COLOR CODED COMPOSITION RESISTORS

The *quick* way for determining resistance values of composition resistors marked with RETMA color coding. Just set color wheels, read resistance value *directly!* Also lists RETMA resistance values. Size, 4-¾" x 2-⅛".

PRICE—10¢

OHMITE OHM'S LAW CALCULATOR

with slide rule and parallel resistance scales

ONLY ONE SETTING REQUIRED to solve Ohm's law and parallel resistance problems covering a range of values encountered in electronic and moderate power applications. Also, slide rule scales to divide, multiply, find squares and square roots. HANDY POCKET SIZE, only 9" x 3"... can be carried anywhere!

PRICE: VINYLITE PLASTIC $1.50
CARDBOARD 25¢

OHMITE® RHEOSTATS RESISTORS TAP SWITCHES

Send this Coupon

Ohmite
Manufacturing Co.
3636 Howard St.
Skokie, Ill. (Suburb of Chicago)

☐ *Ohm's Law Calculator . . . @ 25c*
☐ *Ohm's Law Calculator . . . . . @ $1.50*
☐ *Little Devil Color Coder . . . . . @ 10c*

Name_____
Address_____
City_____ Zone_____ State_____

to the U.S.A. and VE3. AAW is on the sick list. Recent visitors include VE6HN and VE3BOY, the latter stationed here with the Canadian Navy. New officers of the HARC are RR, pres.; ED, vice-pres.; WD, secy.; "Binks" Fisher, treas. Send your reports along via the Maritime Net. Traffic: (Sept.) VE1AAW 194, VO6U 152, VE1FQ 119, VO6N 56, VE1HC 37, ZM 34, VO6S 16, VE1DB 7. (Aug.) VE6N 46.

ONTARIO — SCM, G. Eric Farquhar, VE3IA — Following are the elected officials of several very active clubs: Ottawa ARC, KN, pres.; LX, vice-pres.; BCO, secy. Nortown ARC of Toronto, HZ, pres.; HE, vice-pres.; WA, rec. secy.; BXF, corr. secy. Hamilton ARC, BVR, pres.; QU, vice-pres.; DFE, secy.-treas. KM, hon. pres.; CJM, bulletin editor. Beaver Radio-Telegraph Club, ATR, manager, EAM, assistant. The Quinte ARC reports business was brisk at its annual "Auction Nite." GI visited ATR while on vacation. IR and BSU mobiled together to the Montreal Convention. BSU reports much pleasure from his Viking rig. ATR comments on unnecessary and useless chatter observed during net operations and emphasizes the use of the net abbreviations which were designed to make net operation more effective. Your SCM will gladly provide these signals on request. Ham radio received a fine plug from the Brittania Yacht Club in connection with the Canadian Dinghy Association Regatta held at Ottawa. AGU, LX, DY, BBW, PG and ACS supplied equipment and operators for network and public address system operation. Congrats to KF and ZW on high scores in the ARRL DX Contest. AGU has an ingenious mobile mount. Congrats are being extended to NG upon his being awarded the Yates Memorial Trophy as the Nortown Club member who did the most valuable work in promoting ham radio. The following AREC members of Toronto received letters of thanks from the Toronto Flying Club for their able assistance in providing communications during the National Air Races: IL, AIA, AMB, BSD, RU, DHG and NG. While experimenting with 420 Mc. EAB reports signals radiating from door knobs, drawer handles, and his bicycle! There's a small harmonic at the QTH of DY. BXF and BSW, OBS and OO appointees, respectively, get a kick out of receiving letters of thanks from users of their services. Traffic: VE3ATR 323, BUR 178, IA 98, NG 75, NO 35, GI 27, AOE 25, SG 14, VZ 10, AUU 9, DQA 9, DPG 6, AVS 2.

QUEBEC — SCM, Gordon A. Lynn, VE2GL — It is with deep regret that we record the passing of Quebec's dean of radio amateurs, Dr. J. O. H. Ricard, VE2AT, on Sept. 29th at Grand Mere. AT began hamming in 1909 and had held his present call since 1921. He recently was active on 2 meters. On Sept. 18th and 19th, Montreal was host at the Eastern Canada ARRL Convention, described by many present as the best possible. Congratulations to the committees who made it a wonderful success. WW now claims 200 countries, the first VE2 to do so. During the week of Sept. 21st Montreal AREC members set up a booth for display and communication purposes at the civil defense display, and assisted in a huge display and simulated emergency at which communications were provided. AFS, AFT, AGF, AHQ and XYL, AKM, AKT, ALL, AMA, AMG, AMQ, ANN, ANZ, AOQ, APD, BB, BR, CA and XYL, CD, DR, FX, KG, KH, KW, NI, IE, TS, and XZ were among those participating. CA reports some good days on 20 meters. He got in some DX and now skeds VE8RT. EC reports continued skeds with the St. Maurice Valley gang. BK is QRL making loading coils for walkie-talkies on the lathe. Congratulations to BE on his reëlection as Canadian Division Director. PQN again is operating with DR as manager and invites all VE2s to report in on 3570 Kc. daily at 7:15 P.M. and 10:15 P.M. The Quebec 'Phone Net is operating daily on 75 meters with AAH as Net Manager. Traffic: VE2BB 169, DR 154, CA 27, EC 20, CP 12, LO 3.

ALBERTA — SCM, Sydney T. Jones, VE6MJ — NX has taken over the traffic sked for HM while Charlie is visiting in Eastern Canada. WC reports traffic is moving on 7 Mc. XG is getting into the swim again after a move from Winnipeg. KZ has a new Viking II transmitter. HY is keeping MJ company at work. AE is active again using the clothesline for an antenna. AT and his XYL have been in the U. S. A. on an extended trip. The reports have been very few in the past few months, gang. If you like to read the Alberta gossip, *please* let's hear from you. Your SCM also would like to hear from all those holding appointments. Traffic: VE6NX 39, WC 35, OD 11, MJ 6.

BRITISH COLUMBIA — SCM, Peter McIntyre, VE7JT — A contest is in progress among the AREC Net members between the three sections, Island, East, and West, to see who has the most check-ins for the month. Civil defense has made favorable strides in the local area of Vancouver and surrounding environs under the local EC, AOB, and the C.D. Radio Laison Officer, DD. Approximately 70 amateurs met W1BDI at a banquet and Ed was presented with a BCIT (B.C. Indian TItem Pole) and book of signatures. OF has been appointed EC District No. 4 and BV EC District No. 1. FS is now ORS. Our Island correspondent reports that in August US was still building, BF was using mobile antenna for fishing, DH was still around, and SH had had no contacts yet. AQB's new rig is

Continued on page 116)

coming up. LP is going TV. ASA is trying to find a place for her rig. ALL's big rig went "kaput." ALY is putting out an FB signal on 'phone. The AREC members in Vancouver are providing the communications for c.d. on 2 meters both fixed and mobile. We hope that amateurs will be able to obtain the same amount of coöperation from c.d. officials in other sections of British Columbia that exists in the Greater Vancouver Area. Would also like to hear from those on bands other than 75 meters. Check into the AREC Net on 3755 kc. any night between 6 and 7 P.M. on 'phone or c.w. Traffic: (Sept.) VE7DH 41, QC 30, FS 7. (Aug.) VE7 QC 72, DH 19.

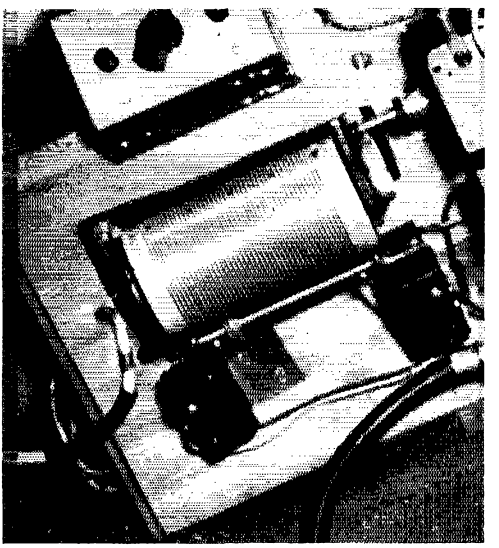
SASKATCHEWAN — SCM, Harold R. Horn, VE5HR — The Regina Club station, NA, was kept busy during the civil defense display at Regina. Keen interest was shown by the public and c.d. officials. Considerable traffic was handled and those operating the station did a very good job. JS has been transferred to Brandon as Radio Inspector. OP reports on the Moose Jaw gang. KR has joined the Army. IL is active on mobile now. JV is running his countries worked total higher and looking for more rare ones. WØIAN visited Moose Jaw; EQ also paid the Club a visit. PC rook the big step. Our best wishes to you both. DZ and GW are active on 20 meters. FS is heard occasionally when his duties as a Member of Parliament permit. Our good wishes to GI, who has been ill for some time, and our hopes for a quick return to the air. PJ says his new T2FD works FB. He spent a few days with DD LE is rebuilding. Many thanks, fellows for the coöperation this year, and let's hope that the New Year brings good health and happiness. A Very Merry Christmas to you and yours. Traffic: VE5HR 34, PJ 10.

Remote Mobile Antenna Resonating

(Continued from page 84)

K6DY and W6WOY have located their rigs under the dash and both are VFO. The b.c. antenna is used with a wavemeter to indicate resonance.

During a 3000-mile trip, K6DY established contacts over the entire 75-meter band without loss of efficiency, and with no more effort than pushing a button. Daytime contacts to 800 miles, while in motion, were made during this trip. Try it, boys; you'll like your rig better.



The roller contact on K6DY's tuning coil actuates microswitches, placed at either end of the coil, to reverse the motor.

HENRY RADIO offers you MORE:

LOW PRICES: You can't beat my wholesale prices.

FAST SERVICE: You get fast service. I have big stocks of Collins, National, Hallicrafters, Hammarlund, RME, Johnson, Harvey-Wells, Lysco, Gonset, Millen, Morrow, Mallard, Elmac, Master Mobile, Hy-Lite, Babcock, other receivers, transmitters, parts at lowest prices. I try to be the first to have the newest equipment.

BIG TRADES: I want trade-ins. I trade big. Tell me what you want—what you have to trade. Get my offer. I pay cash for receivers and transmitters too.

TIME PAYMENTS: Get what you want and pay by the month. I give you better terms because I finance all terms myself. Write for details.

SATISFACTION: I want you to be satisfied. Ask any ham about Henry Radio.

PERSONAL ATTENTION: You get personal attention. Bob Henry, WØARA, runs the Butler store. Ted Henry, W6UOU, runs the Los Angeles store. Bob Henry can be reached nearly 24 hours a day, 7 days a week. Write, phone, wire or visit either store. Send us your orders and inquiries. Export inquiries solicited too.

Bob Henry
WØARA

Butler 1, Missouri
Phone: 395

HENRY RADIO STORES

11240 Olympic Blvd.
LOS ANGELES 64
BRadshaw 2-2917

"LARGEST DISTRIBUTORS OF SHORT WAVE RECEIVERS"

A 220-Mc. Station

(*Continued from page 45*)

tenna to be adjusted, and connecting it to the indicator section with a two-wire cord of suitable length. With our low-powered transmitter the separation between the transmitting antenna and the pick-up unit should not be more than about 25 feet, but with higher power levels distances of 100 feet or more may be used. The connecting cable can be lamp cord, coaxial line, Twin-Lead, or any other 2-conductor cable. The field-strength indicator antenna should be the same polarization as the antenna under test. Its length can be reduced to decrease the sensitivity of the unit for use at close range, if desired.

The case for the pick-up portion is an ICA No. 29400 Channel-Lock aluminum box 2⅛ by 1⅝ by 4 inches in size. The antenna elements are 12 inches long, made of soft aluminum ground wire. The ends of the wires are pounded flat by hammering them out on a hard surface. This may then be drilled to mount on the feed-through bushings. The pick-up unit should be mounted in approximately the same plane as the transmitting antenna. Adjustments may then be made on either the antenna or the transmitter, knowing that an increase in the meter reading means that more power is being radiated in the desired direction. It is invaluable in antenna work, and will be one of the most useful pieces of equipment you'll ever build. It may be used on almost any band if a suitable modification is made in the length of the pick-up antenna.

Silent Keys

IT IS with deep regret that we record the passing of these amateurs:

W1GEQ, Arthur P. Thomas, Wollaston, Mass.
W2AGB, Vernon J. Reynolds, Kearny, N. J.
W2FAA, Louis B. Little, Bloomfield, N. J.
W2JSV, Thomas S. Black, Richmond Hill, N. Y.
W2MJL, Nicholas Fusillo, Baldwin, L. I., N. Y.
ex-2ZL, J. O. Smith, West Haven, Conn.
W3QBV, Thomas Davis, Uniontown, Penna.
W3UR, Max Spengler, Harrisburg, Penna.
W3ZB, Benjamin W. Collins, Swarthmore, Penna.
W4ZRT, Ens. Paul F. Stewart, USNR, St. Petersburg, Fla.
W5DXQ, Clyde B. Trevey, Beaumont, Texas
W5GVL, Reuel J. Thomson, Marshall, Texas
W5LUK, James R. McKelvey, Borger, Texas
W5SLK, John W. Watterson, McAlester, Okla.
W6BWS, John E. Striplin, Torrance, Calif.
W6WIN, James E. Shiffer, San Francisco, Calif.
W8CUX, Fred E. Church, Millington, Mich.
W8CXU, Theo. A. Piggott, Weirton, W. Va.
W8ICF, Jack R. Hodges, Grosse Point Farms, Mich.
W9DAZ, Vialis F. Walz, Bloomington, Wis.
W9MTL, Willard R. Schwager, Gary, Ind.
WØCJE, James L. Sealy, Cedar Rapids, Iowa
KL7ARG, Lt. Cmdr. James W. Christman, USCG, Juneau, Alaska
ON4PC, Willy Geronnez, Mons, Belgium
VE2AT, Dr. J. Honore Ricard, Grand Mere, Que.

Novice Round-up

(Continued from page 44)

is the "section multiplier." A fixed scoring credit may be earned by entrants who hold an ARRL Code Proficiency certificate. If an entrant does not hold a CP award he can apply for credit by attaching to his Round-up report a copy of qualifying run from W6OWP, December 6th or January 8th, or from W1AW, December 15th or January 13th. CP credit equals the w.p.m. speed indicated on the latest certificate or sticker held by the entrant. The final score equals the "total points" plus "Code Proficiency credit" multiplied by the "section multiplier."

5) *Reporting:* Contest work must be reported as shown in the sample form. Reporting forms and a map of the United States will be sent gratis upon request. Indicate starting and ending times for each period on the air. All Round-up reports become the property of ARRL and must be postmarked not later than February 15th, 1954.

6) *Awards:* A certificate award will be given to the highest-scoring Novice in each ARRL section.

7) *Disqualifications:* Failure to comply with the contest rules or FCC regulations shall constitute grounds for disqualification. ARRL Contest Committee decisions are final.

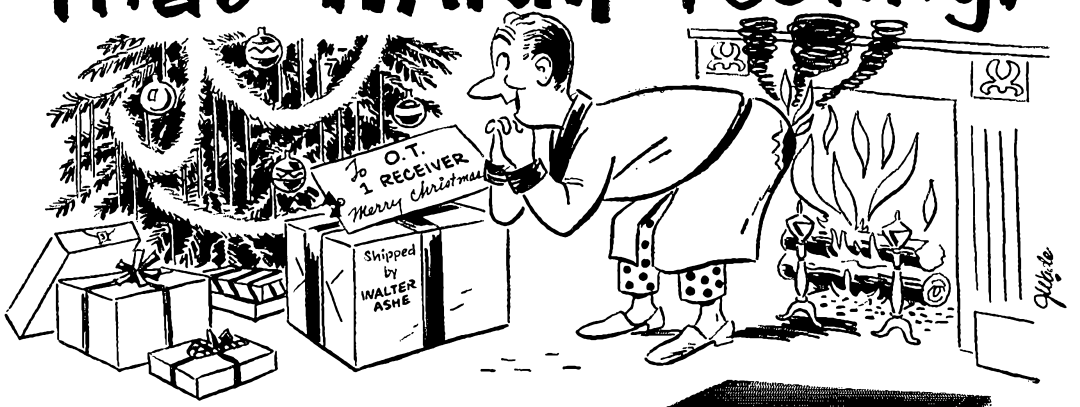
Field Day Results

(Continued from page 55)

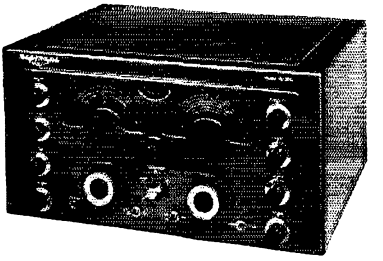
W3RBS/3	Ridley Radio Club	336-	A-30-	3249
VE3CY/3	Kitchener Waterloo Amateur Radio Club	335-	A- -	3015
VE3HX/3	Brantford Amateur Radio Club	319-	A-14-	2916
WØBVG/Ø	Southwest Missouri Amateur Radio Club	384-	AB-27-	2571
W4HBB/4	Amateur Radio Club of Savannah	392-	B-25-	2502
W4DU/4	Jacksonville Amateur Radio Society	325-	AB-16-	2376
W4NC/4	Winston - Salem Amateur Radio Club	271-	B-20-	2376
W5ANR/5	Fort Smith Radio Club	390-	B-11-	2340
W6UJ/6	(nonclub group)	360-	B- 6-	2310
W9MD/9	Illinois Ham Club	240-	A- 7-	2160
W1MHL/1	Waltham Amateur Radio Assn.	207-	A- -	2088
W9MKS/9	Starved Rock Radio Club	319-	B-12-	2064
VE7ZV/7	Vancouver Amateur Radio Club	251-	AB-15-	2052
W8AM/8	Coffee Dunkers of Detroit	278-	AB- 9-	2022
K5NBW/5	(nonclub group)	271-	AB- 6-	1998
W5HD/5	Kilocycle Club	315-	AB-10-	1989
W7AKQ/7	Oregonian Amateur Radio Society	193-	A-12-	1962
W4FLW/4	(nonclub group)	301-	B-11-	1956
W7QGN/7	Lower Yakima Valley Radio Amateurs	173-	A- 7-	1935
W4GCW/4	Pickens Co. Amateur Radio Club	294-	B- 7-	1914
W5IAS/5	Tulsa Amateur Radio Club	270-	AB-12-	1911
W3QYK/3	Flood City Radio Club	265-	B-23-	1740
W5TKE/5	Pioneer Radio Amateurs of Kay County	228-	AB-19-	1539
W9KYQ/9	New Castle Radio Amateur Assn.	171-	AB- 8-	1272
VE3KP/3	Roblin Radio Club	125-	A- 9-	1125
W4YNG/4	Huntsville Amateur Radio Club	116-	ABC-10-	1095
W1LQQ/1	Yankee Radio Club	230-	AB-10-	1077
W3AKX/3	Frederick Amateur Radio Club	128-	AB- 8-	898
W5QDK/5	Pecos Valley Amateur Radio Club	116-	AB- 6-	873
W9MJL/9	Vermilion County Amateur Radio Assn.	120-	B- 7-	720
WØIGZ/Ø	Runestone Radio Club	91-	B-40-	696
VE7ND/7	Totem Amateur Radio Club	44-	AB- 8-	594
	Five Transmitters Operated Simultaneously			
W6CG/6	Royal Order of Suds	1087-	AB-20-	7896

(Continued on page 122)

That "WARM" Feeling!



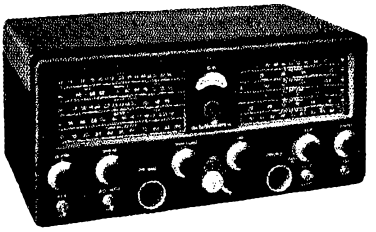
Nothing else equals the satisfaction you get from owning and operating the equipment of your choice — especially when Walter Ashe makes it so pleasantly money-saving with his fabulous "SURPRISE" Trade-In Allowance on used communication equipment. This year give yourself the best Xmas present ever. Trade used equipment now. Wire, write, phone or use the handy coupon below.



NATIONAL NC-183D.
Less speaker. Net $383.50

NATIONAL HRO-60.
Less speaker. Net $533.50

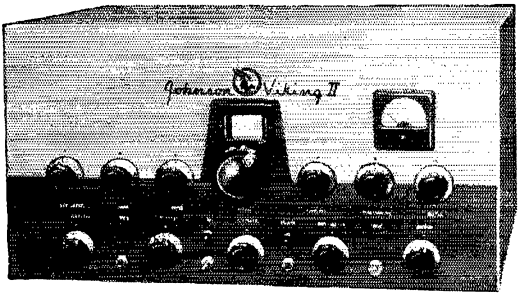
NATIONAL NC-88.
Built-in speaker. Net $129.95



HALLICRAFTERS SX-71.
Less speaker. Net $249.95

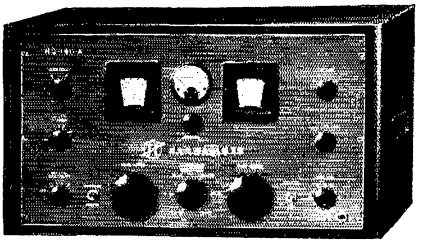
HALLICRAFTERS S-76.
Less speaker. Net $199.95

HALLICRAFTERS S-40B.
Built-in speaker. Net $129.95



JOHNSON VIKING II TRANSMITTER KIT. Net $279.50
Wired and tested $337.00

COLLINS 75A-3 with 3 KC mechanical filter.
Less speaker Net $530.00



HAMMARLUND HQ-140X.
Less speaker. Net $264.50

All prices f. o. b. St. Louis • Phone CHestnut 1125

FREE CATALOG! Send for your copy today.

WALTER ASHE RADIO COMPANY Q-12-53
1125 Pine St., St. Louis 1, Missouri

☐ Rush "Surprise" Trade-In offer on my_____ _____

for_____
(show make and model number of new equipment desired)

☐ Send new FREE 1954 Catalog.

Name_____

Address_____

City_____ Zone_____ State_____

Walter Ashe RADIO CO.
1125 PINE ST. • ST. LOUIS 1, MO

W2BVL/2	Nassau Radio Club	820-	A-15-	7314
W2FUS/2	Morris Radio Club	669-	A-30-	6246
W1AJ/1	El-Ray Radio Club	798-	AB-25-	6196
W8KGG/8	Huron Valley Amateur Radio Assn.	905-	B-21-	5580
W2KOJ/2	Watchung Valley Radio Club	622-	AB-24-	5442
W1AA/2	Lake Success Radio Club	699-	AB-17-	5430
W5PDO/5	Los Alamos Amateur Radio Club	620-	AB-16-	5220
W9UC/9	Fort Wayne Radio Club	535-	A-18-	5040
W7DK/7	Radio Club of Tacoma	567-	A-30-	4985
W3OK/3	Delaware-Lehigh Amateur Radio Club	485-	A-25-	4590
W6JZ/6	East Bay Radio Club	530-	AB- -	4362
W9BA/9	St. Clair Amateur Radio Club	617-	AB-16-	4332
VE3CP/3	Frontier Radio Club	454-	A-20-	4311
W2UBW/2	Mid-Island Radio Club	450-	A-20-	4293
W6LL/6	North Bay Amateur Radio Assn.	789-	ABC- -	4164
VE3BER/3	Clinton Amateur Radio Club	662-	AB-16-	4098
W1TKA/1	Stamford Amateur Radio Emergency Corps	559-	A-14-	3984
W9JP/9	Indianapolis Radio Club	617-	ABC- 9-	3825
W4VTA/4	Confederate Signal Corps	398-	A-12-	3807
W3KX/3	Electric City Amateur Radio Club	431-	AB-12-	3801
K2CPY/2	FTR Radio Club	374-	A- 9-	3591
W8TT/8	Lake-Geauga Amateur Radio Club	529-	B-21-	3324
W6LUC/6	Santa Barbara Amateur Radio Club	344-	AB-16-	3225
W9WFJ/9	Midway Radio Club	370-	AB- 8-	3159
W9NZ/9	McHenry County Amateur Radio Club	374-	AB-14-	3099
W6BXN/6	Turlock Amateur Radio Club	432-	AB-13-	2967
W1PZ/1	Pocahontas Radio Club	303-	A- 5-	2965
W8SP/8	Mountaineer Amateur Radio Assn.	275-	A-24-	2700
W5TSV/5	Pampa Amateur Radio Club	421-	AB-12-	2584
W4PCC/4	(nonclub group)	416-	B-20-	2496
W1WKN/1	Old Colony Amateur Radio Assn.	276-	A-23-	2484
W4NEP/4	Paducah Amateur Radio Club	361-	AB-21-	2316
W1ECO/1	Submarine Signal Amateur Radio Club	268-	AB-25-	1998
VE3BXT/3	Scarboro Amateur Radio Club	195-	A-14-	1980
W6WI/6	(nonclub group)	279-	AB-19-	1872
W7NBR/7	Spokane Radio Amateurs	188-	AB-12-	1590
W1DGV/1	Great Bay Radio Assn.	206-	AB- -	1569
WØBJT/Ø	Northwest St. Louis Amateur Radio Club	238-	B- -	1568
W7BB/7	Lake Washington Amateur Radio Club	196-	AB- 9-	1548
W3LTK/3	Radio Assn. of Erie	201-	B-25-	1480
W6ZOJ/6	Paso Robles Radio Club	187-	ABC- 7-	1346
W6CKV/6	Golden Empire Radio Club	87-	A- 8-	783

Six Transmitters Operated Simultaneously

W4FU/8	Ohio Valley Amateur Radio Assn.	1434-	A-29-	12,906
W2VDJ/2	Lakeland Amateur Radio Assn.	1142-	A-26-	10,503
W3VU/3	Chesapeake Amateur Radio Club	917-	AB-25-	7443
W7AW/7	West Seattle Amateur Radio Club	754-	A-26-	7083
W9SW/9	Chicago Suburban Radio Assn.	730-	A-31-	6794
VE3JJ/3	West Side Radio Club	689-	A-22-	6444
VE3BRR/3	Nortown Amateur Radio Club	670-	A-38-	6255
W8ACW/8	Genesee County Radio Club	1001-	B-40-	6240
W6MSO/6	Inglewood Amateur Radio Club	665-	A-24-	5985

(Continued on page 124)

W3NA/3	The DX Club	688-	AB-15-	5671
W9NFT/9	Illinois Valley Radio Assn.	506-	A-26-	4554
W8SMA/8	Fort Hamilton Amateur Radio Assn.	585-	ABC-20-	4305
W1GLA/1	Framingham Radio Club	415-	A-14-	3960
W2KKE/1	Westchester Amateur Radio Assn.	401-	A-20-	3834
W6OFT/6	Palomar Radio Club	718-	BC- 8-	3777
W7AIA/7	Clark County Amateur Radio Club	389-	A-18-	3501
VE7AQL/7	Reddy-Watts	329-	A- 9-	3103
W4SKH/4	Oak Ridge Radio Operators Club	382-	AB-35-	3099
W8CNI/8	Tiffin Amateur Radio Club	310-	AB- -	2589
W7PXL/7	Valley Radio Club	417-	B- -	2514
W6LUF/6	Mt. Diablo Amateur Radio Club	462-	ABC-25-	2253
K6CV/6	Trade Teachers	251-	AB-12-	2085
W6HWF/6	Shasta County Radio Club	83-	AB- 6-	570

Seven Transmitters Operated Simultaneously

W6UW/6	Santa Clara County Amateur Radio Assn.	1164-	A-32-	11,009
W9PCS/9	York Radio Club	1422-	AB-24-	9906
W5SC/5	San Antonio Radio Club	800-	A-20-	7425
W6MFL/6	Westchester Amateur Radio Assn.	881-	AB-20-	7206
W6OTX/6	Palo Alto Amateur Radio Assn.	819-	AB-22-	7089
W6QGJ/6	San Francisco Radio Club	835-	AB-17-	6603
W6GER/6	Soledad Amateur Radio Club	522-	A-15-	4977
K6FAV/6	McClelland Amateur Radio Society	686-	B-20-	4890
W2AWF/2	Albany Amateur Radio Assn.	536-	AB-50-	4671
W1NEM/1	Hartford County Amateur Radio Assn.	454-	A-50-	4311
W7MXH/7	Cascade Radio Club	571-	AB-30-	3564
VE3RW/3	Quinte Amateur Radio Club	330-	A-15-	3195
W7QHH/7	Reno Amateur Radio Club	489-	B-20-	3084
W4MOE/4	Asheville Amateur Radio Club	374-	B-18-	2574
W4NVU/4	Dade Radio Club	268-	ABC-30-	1317
W6LIE/6	Kern County Radio Club	174-	B-20-	1044

Eight Transmitters Operated Simultaneously

W6ARO/6	West Valley Radio Club	1342-	AB-25-	8784
W3RCN/3	Rock Creek Amateur Radio Assn.	870-	A-65-	7975
K6EA/6	Associated Radio Amateurs of Long Beach	796-	A-30-	7407
W3SL/3	Delaware Amateur Radio Club	874-	AB-34-	6192
W2DPQ/2	Huntington Radio Club	818-	AB-35-	5658
VE3KP/3	Niagara Peninsula Amateur Radio Club	787-	AB-25-	5106
W2USA/2	Suffolk County Radio Club	712-	ABC-20-	3738

Nine Transmitters Operated Simultaneously

W2GSA/2	Garden State Amateur Radio Assn.	1911-	AB-37-	15,593
W9AP/9	North Suburban Radio Club	1380-	A-40-	12,645
VE3DC/3	Hamilton Amateur Radio Club	776-	A-26-	7308
W6TOI/6	Downey Amateur Radio Club	925-	AB-15-	6543
W6MLI/6	Coronado Radio Club	538-	AB-20-	3885
W6HE/6	Lockheed Amateur Radio Club	427-	AB-35-	3051

Ten Transmitters Operated Simultaneously

W3FRY/3	Frankford Radio Club	2665-	A-25-	24,795
W2OM/2	Tri-County Radio Assn.	2003-	A-30-	18,252
W9IT/9	Northwest Amateur Radio Club	1388-	A-37-	12,717
W2OW/2	Binghamton Amateur Radio Assn. and IBM Amateur Radio Assn.	786-	AB- -	6543

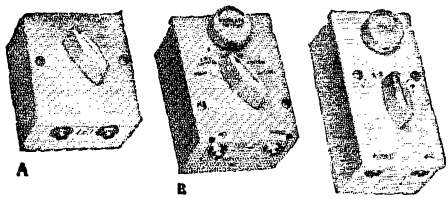
Twelve Transmitters Operated Simultaneously

W1OC/1	Concord Brasspounders	1626-	A-28-	14,316

(*Continued on page 126*)

LOOK STEINBERGS LOOK

JACK BOXES



(A) BC-345. 3½" x 3½" x 1⅞" aluminum, 2 standard open-circuit jacks, 3-position switch, 6-contact banana plugs and jacks.
(B) BC-1366. 4¼" x 3" x 2¼" aluminum, 1 standard open-circuit jack, 1 3-circuit mike jack, 150,000 ohm volume control, 5-position switch, 11-contact banana plugs and jacks.
(C) BC-213. 5¼" x 2¾" x 2⅛" aluminum, 1 standard open-circuit jack, 1 3-circuit mike jack, 150,000 ohm volume control, 4-position switch, 8-contact banana plugs and jacks.

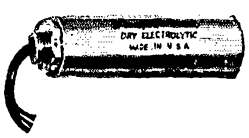
YOUR CHOICE 30¢

8/8/8 MFD. 500 V. D.C.

Triple 8 mfd. 500 working volt D.C. oil-filled condenser, common negative, solder terminals, hermetically sealed, 5" x 3⅜" x 2¼"..... **$1.95**

TUBE SOCKETS

For 4-prong tubes 866, 809, 811, 100th etc. Heavy phosphor bronze side wiping contacts, metal shell, white porcelain base. Regular list $1.50, while they last..... **45¢**



Triple 8 mfd. 450 V. electrolytic upright can condenser, separate negatives, all leads insulated from can. Nationally known mfr. Reg. dealer net $2.58.....ONLY **59¢**
10 for **$5.00**

PHOSPHOR BRONZE AERIAL

125 ft. of the finest aerial wire obtainable. 42-strand phosphor-bronze with linen center. Will not stretch, very high tensile strength, diameter approximately same as No. 14 copper, very flexible. Excellent for transmitting or receiving antenna, control cable, guy wire. Regular list $4.95..... **90¢**

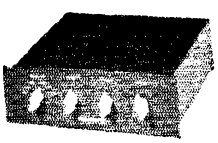
MINIMUM ORDER $2.00. Send 20% deposit with COD orders. Please include sufficient postage or instruct us to ship by Express Collect. Overpayment will be refunded by check.

Single Sideband

Watch this space next month for the most compact and inexpensive single sideband equipment on the market . . . for mobile or fixed station use.

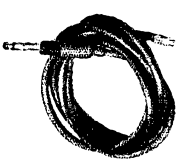
WRIGHT T-R SWITCH

For break-in operation on CW, AM, or SSSC. Use one antenna for transmitting and receiving. It's instantaneous! No moving parts, no power needed to operate. Coax fitting for connections to feeder and receiver. Will handle 1 Kw. With 75 meter plug-in coil.. **$9.95**
40, 20 meter coils, **$1.75** each



MAYNARD PREAMPLIFIER

Self-powered; 4-position record equalizer plus mike or tuner input; 20 db bass or treble increase or decrease 3-12AX7, 6 X 4. Regularly $62.50.
Limited quantity. **$39.50**



PL-55 PLUG AND CORD

Standard plug with 6 ft. rubber, 2-wire cord with spade lugs..... **75¢**

LIMITED QUANTITY

4D32 tubes. Brand new	$18.95
8 Henry, 250 Ma. cased choke	2.95
8 Henry, 300 Ma. cased choke	3.50
4 Henry, 350 Ma. cased choke	3.95
Johnson 100 MMF variable, 2000 v. spacing	1.95
3-conductor Koiled Kord, 6 ft. extended	1.79
83-1SP standard coax plug	.60
Coax angle plug	.45

Steinbergs
Phone CHerry 1880
633 WALNUT STREET • CINCINNATI 2, OHIO

Your order will receive my personal attention and will be shipped the same day order is received. We distribute all top-flight amateur lines . . . let us know what you need.
73, Jule Burnett, W8WHE

CLASS B

Grouped in this special listing are the scores of stations manned by one or two operators. Where two persons participated, the call of the assisting operator is given following that of the amateur whose call was used. Figures following the call listings indicate number of contacts, power and final score.

One Transmitter

W6RW/6, W6BXL	468-	A-	6656
W3EIS/3, W4KFC	409-	A-	5873
W2FBA/2, W2JBQ	386-	A-	5549
W6TSW/6, W6IXK	520-	A-	4905
W1HA/1, W1RAN	231-	A-	2304
W6JPM/6, W6LKC	211-	A-	2124
W6IYG/6, W6RSU	295-	AB-	1917
W5OLD/5, W5OGS	178-	B-	1827
W5IER/5, W5REV	197-	A-	1773
W5AJA/5	104-	A-	1742
W9OLL/9	58-	A-	1641
W4IYR/4	135-	A-	1440
W5TGB/6	100-	A-	1350
W7FVI/7, W7DRF	74-	A-	1337
W2COU/2, W2YRH	61-	A-	1161
W8VWY/8	61-	A-	1161
W6HJK/6	120-	A-	1116
W7SUI/7	77-	A-	1040
VE1AAM/1, VE1AAU	48-	A-	986
W1UFY/1	95-	ABC-	953
W9LSV/9, W9LXV	100-	A-	900
W9GZR/9, W9FPA	147-	B-	882
W1MHF/1	144-	B-	864
W7BTF/7	39-	A-	864
WØOMG/Ø, WØTSZ	85-	A-	765
K2AZJ/2	82-	A-	738
WØFDP/Ø	28-	A-	716
W5VU/5	112-	C-	672
W2IMJ/2, W2FRA	47-	A-	648
W6IAH/6, W6EA	22-	A-	635
W8KAF/8, W8KYD	69-	A-	621
VE3DFM/3	18-	A-	581
VO6N/VO6	35-	A-	540
KN2CLL/2, K2AFQ	22-	A-	528
W1TXI/1, W1TRF	78-	B-	513
W7HJ/7	11-	A-	500
W9FKC/9	54-	B-	486
W9HOA/9	55-	B-	486
KN2CQJ/2	61-	A-	462
W6CAL/6	72-	B-	432
WØPB/Ø	3-	A-	378
W1DIT/1	60-	B-	360
W6CIS/6	39-	A-	351
W7QHD/7	38-	A-	342
WØNZQ/Ø	11-	A-	342
K8NAS/8[1]	25-	A-	338
W4JGS/4	22-	A-	297
W5TID/5	116-	B-	282
W1ATX/1	28-	A-	252
W1YCG/3	57-	A-	246
VE6WR/6	46-	A-	213
W1BB/1	13-	A-	189
W4SAT/4, W4TYP	74-	B-	184
W8HAY/8	16-	A-	153
W2QPQ/2	25-	A-	150
WN9WWJ/9	11-	A-	149
W6NLQ/6	16-	A-	144
W3QQS/3	68-	B-	136
W4ZK/4	15-	C-	135
W1MEP/1	5-	A-	45
WN8NJL/8	6-	B-	36
WN8MLU/8	5-	B-	30
W1WAG/1	7-	A-	21
VE6FB/6	5-	A-	21

Two Transmitters

W4KUX/5, W4KCQ	202-	AB-	1503
W6INZ/6, W6EJM	167-	A-	1503
W6FTJ/6, W6KYH	79-	A-	1067
VE3AVS/3	48-	AB-	363
VE3ATU/3	102-	C-	306
W8NOH/8	14-	B-	82

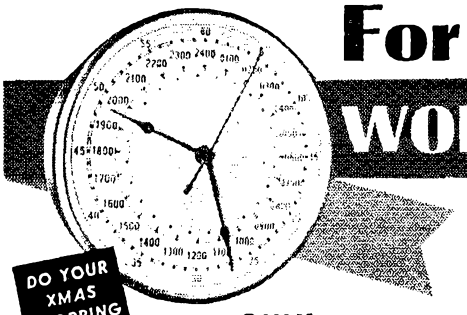
CLASS C

Grouped in this tabulation are the scores of entrants in the mobile class. Figures following the call indicate number of contacts, power, number of participants at each mobile station and final score.

W9RQM/9[2]	256-	A-	2-3848
W6FUA/6	177-	A-	1-2390
W6HDT/6	134-	A-	1-2147
W1WGM/1	120-	A-	1-1958
W6ZVD/6[3]	118-	A-	2-1931
W8AJH/8	56-	A-	1-1823
W7KKN/7	123-	A-	1-1661
W3FMG/3	59-	A-	1-1512
W6INX/6	75-	A-	1-1350
W6QYZ/6	73-	A-	1-1323
W7BA/7	70-	A-	1-1283
W8PM/8	28-	A-	1-1256
W6PIX/6	67-	A-	1-1242
W8MWE/8	46-	A-	1-1229
W7MPH/7	90-	A-	2-1215
W8AEU/8	45-	A-	1-1215
W8BDZ/8	35-	A-	1-1215
W3BII/3	64-	A-	1-1202
W5DAH/5[4]	63-	A-	2-1188
W2KLA/2	86-	A-	1-1161
W7JFO/7	57-	A-	1-1161
W2ZYK/2	60-	A-	1-1148
W8AGA/8	34-	A-	1-1148
W8VK/8	40-	A-	1-1148
W8ZXL/8	27-	A-	1-1134
W7CO/7	57-	A-	1-1107
W8INO/8	32-	A-	1- 986
W3FVK/3	46-	A-	1- 959
W3GBB/3	45-	A-	1- 945
W7KZP/7	44-	A-	1- 932
W6HVO/6	68-	A-	1- 918
W8INW/8	23-	A-	1- 918
W3RMN/3	42-	A-	1- 905
W7GJW/7	41-	A-	1- 891
W6EIG/6	95-	B-	1- 855
W3FDJ/3	38-	A-	1- 851

(Continued on page 128)

For a Ham's Xmas!



DO YOUR XMAS SHOPPING EARLY, BY MAIL!

WORLD TIME CLOCK

AUTOMATIC, ELECTRIC 24-HOUR CLOCK WITH HUGE 10" DIAL, SWEEP SECOND

AT A SINGLE GLANCE this fabulous clock tells your favorite Ham the exact time in every zone of the world. Key cities and countries are shown on inner dial. 0100-2400 hours and 1-60 seconds are shown in separate bands! Gray metal with chrome-plated bezel. Self-starting. Convex crystal. A unique clock of time-proven quality at a modest price that HASN'T risen with inflation! *Order No. 32-870-Q.*

ONLY $12.50 *Plus $2.50 U.S. Tax*

MICROSCOPE SALE!

150-POWER $7.75

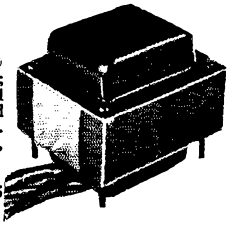
200-POWER $8.95

REAL SAVINGS for hobbyists, students, lab spot checks; for examining phono styli, textiles, biology specimens, etc. Entire stock of imported units bought at sacrifice. Ideal gifts — they come in fitted hardwood boxes, complete with specimen slide. Polished ground optics and mirror, plated barrel, heavy cast enameled base. Full tilting pivot, twin knurled micro-rack focusing. All parts demountable. Guaranteed. Ship. wt. 3 lbs.

Order No. R-5098Q 150X.....$7.75
Order No. R-5098AQ 200X..... 8.95

210 MIL POWER XFMR

$5.55 *REG. $9.95*



A steal! 115/1/60 pri, 375-0-375 @ 210 mils; 5V @ 3A; 6.3V @ 6.75A; 6.3V @ 2A; 6.3V @ 1.2A. Half shell type, fully shielded; color coded leads; 3¾ x 3" mtg. ctrs, 9½ lbs. Ideal for amps, mods., supplies, xmtrs. Save $4.40 while they last Yes, brand new!

Order No. R-5094Q.....$5.55

ARMY-NAVY HEADSETS

$4.95

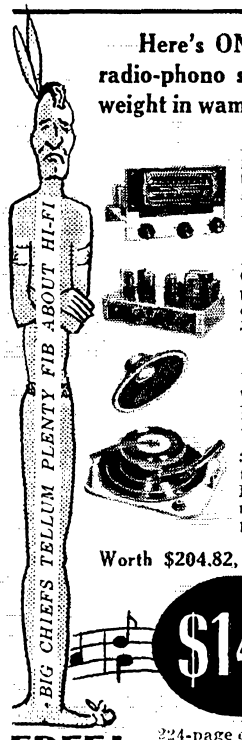
WORTH OVER $10

Famous HS-33 headsets using ANB-H-1 receivers, with HB-7 headbands, MX-41/AR rubber cushions, 5 ft. cord with PL-55 plug. Guaranteed 100-4000 cps ±3 db, down 20 db @ 6000 cps. Total imp. 600 ohms. Perfect for broadcast monitoring, ham receivers, test labs, audio fans. 1½ lbs.

Order No. R-5019Q.....$4.95

honest injun!

Here's ONE hi-fidelity radio-phono system worth its weight in wampum (and fact)!



FM-AM TUNER: Approved Model V-12, 12 tubes, separate power supply, exclusive at Radio Shack. Reg. $97.05.

AMPLIFIER: Grommes LJ2. 8 watts, preamp. separate tone controls, 20-20,000 cycles, 5 tubes. Reg. $35.77.

12" SPEAKER: University 6200. Note: one good speaker outperforms 3 little squeakers! Reg. $20.58.

3-SPEED CHANGER: famous intermix Tri-O-Matic, with G-E magnetic cartridge and 4-pole motor. List $51.50.

Worth $204.82, ONLY **$140**

ADD POSTAGE FOR 42 LBS.

FREE! 224-page catalog of 1954 hi-fi, radio, T.V., industrial equipment.

MAIL ORDERS: add est. postage. Min. 25% deposit on C.O.D.'s. Hi-fi time-pay plan: min. 10% down, 1 yr. to pay, no interest if paid up in 60 days!

RADIO SHACK CORPORATION

167 Washington St., Boston 8, Mass.

W3FWZ/3	35-A-1- 810	W6ALD/6	3-A-1- 378
W7OYO/7	35-A-1- 810	W3NPL/3	2-A-1- 365
W8UXV/8	27-A-1- 783	W6GAU/6	1-A-1- 365
VE2CD/W1 [5]	23-A-1- 783	W8CZW/8	2-A-1- 365
W8YGM/8	22-A-1- 770	W8YPE/8	2-A-1- 365
W6NQQ/6 [6]	30-A-2- 756	W8JVN/8	1-A-1- 351
W8IND/8	9-A-1- 756	W2LID/2	23-A-1- 311
W7OZG/7	28-A-1- 716	W6PFE/6	22-A-1- 297
W7MSI/7	27-A-1- 702	W9OGZ/9	22-A-1- 297
W8QAV/8	11-A-1- 702	W7ELJ/7	20-A-1- 270
W7RTQ/7	51-A-1- 689	W8CBM/8	20-A-1- 270
W7PGY/7	25-A-1- 675	K5NRE/5 [7]	86-C-3- 258
W3IFW/3	23-A-1- 648	W9GFA/9	18-A-1- 243
W8IWP/8	14-A-1- 635	W7QLG/7	16-A-1- 216
W8ZJQ/8	9-A-1- 621	W7AWP/7	15-A-1- 203
W3KKH/3	20-A-1- 608	W3WA/3	14-A-1- 189
W6KRH/6	19-A-1- 608	W6DPJ/6	14-A-1- 189
W8AJW/8	20-A-1- 608	W7JIH/7	14-A-1- 189
W8BUS/8	8-A-1- 608	VE3DMZ/3	20-B-1- 180
W8GHO/8	16-A-1- 608	W7LBF/7	12-A-1- 162
W7SKT/7	19-A-1- 594	W3FRD/3	11-A-1- 149
W8ZEU/8	7-A-1- 594	W8FKS/8	10-A-1- 135
W7FTR/7	18-A-1- 581	W9EZS/9	10-A-1- 135
W7OTA/7	12-A-1- 527	W1IHL/1	9-A-1- 122
W3ESM/3	13-A-1- 513	W3QHG/3	9-A-1- 122
W6AZL/6	39-A-1- 507	W9AYU/9	9-A-1- 122
W6KSU/6	12-A-1- 500	W9SMW/9	9-A-1- 122
W7CBE/7	11-A-1- 486	W1NJM/1	11-A-1- 99
W7HUL/7	11-A-1- 486	W2HF/2	8-B-1- 72
W3PSQ/3	10-A-1- 473	W8AFW/8	5-A-1- 68
W3JCI/3	9-A-1- 459	W8FBZ/8	5-A-1- 68
W8VM/8	9-A-1- 459	W4YCK/4	3-A-1- 41
W9MYI/9	33-A-1- 459	W7PZO/7	3-A-1- 41
W7MEU/7	8-A-1- 446	W7RNC/7	3-A-1- 41
W8ZSD/8	8-A-1- 446	W9RMM/9	4-B-1- 36
W3QLG/3	7-A-1- 432	W3FGI/3	2-A-2- 27
W2IN/2	9-A-1- 429	W5UWA/5	2-A-1- 27
W3MKY/3	6-A-1- 419	W6NCP/6	2-A-1- 27
W6FJF/6	6-A-1- 419	W8WAG/8	1-A-1- 27
W1BDI/1	20-B-1- 405	W7DMN/7	1-A-1- 14
W8LEX/8	5-A-1- 405	W7DZO/7	1-A-1- 14
W8NGY/8	5-A-1- 405	W7IEE/7	1-A-1- 14
W7AXS/7	29-A-1- 392	W7JWE/7	1-A-1- 14
W3GYS/3	3-A-1- 378	W7TES/7	1-A-1- 14
		W7TKN/7	1-A-1- 14

CLASS D

Grouped in this tabulation are the scores of home stations operated from emergency power.

W2SZ [8]	248	W2RGX	21
K2BCI [9]	104	WN1WHL	9
W6SFT [10]	79	W6NCP	4
WØFLN	62		

CLASS E

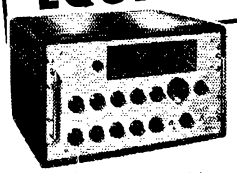
Grouped in this tabulation are the scores of home stations operated from commercial power sources.

W1YYM [11]	364	W5WGS	55
W6GKM	357	W6NST	53
W8NGO	277	WØSQN	53
W5TFB	235	VE3BVL	53
W4TJI	230	W2OMG	52
W3DIM/3	226	W8KID	50
W4SGH [12]	176	K2BOF [15]	49
W3ISE	167	W2ICE	49
WØBMM/Ø	160	W7ICD	49
W6PMQ	155	W6AM	48
W1AW [13]	149	W8KBE	46
W9ESQ	147	WN3UTW	45
W6GEB	145	W1WMH	44
W1WKM	132	W7QCN	44
W5YIG/6	120	W2GSB [16]	43
W3RNY	111	W3NRE	42
W1TZA	98	W8DAE	40
W2RCX	94	W1BJP	38
W2RHQ	93	WØDAK	37
K7NRM [14]	92	W9NH	36
W1UGW	90	W2GIQ	35
W7PYV	75	W6MJP	35
W1WVW	61	W9YDQ	35
W3HDV	57	W4KUI	32

(Continued on page 130)

hallicrafters COMMUNICATIONS EQUIPMENT

HARVEY
ALWAYS HAS IT...IN STOCK For IMMEDIATE DELIVERY



HT-20
TVI-SUPPRESSED, 100-WATT BANDSWITCH TRANSMITTER

All spurious outputs above 40 mc at least 90 db below full rated output. All stages metered; single meter with 6-position meter switch. Output tuning indication. Frequency range of 1.7 mc to 31 mc continuous on front panel control. Ten-position crystal selector switch; provision for plug-in VFO on xmtr power supply. Seven tubes plus 5 rectifiers.

HT-20 complete with tubes..... **$449.50**

SX-88
"DREAM BOX" FOR DX— 12 TUNED I-F STAGES

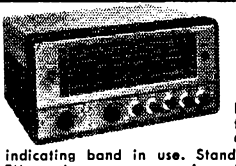
Full precision gear drive for main tuning and bandspread. Full frequency coverage from 535 kc to 33.3 mc. Ten watt audio with push-pull output and negative feedback. Speaker terminals—3.2/8/500-600 ohms. Double conversion with crystal-controlled 2nd conversion oscillator. Built-in 100-kc calibration crystal. Has i-f output jack via cathode follower for teletype converter, oscilliscope, etc. 20 tubes. Six-position bandwidth control for 250 cycle to 10 kc selectivity. Satin black steel cabinet with grey-blue front panel, chrome trim.

SX-88 complete with tubes *less speaker*..... **$499.95**

SX-71
HIGH-PERFORMANCE RECEIVER FOR ADVANCED AMATEURS

Built to make hams happy — built to bring in DX through the tuff stuff. Covers standard broadcast band plus 4 short-wave bands, 1650 kc-34 mc and 46-56 mc. Superior image rejection plus built-in NBFM, one r-f, two conversion, three i-f stages. Temperature compensated, voltage regulated. Phono input jack. Three watt output at 3.2 or 500 ohms impedance. Socket for external power or remote control. Full-visibility band spread. Satin black steel cabinet, chrome trim.

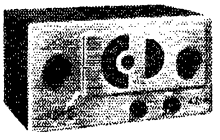
SX-71 complete with tubes *less speaker*..... **$249.95**



SX-62
HIGH-FIDELITY ALL-BAND RECEIVER

Full width dial is marked for foreign short wave listening. One band lights up at a time, indicating band in use. Standard broadcast, short wave or FM continuous coverage from 540 kc to 109 mc in 6 bands and 27-109 mc FM. Crystal calibration oscillator built-in to check dial pointer accuracy. Two r-f, three i-f stages. Temperature-compensated, voltage-regulated. Six-position selectivity. Hi-fi audio with 4-position tone control and 10-watt push-pull output. 500 and 5000 ohm impedance. Phono jack. 16 tubes. Satin black steel cabinet with light grey panel, chrome trim.

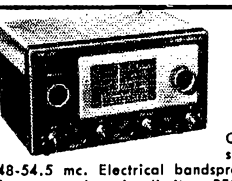
SX-62 complete with tubes *less speaker*..... **$349.95**



S-38C
LOW-COST RECEIVER with ELECTRICAL BANDSPREAD

Here is world-wide performance in a compact receiver that's fine for the new amateur or as a reliable standby set. Communications-type controls for standard broadcast plus 3 short-wave bands, 1650 kc to 32 mc. Sensitive built-in speaker. Headphone tip jacks. CW oscillator. Engineered throughout to give years of good service.

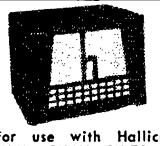
S-38C complete with tubes..... **$59.95**



S-53A
A TOP PERFORMING SMALL RECEIVER

Covers broadcast band plus 4 short-wave bands, 2.5-31 and 48-54.5 mc. Electrical bandspread. Two i-f stages. Switches for automatic noise limiter, BFO and high-low tone. Built-in speaker. Headphone tip jacks. Phono-jack. Other important features, including temperature compensation to reduce fading due to frequency shift, make the S-53A tops in its price range.

S-53A complete with tubes..... **$99.95**



R-46
MATCHING 10" PM SPEAKER

For use with Hallicrafters receivers SX-71, SX-76, SX-73, SX-62 or SX-88. 80 to 5000 cycle range. Matching transformer with 500-ohm input. Speaker voice coil impedance, 3.2 ohms. Satin black steel cabinet matches all Hallicrafters receivers. Cloth covered metal grille.

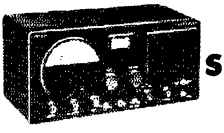
R-46 ..... **$24.95**

S-76
DOUBLE CONVERSION RECEIVER

WITH GIANT "S" METER

Top selectivity at moderate price! Covers standard broadcast band plus 3 shortwave bands, 1720 kc to 34 mc. Calibrated electrical bandspread. Five-position selectivity, one r-f, two conversion, two i-f stages, temperature compensated. Phono input jack. Socket for external power or remote control. Satin black cabinet, chrome plastic trim, hinged top.

S-76 complete with tubes *less speaker* **$199.95**



S-40B
ALL-TIME POPULAR HAM RECEIVER

Covers broadcast band plus 3 short-wave bands, 1680 kc to 44 mc. Electrical bandspread for easy tuning. One r-f, two i-f stages. Switches for automatic noise limiter, BFO and 3-position tone control. CW pitch control and built-in speaker.

S-40B complete with tubes..... **$129.95**

Anywhere in The World ORDER BY MAIL DIRECT FROM HARVEY

Write for full details and accessory lists to:

NOTE: In view of the rapidly changing market conditions, all prices shown are subject to change without notice and are Net, F. O. B., New York City.

WE'RE GENEROUS ON TRADE-INS! What've you got to trade on this fine Hallicrafter equipment? Because of our big outlet in the New York market, we can make you a generous allowance. Send full description.

hrc Harvey RADIO CO., INC.

103 W. 43rd St., New York 36, N.Y. • JUdson 2-1500

W8MUJ	32	W2IP	11
W1WEF	31	W2NHH	11
W2QKJ	31	W3FQE	11
W9VYX	31	W3JAA/3	11
K2BKW	29	W3SOH	11
W3SIJ	29	W8FRD	11
WØEBA	27	W7NWP	10
W3UOE	26	WØHAW	10
W6MYG	25	W5BSR	9
W1TVJ	24	W7EHH	9
K5FEB	23	VE3BAJ	9
W6JUE	23	W1ONV	8
W7CZX	21	W1TWZ	8
W2IIC	20	W8WVL	8
W2CVW	19	W9HLB	7
W8INF	19	W3IMW	6
VE7WL	19	W9VOX	6
W8TDG	17	W4TRN	5
W2HAZ	16	W3TCD	4
W3TF	16	W8DLE	4
W9TTR	16	W9AZR/Ø	4
W3COK	14	W1ALP	3
W4OGG	14	W1TVI	3
W5URP	13	W2GWT	3
W7PSS	13	W8WRN	3
W6NCP	12	W8JWP	2
W9EIL	12	VE7AKH	2
K2AWA	11	KN2DGC	1
		W2WLR	1

[1] W8MKM opr. [2] W9RLB second opr. [3] W6ROJ second opr. [4] W5CTG second opr. [5] VE2KH second opr. [6] KN6ALN second opr. [7] W5s HBZ and SYE oprs. [8] W1TCJ and W2UGV oprs. [9] 12 oprs. [10] 7 oprs. [11] W1WPO second opr. [12] 6 oprs. [13] W1WPR opr. [14] W7s PKW and SSX oprs. [15] 5 oprs. [16] W2BJP opr.

December 1928

. . . "Radio on the Byrd Expedition" summarizes communications aspects of the South Polar explorational undertaking now commanding world-wide attention.

. . . Earl W. Springer, W9BWI, in "The Construction and Operation of a 3500-Kc. Crystal-Controlled 'Phone," describes a high-stability, high-quality 80-meter transmitter.

. . . "Push-Pull Transmitters," by James J. Lamb, W1CEI, details a bound-to-be-popular set with UX-210s and UX-860s in a symmetrical crystal-controlled circuit.

. . . The two-210s transmitter discussed by J. Herbert Hollister, W9DRD, as well as his crystal-handling suggestions, makes "Debunking Crystal Control" must reading.

. . . George Grammer, W3AIH, presents "Some Suggestions for the Monitor" in describing a straightforward monitoring set-up that has given years of reliable service.

. . . "A Frequency-Meter Combined with Your Receiver," by ARRL Director Eugene C. Woodruff, W8CMP, tells of a self-contained battery outfit using Type 199 tubes.

. . . J. M. Grigg writes on "An Improved Superheterodyne," a 500-kc.-i.f. five-tube set of good tone quality, selectivity, sensitivity and simplicity of tuning.

. . . L. W. Hatry's "Now — the Vacuum-Tube Ammeter" discusses variations in vacuum-tube voltmeter circuits for a wide range of measurement applications.

. . . Meeting a consistent demand for such information, Herbert F. Wareing, W9NY-W9FUZ, writes on "Choke Coil Design" considerations.

. . . "Straight-Edge Solutions" provides large-scale reproductions of nomographic charts by Allen B. Taylor, W6DXH, together with instructions for their use.

. . . Charles A. Hill, W6BRO, in "Relieving the Glass Arm," gives advice toward alleviating a difficulty that sooner or later plagues almost every c.w. hound.

"Color Television"

A special issue containing

• 15 N.T.S.C. Monographs–

The National Television Systems Committee has authorized IRE to publish its long awaited Monographs in the January 1954 special Color Television issue of "Proceedings of the I·R·E" — thus giving them industry-wide distribution for the first time in print.

• 25 additional Color TV articles–

will also appear in this issue, which brings the reader up-to-the-minute on the developments of Color Television. Copies of the first Color Television issue are still available and combined with this second Color Television issue will form a complete bibliography of major historical importance. Also included in the January issue will be a complete listing of the N.T.S.C. system specifications as submitted to the F.C.C.; and field test reports on the system's performance.

in "Proceedings of the I·R·E" January '54

Available to non-members for $3.00. Extra copies to I R E members are $1.25. All members get one copy free!

Another History Making Issue!

● ●

I R E is an organization of 33,312 member-engineers. There are no company memberships. Operating continuously since 1913, its sections meet in 78 cities. 21 specialized Professional Groups widen the scope of its member-services and 40 technical committees help the industry.

"Proceedings of the I·R·E"

Published by

THE INSTITUTE OF RADIO ENGINEERS

1 East 79th Street, New York 21, N. Y.

Please place orders before December 10th.

Strays

W4HCM tells us that W4HDX, chief engineer at b.c. station WJNO, Palm Beach, Fla., dashed off the Eddie Fisher tune hit "Just To Be With You." Encore, OM!

—•••—

W3EQK tried a 20-meter 'phone CQ while out mobiling one fine day. Back came W2ZYC, also mobile. It turned out that both are Emergency Squad policemen, W3EQK for the city of Baltimore and W2ZYC for the city of New York, and both are named Art.

—•••—

W2UWK, W3VAV, W6OQY and reader Robert Page didn't miss the recent AP dispatch concerning the mockingbird of W5VPM. Mr. and Mrs. W5VPM, who regularly engage in buzzer code practice, were amazed when their pet bird began to dot-and-dash on his own. Next will come the theory, we suppose.

McSquegg

(*Continued from page 61*)

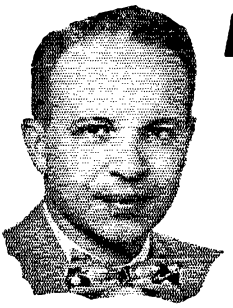
In the snows outside, Earlybird Kilroy was being dragged reluctantly along by his cocker spaniel. And, as usual, over the countryside far and wide hung the asphyxiating pall of Earlybird's morning stogie. The set-up was perfect!

Sunspot was penning "Glad to be your first W" on the bottom of an airmail-special-registered QSL card as ZD5HI started his final transmission. McSquegg could sense the impatient W/VE crowd getting set to open up on ZD5HI with a salvo sufficient to outclass *Big Mo*. It was then that the accented voice in the 'phones literally reached out and knocked him off his chair.

"A distinct pleasure to work you, Sunspot," said the rare fellow. "Delighted to be your first ZD5. And, by the way, *please remind your club friend, Earlybird, that he still owes me a QSL for our 160-meter single-sideband QSO of last week.* Very seventy-three!"

Sunspot grabbed the window sill and pulled himself up off the floor. He dejectedly watched Earlybird and his cocker as their figures perspectively grew smaller and smaller in their journey down the lane, realizing then and there that he had fought a futile battle against hopeless odds.

Wheezing from the still-hovering fumes of the lethal cigar, McSquegg's own sad-looking hound, Fleabait, disconsolately wandered out through the front gate to sniff the cooling tracks of Kilroy's dog — pawprints in the new-fallen snow proclaiming to all the world that Kilroy, indeed, had been there. . . .



Leo I. Meyerson, WØGFQ
C.U. on 10-20-40 & 75 Meters

Pay Only 10% Cash Down

18 Months to Pay on Major Equipment

Now it is easier than ever to buy from WRL. Pay as little as 10% down and the balance in 18 months. No red tape — we handle our own financing. We will give you a generous trade-in allowance on your present equipment. We have over 600 reconditioned used items — with new factory guarantee. Send for free list. You will profit most when you deal with WRL — THE WORLD'S MOST PERSONALIZED RADIO SUPPLY HOUSE and THE WORLD'S LARGEST DISTRIBUTOR OF AMATEUR RADIO TRANSMITTING EQUIPMENT.

The NEW MODEL 40A Complete Band Switching GLOBE SCOUT

(50 Watts CW—40 Watts Phone)

$10. cash down
12 monthly payments of $8.95

KIT FORM $89.95
WIRED $99.95

LATEST TRIUMPH OF THE WRL ENGINEERING STAFF
Complete bandswitching 160 thru 10M transmitter with combination pi-network antenna tuner which will work into any antenna. Three-stage modulator allows 100% modulation of final. Has complete power supply. XMTR housed in new special grey TVI screened cabinet. Ideal XMTR for the novice or experienced ham.

"It Is A Pleasure To Do Business With WRL"

Dear Leo:

I placed my Globe King in operation several months ago and am MORE than pleased with the results. For rugged dependability, an outstanding signal, and watt-per-dollar value, I do not believe it can be beat. Although I live, literally, in a forest of TV antennas, I have never received a complaint.

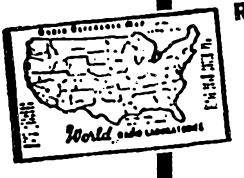
GEORGE FAIRBANKS, WIFWX
Seymour, Connecticut

NEW TVI MODEL 400C GLOBE KING XMTR

TVI SCREENED CABINET NOW STANDARD EQUIPMENT

$51.50 Cash Down
$495.00 KIT FORM
$515.00 WIRED

12 Monthly Payments of $40.95
18 Monthly Payments of $28.07



RADIO REFERENCE MAP
25¢
HANDY WALL SIZE

FREE

SEND TODAY!

WRITE FOR DETAILED SPECIFICATION EQUIPMENT SHEETS

WRITE
WIRE

PHONE
2-0277

World Radio
EVERYTHING IN RADIO
LABORATORIES
COUNCIL BLUFFS, IOWA

World Radio Laboratories, Inc.
744 West Broadway
Council Bluffs, Iowa

Q-12

Please send me:

- ☐ New Log Book 25c
- ☐ Free Catalog
- ☐ Radio Map 25c
- ☐ Globe Scout Info
- ☐ Globe King Info
- ☐ Globe Champion Info
- ☐ Used Equipment List

Name_____

Address_____

City_____ State_____

World Above 50 Mc.

(Continued from page 65)

W7PXB reports that Channels 10 and 11 have been seen around Seattle several times recently. If you can see high-band TV DX, you can work out on 144 Mc. Coverage on 144 Mc., if optimum techniques are employed, can beat TV coverage on Channels 7 to 13 any day!

The best 2-meter DX so far reported from the Northwest is a contact between W7NCW, Longview, Wash., and W6MXQ/7, Ashland Peak, Oregon, during the September V.H.F. Party, a distance of 280 miles. W6MXQ/7 also worked down as far as W6UOV at San Mateo, 320 miles. So, for that once, at least, a 2-meter link between Washington and California was established, but at the cost of some rather prodigious effort by the party that set up W6MXQ/7 for the contest. Their average for all 16 contacts made was 246 miles, good going in any 2-meter league!

An interesting sidelight on the W6MXQ expedition: A 75-meter liaison rig was carried along, but it turned out to be completely useless because of the QRM. Ollie says next time they'll concentrate all their weight-carrying capacity on 2-meter gear. He is already planning for next September's contest. (June can be too early for the high altitudes, because of the late melting of snow.) He would particularly like to promote a WØ expedition to Pike's Peak for that event. Volunteers please get in touch with W6MXQ, Box 23, Albany 6, Calif.

OES Notes

W5SCX, Ardmore, Okla., maintains daily skeds with W5AJG and W5HHU in Dallas, 110 miles to the south, checking signal levels against weather conditions. Contact is possible daily, but large variations in signal strength are encountered. Bill had his first contact with WØZJB, Wichita, Kansas, late in September. Checks are also made with Amarillo, 280 miles to the west. This path is not solid, requiring something special in the way of weather, so far.

Ever try any of your low-frequency antennas on 144 Mc.? W8UZ, Columbus, Ohio, got a surprise during the September V.H.F. Party when he put his 80-meter off-center-fed job on the 2-meter rig and found that it not only loaded well, but did a creditable job in north-south work.

W8WRN writes of the experience of one of his Technician friends, who will remain call-less in this report. Seems Ken had listened for him several times on 420, with no results, which didn't seem right as they were not too far separated. Finally, Ken went over to see the newcomer, taking along a Lecher-wire assembly. The Technician was on 350 Mc.! Moral: Don't guess about frequencies; use a Lecher-wire system, the one method for checking frequency in the u.h.f. range that is completely reliable. November *QST* carries the details. Construction of such a Lecher-wire measuring device might well be a project for a club where there is extensive v.h.f. or u.h.f. interest. The cost is almost nothing, and it can save a lot of headaches.

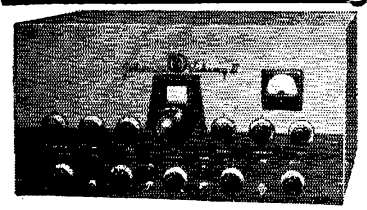
W9LEE and W9GFL both report poor 2-meter conditions in upper Wisconsin during the early fall, though W9GFL lists several new stations on the band, and tells of formation of a 2-meter net. Frequency for net operations: 146.25 Mc.

Answer to QUIST QUIZ *on page 58*

It is unlikely that anyone could make enough mistakes in a 2-meter converter (or any other front end) to justify the use of three r.f. stages ahead of the mixer. It depends a lot on the gain and noise figure of a single r.f. stage compared with the noise figure of the mixer. If a good (low noise figure) mixer is used, only one r.f. stage is likely to be sufficient, and a second r.f. stage would only pull down the receiver noise figure by a fraction of a decibel. If the mixer is noisy, it may take two r.f. stages to bring the amplified input noise to the point where it masks the mixer noise sufficiently.

When more r.f. stages are used than are necessary to establish a good noise figure, one always runs the risk of serious cross-modulation troubles in the front end of the receiver. The best desgin keeps the gain at a minimum (consistent with a good noise figure) before getting into the high-selectivity circuits.

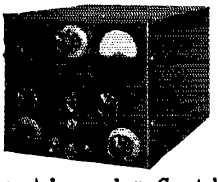
Lafayette for High Voltage BARGAINS!



NEW! JOHNSON VIKING II

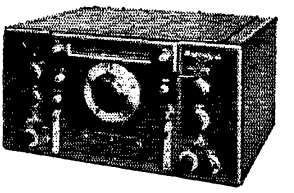
The Johnson Viking II transmitter kit incorporates all the desirable features of its predecessor plus those required for effective TVI suppression. 100 watts output on phone and 130 watts on CW on all bands 160 thru 10 meters. New final amplifier uses parallel 6146 tubes. All parts supplied, including copper plated steel cabinet, chassis, wiring harness, all hardware and tubes. Complete construction test and operation manual also supplied. Viking II Transmitter Kit.....**279.50**

JOHNSON MOBILE TRANSMITTER KIT



New Johnson mobile transmitter kit, a band-switching 4 band rig, 60 watts input, 100% modulated (30 watts on 300 volt supply) 807 final, microphone input—dynamic, crystal or carbon. Crystal or VFO control. Viking Mobile Transmitter Kit (less tubes) **99.50**

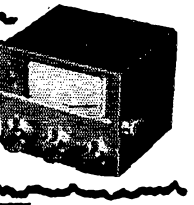
LAFAYETTE — HEADQUARTERS FOR COMMUNICATIONS RECEIVERS



Lafayette has been the Headquarters for fine communications receivers for 32 years. All the latest models are available as soon as released by the manufacturers. Be sure to check Lafayette before you buy your new receiver.

HALLICRAFTERS		NATIONAL	
S-38C	49.50	SW 54	59.95
S-40B	119.95	NC 125T	199.95
S-53A	89.95	NC 183D	383.50
SX-62	299.50	HRO 60	533.50
SX-71	224.50	**HAMMERLUND**	
SX-73	975.00	HQ-140	264.00
S-76	179.50		

RME MC-55 5-BAND MOBILE CONVERTER



MC-55 Net $69.50
MC-53, for 2, 6 and 10-11 Meters..... 66.60
MC-57, for 10, 20 and 75 Meters..... 64.50

UNBELIEVABLE Price!

WESTERN ELECTRIC Hearing Aid

Reg. Price $185.00 our price $24.50

Brand new, in original Western Electric jeweler's case. Supplied with receiver, receiver cord, battery cord and plug (less batteries). Money-back guarantee. Act now while they last! Uses Burgess XX30E and 8R batteries at $1.55 per set.

SPECTACULAR VALUE!

PLASTIC BASE RECORDING TAPE

Here is a real buy on 1,200 feet of plastic base recording tape, including 7" reel. Highest quality, optimum performance for thousands of playings. Frequency response 50 to 8,000 cycles. At this price you can't lose.

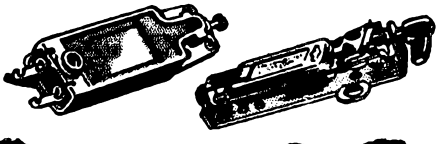
1,200 ft. Reel..... **1.89**

SELENIUM RECTIFIER

Most popular sizes for radio and TV. Famous brand. All fresh, new stock. Input voltage 130 volts. You can't go wrong at these prices.

	Lots of 10
RE-12, 65 MA., ea. 59c.....	57c ea.
RE-14, 75 MA., ea. 62c.....	59c ea.
RE-10, 100 MA., ea. 77c.....	72c ea.
RE-11, 250 MA., ea. 1.25.....	1.19 ea.
RE-13, 400 MA., ea. 1.59.....	1.52 ea.

PHONO CARTRIDGES



GENUINE ASTATIC LQD TURN-OVER CARTRIDGE for 33⅓, 45 and 78 r.p.m. records. Equipped with two precious jewel tip needles which are removable. Reg. list price $10.00, LAFAYETTE Special!
Stock No. PK-18, Single, ea. **3.97** Lots of 10, ea. **3.50**

3.5 VOLT OUTPUT exact duplicate for direct replacement of all standard cartridges such as L70, L82, L92, W60B, N10, and many others. Reg. list price $5.50.
Stock No. PK-11, Single, ea. **1.99** Lots of 10, ea. **1.75**

Lafayette Radio

FAMOUS IN RADIO FOR 32 YEARS

NEW YORK, N. Y.	100 Sixth Ave.
BRONX, N. Y.	542 E. Fordham Rd.
NEWARK, N. J.	24 Central Ave.
PLAINFIELD, N. J.	139 West 2nd St.
BOSTON, MASS.	110 Federal St.

DXCC

(Continued from page 71)

159
LU8CW

157
W4CYU

156
W3EVW
G5RV
G6AY

155
W8REU
HB9J
LU4DD
SM5ARP

154
W1ADM
W8AJW
G3HLS
OD5AB

152
W4OM
W5NMA

151
W2QF
W4MKB
W8KML
CT1PK

150
W4ESP
W5ALA
W6KQY
W9RNX
GM3AVA
IIAMU
LU4MG
YV5AB

149
W3BET

147
W8DMD
SM5LL

146
W1HKK
W2AEB
W4DCR
PY4RJ

145
WØNCG
G5VT

144
W2RGV
W2ZX
G2MI

143
W2EOH
G2BXP
IICAR
TI2RC

142
W1BEQ
W2VWN
F9HF
PY1AQT
TI2TG

141
WØAIW

140
W1EKU
W2AKX
W8HUD
WØPRZ
CE3AE
IIUA
OZ7TS
PY2AHS
VP6SD

ZS1DO

139
W6TT

137
W5KC
G2AJF

136
G2WW
PAØNU

135
W1CLX
W2ZKG
HC2OT
TI2HP

134
W1QPN

133
CE1AH
IIRM

132
W1KJU
W4AAW
W9IOD
W9JJF
ZS1KW

131
W1FFO
W2ZW
W6CHV
W9HP
W9UUN
F9RM
G6LX
G8QX
GM2DBX
IIBIC
PAØJA
PY2JU

130
W1GOU
W1HX
W1MMV
W2NHZ
W3MAC
W4HRR
W6VFR
W6WNH
W9BZB
WØANF
WØPUE
WØVSK
CN8BA
CN8MM
CX4CS
G3BID
G8KP
HB9LA
IIASM
IIAXD
KL7AFR
PY4KL
PY4VX
SM5WJ
VE7ZM

129
W2ZVS
W5KUC

128
W6NIG

126
ZS5CU

125
W1CJK
W1GKK
F8SK

PY1FR
ON4MS

124
W8NXF
WØEYR
KH6OR

123
W4FBH
W8AUP
W9TJ
ON4AR

122
G2ALN
OQ5LL
VE7VO

121
W4BOC
W4JCK
W9NLP
G3COJ
G8UG
GC2RS
OH2SE

120
W1RZD
W2JY
W2QKJ
W2SGX
W2WZ
W3DKT
W4AQR
W4DCQ
W4IYM
W4MB
W5CEW
W6IKQ
W6MJB
W8BIQ
W8TJM
F8XP
HB9DY
IIVS
ON4YI
OQ5LL
VE1CR
VE3BNQ
ZS6FU
4X4DK

119
W9FDX
F9PH
HK4DF
IIRC
LU3DH
VK3BZ
VP5FR

118
W2VQM
W6TZD
WØTJ
F8CW

117
W4KAE
W6YX
EA4CM
G5PP

116
W2PRN
W5EB
W5HFQ
F3WV

115
W2MFS
W3RIS
W7EMP
W8HRV
WØGUV
LA7Y

114
W1BLF
W6YI
W8ZMC
GM2UU
G3BNC

PY1AGP
TI2EV
ZS3G

113
W1HRI
W2PBI
W3MMH
W8BKF
CO2BL
G5PP
PY4CB

112
W3GHS
W4MRA
W5JJA
W6GVM
W7EKA
W8AJH
G4JZ
IIBPW
VE4RO

111
W2PRF
W2UTH
W9CZC
VE7MS
YK1AC

110
W2GX
W2IUV
W2YYL
W3BUX
W3BYL
W3FGB
W3JNM
W4GIO
W4NYN
W8BFQ
W8DMJ
W8LJ
W8QAD
WØHX
CT1DX
EI4Q
F8NK
G3YN
G5LN
IIFLD
KV4BB
OZ7SM
ZS1GG

109
W1KWD
W4NDE
CO2OZ
DL4TL
EA4DB
HB9CX
HB9ID
VE3BDB
ZS6Z

108
W1BAV
W2AOX
W2VYH
W3KTF
W3MWP
W4LIM
DL1LH
IIRLH
ZS5GU

107
W2RUI
W4LZM
W4QT
W7HLB
W7PEY
WØJYW
EA3FG
G4MS
G5OO
HB9JZ
ZS6DW

106
W1FZ
W3AER
W8MKY
DL1FK

G8VB
TI2OA
VK3JE
YN4CB
ZS2IW

105
W2JJI
W2ONV
W3UIP
W6AED
W6UYX
W8HRV
G2MQ
KT1WX
LU4DMG
SU1HF
VK2DI

104
W1BPH
W2PPS
W4AHF
W8ACP
W8SDR
W9FHZ
W9LXQ
CE3AG
EI2L
F3OX
G6TA
G8QW
IIGZ
LX1SI
PY4PQ
ZD4AH
ZS6LW

103
W1JYQ
W1PDF
W2DPS
W2IZS
W2NQR
W2QWS
W3NA
W7AUS
W8NA
WØUQD
CR6BX
CX3BH
GW3CDT
G2AKR
HK4FV
IS1AYN
IIKP
VP9G
VQ4SC
YS2AG
3V8BB

102
W2DYR
W2LV
W2PBG
W2QPC
W4BA
W4CWV
W4KYB
W5JWM
W5NZE
W6PWR
W6SHW
W7HTB
W8IWI
W8NGO
W9WXT
WØSQO
WØSUG
WØWSH
CO7GM
CT1FL
DL3DO
DL7AB
ET2LV
GI6TK
G2DP
G3CCO
HB9HM
IIAUH
KP4ES
PAØMDW
SM5FL
TA3GVU
VE3AUJ
VE7HC
VS9AH
XZ2SY
ZL3LR
ZS5G

101
W1RFE
W2LSX
W2RTX
W2TXB
W2UAT
W2WME
W3SFK
W3HUV
W4DEO
W5ZS
W6KPC
W6PKI
W7MBW
W8CYL
W8NML
W8ZOK
W9BVX
W9LQ
W9VND
WØJRY
WØMKF
WØNWW
CT1MB
CX3AA
F3PW
GH2OV
G6WX
HP1BR
IIASO
IIKZ
IINK
IIRB
IIWAL
IIZV
KP4EZ
OH2OV
VE3AIU
VE3BQP
VS1AY
4X4AD

100
W1CUX
W1FQX
W2KSN
W2MA
W2OR
W3AEV
W3AM
W3DYT
W4CRI
W4DSC
W4DYM
W4ECE
W4EYG
W4GLR
W4LGG
W4LPT
W4NQN
W5ALB
W5ERY
W5GZ
W6CHY
W6ITH
W6OZE
W6SAI
W6UZX
W6ZTW
W7ADH
W8ALC
W8BRA
W8DXO
W8FJX
W8VRA
W9CKP
W9GZK
W9HMG
W9JUV
W9NDA
W9UJ
WØFUH
WØGSW
EA3GI
EI4L
G2HIF
G2LS
G2VJ
GM3DZB
GW8BW
IIAOF
KP4HZ
LX1DC
OE5YL
PAØQJ
SM5FA
SM6OE
VE3AOL
VE3TW
VP5AR
VQ5PBD
ZP5CF

NEWARK Values at Xmas

AND ALL THRU THE YEAR!

Famous Brands • Values • Specials

RCA WV-97A. Senior Voltohmyst.
62F000. Shpg. wt., 10 lbs.....67.50

RCA WV-77A. Junior Voltohmyst.
62F010. Shpg. wt., 6 lbs.....47.50

Triplett 666-HH. Volt-ohm-milliammeter.
62F208. Shpg. wt., 3 lbs.....24.01

Triplett 630. Volt-ohm-milliammeter.
62F212. Shpg. wt., 4½ lbs.....38.71

Simpson 260. Set Tester (Roll Top).
62F303. Shpg. wt., 9 lbs.....45.96

Simpson 260. Set Tester (Open Face).
62F300. Shpg. wt., 5 lbs.....38.17

Millen 90651. Popular Grid Dip Meter.
97F208. Shpg. wt., 3½ lbs.....61.50

Hallicrafters S38C. All-wave Receiver.
98F005. Shpg. wt., 14 lbs.....59.95

Hallicrafters S40B. Communications Receiver. Covers 540 kc to 43 mc.
98F003. Shpg. wt., 33 lbs.....129.95

National SW-54. Superhet Communications Receiver. Covers 540 kc to 30 mc.
98F318. Shpg., wt., 10 lbs.....59.95

National NC-88. New Communications Receiver. Covers 540 kc to 40 mc.
98F312. Shpg. wt., 30 lbs.....129.95

Dorset. High Fidelity Portable 3-Spd Record Changer with Garrard RC-80.
73F605. Shpg. wt., 30 lbs.....129.50

Garrard RC-80. 3-Speed Record Changer.
73F510. Shpg. wt., 18 lbs.....45.08

Wilcox Gay 3A10. 2-Spd Tape Recorder.
75F003. Shpg. wt., 26 lbs.....119.97

Pentron 9T3C. 2-Track, 2-Spd Recorder.
74F908. Shpg. wt., 27 lbs.....139.50

Eicor 230. Two-Speed Tape Recorder.
74F940. Shpg. wt., 30 lbs.....127.46

Espey 512C. FM-AM Tuner Chassis.
96F031. Shpg. wt., 16 lbs.....69.50

Brush Mike, Hi-Z. At Special Price.
54G350. Shpg. wt., 1½ lbs.....5.95

Wireless Mike. With built-in midget transmitter. Plays thru any radio within 50 feet. No wiring required.
27F576. Shpg. wt., 3 lbs.....6.50

Drake 905. Popular Soldering Gun.
33F056. Shpg. wt., 4 lbs.....11.02

Weller S-500. Heavy Duty Solder Gun.
33F128. Shpg. wt., 3¾ lbs.....9.75

P.E.T. 625L. "Zephyr" Electric Hand Saw.
33F521. Shpg. wt., 11½ lbs.....37.24

P.E.T. 77DK. Deluxe Electric Drill Kit.
33F503. Shpg. wt., 10 lbs.....19.20

Casco G-25. "Electromatic" Drill Kit.
33F530. Shpg. wt., 3½ lbs.....12.97

3-SPEED PORTABLE RECORD CHANGER

New deluxe unit with latest type 3-speed automatic changer, built-in amplifier and speaker. Plays ten 12", twelve 10" or twelve 7" records at 33⅓, 45 or 78 RPM. 3 tube high-gain amplifier. 5" speaker with heavy Alnico V magnet. Turnover crystal cartridge with two needles for standard and microgroove records. Durable plywood case covered with leatherette. Brass plated hardware. 110-120 volts, 60 cycles, AC. Size 15x8¼x16½". 23 lbs. **47.50**
73F910.

3-SPEED PORTABLE PHONOGRAPH

Quality record player with high-gain amplifier and speaker. Plays all 33⅓, 45 and 78 RPM records singly. Two tube amplifier for full rich tone. Single tone arm with high output crystal cartridge for both standard and microgroove records. Heavy duty 4" PM speaker. Simulated leather case with brass-plated hardware. Wt., 9 lbs. **22.50**
73F903.

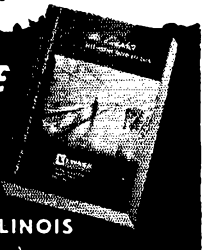
Transmitters and Receivers

Nationally famous brands of Transmitters and Communications Receivers—in stock—for immediate delivery.

97F300. Collins 75A2 Receiver. **NET**.....420.00
97F305. Collins 75A3 Receiver. **NET**.....530.00
97F301. Speaker for Collins Receiver. **NET**..... 20.00
97F309. Collins 32V3 Transmitter. **NET**..... 775.00
98F323. National HRO-60 Receiver. **NET**..... 533.50
98F307. Speaker for HRO-60. **NET**..... 16.00
98F300. National NC125 Receiver. **NET**.....199.95
98F301. Speaker for NC125. **NET**..... 11.00
97F455. Johnson Viking II, kit. **NET**.....279.50
97F460. Johnson Viking II, wired. **NET**.....337.00
97F410. Hammarlund HQ140X Receiver. **NET**..264.50
97F404. Speaker for HQ140X. **NET**..... 14.50
98F001. Hallicrafters S76 Receiver. **NET**.....199.95
98F008. Hallicrafters SX71 Receiver. **NET**.....249.95
98F022. Hallicrafters HT-20 Transmitter. **NET**....449.50

Order from Department T-12

FOB Chicago. Include shipping charges and insurance.



Send for **NEW.. FREE**
Catalog No. 56

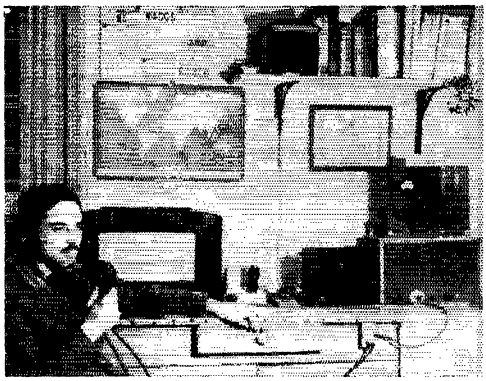
223 W. MADISON STREET — NEWARK ELECTRIC COMPANY — CHICAGO 6, ILLINOIS

How's DX?

(*Continued from page 69*)

and 3V8AG . . . . . Rhombics don't exactly grow on trees in Basutoland but ZS8D has one hooked to his 50-watter for 14-Mc. work. Neighbor ZS7D gets satisfactory results with 100 watts and a 137-foot center-fed job . . . . . Widely-worked ZE3JM gets a big signal out of an 89-6N7-807-813 VFOd arrangement while VQ2W finds a 20-watt 807 ample enough for much 7-Mc. fun.

Oceania — Navy club station KG6GX is manned by Statesiders W3WFE, W7LAR and W7OBU. Their layout includes a BC-610 (500 watts A3 and 700 A1), a 3-el. spinner on 14 Mc. and a 3-wire folded dipole on 40. The boys are on the air almost every day and get as much bang from handling GI traffic as from working rare DX. Ken, W7LAR, will be back home shortly and expects to hit the air as W7LAR/6 from San Bernardino. W7OBU is next in line for return . . . . . W1APA notes that KX6BC and KJ6BA are brothers and that the former is K2BTD of N. Y. C. . . . . Ex-VR2CD, now VE7ASL, proposes doing a 10,000-mile tour of the U. S. A. during November and December. Chas is all set to lug a 10-meter mobile along as VE7ASL/W and will be on the watch for DX acquaintances before he crosses to Hawaii and VE7ASL/KH6. Eventually he expects to settle down there with a KH6 call . . . . . FK8AO is passing out many New Caledonia QSOs on all bands from 3.5 through 28 Mc. Georges has a VFO-807-813 rig, a 12-tube super and an "MD2AC" antenna. FK8AO's usual operating schedule calls for an 0500–0800 GCT tour



Moderate power and modest antennae don't cramp the style of 4X4BR appreciably. Eli's Haifa station has been "first 4X4" for numerous W/VEs.

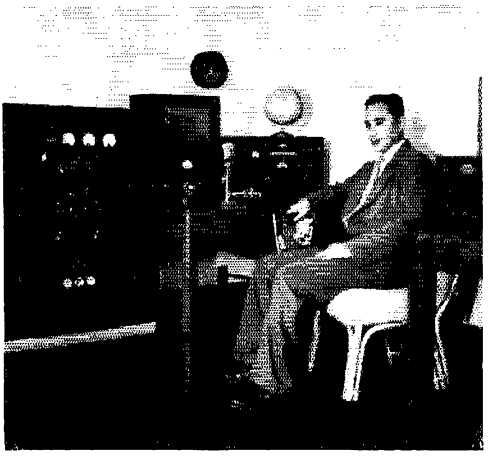
on 7 Mc., with 0800–1300 and 0100–0500 tricks on 20. He's out after WAS and sends QSLs direct if IRCs are received, otherwise via bureaus. FK8AO recently signed up with The Old Sock's RCC on the recommendation of ZL2GX.

Europe — W4MGP intrigues us by stating that he anticipates hitting the air soon from Belgrade with a YU1 call. He's attached to the U. S. Embassy there . . . . . SM5ARP writes that he expects to put 3A2AW on the air again early next year. Carl QSLs 100 per cent and had quite a time straightening out bookkeeping for his Monacco visit last May . . . . . SP3PL gets a kick from QRP DX work with a 5-watt VFO, 8-tube superhet and 400-foot long wire. He has a 100-watter available for QRO. SPs 2KGA and 6XA have similar layouts — 3-stage rigs running 50–80 watts, 9-tube supers and long-wire radiators. We note that Polish SWL cards now really are getting around by the numbers . . . . . LX1DU is eagerly sought on 14-Mc. 'phone of late and Francois's hefty signal stems from a warm 813 final . . . . . A newcomer on the air from Saarland is 9S4AB. Kurt has been making lots of noise with a 5-stage 40-watt transmitter, a converted BC-454 receiver and a long-wire skyhook . . . . . One old-timer still holding his own is I1ER. Mario had all continents worked by 1925 and qualified for WBE in 1934. He's now going strong on 20 meters with 100 watts, an SX-28 and a folded dipole . . . . . YO3RD, now quite active, is ex-YR5ML. Remember that one? . . . . . DL1FF (ex-DA5FF-D5FF) is up past 230

(*Continued on page 140*)

countries worked and has scored WAC on all bands 3.5 through 28 Mc. . . . . Betfor Signals Radio Club, MF2AG, is still one of the more workable Trieste actives. The boys have a 5-stage 110-watt VFO rig and a BC-342.

South America — LU3BJ calls attention to the activities of LU4ZS at the Bahia Luna naval base on South Shetland Isles. Forty meters is preferred . . . . . Several of the PY gang intended a DXcursion to Trinidad island (not the VP4 version) during November, according to W2GT. It's not on the Countries List as things now stand . . . . . Usually-scarce Bolivia is now exceedingly available in the forms of CP5s AB and EK. The former is ex-LU9DBF and the latter ex-CP1AP-CE2CE. CP5AB has 200 watts, a 75A-2 and an end-fire folded-dipole array for 14-Mc. A3 . . . . . That big Paraguayan signal from ZP9AY (ex-ON4AP) rolls off a 21-Mc. rhombic. Buddy ZP9AU is ex-ON4JH and has a 35-watt 807 perking intermittently on 40.



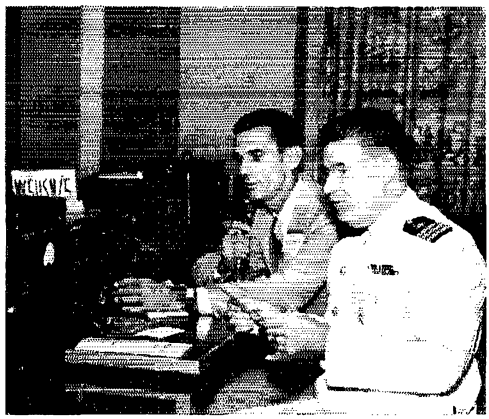
DU7SV radiates a widely-heard signal from Cebu City on several DX bands. No doubt Volt would be more widely worked if Philippines amateur regulations were liberalized. At present a DU DXCC is out of the question; DUs can contact only other DUs and U.S.A.-U.S.-possessions amateurs. (*Photovia W2MUM, W1TJI, W6YY and W9BDW*)

Hereabouts — W6ENV informs us that the Fifth (and Greatest) Joint DX Conference of the Northern and Southern California DX Clubs, this one sponsored by the latter group, will be held January 16th–17th at the Hotel Californian in Fresno. W6ENV writes: "DX men everywhere are cordially invited and urged to attend this real old-fashioned DX round-up. Things will start happening at three o'clock Saturday afternoon and the banquet should start around 8:30 P.M. Several prominent selected speakers will bring a few thousand words, and the Polynesian room — well, it closes late! Sunday breakfast, if you want any, will be informal." Man, them Kilofornia guys can throw a *ball* — drop Andy, W6ENV, a line to notify him of your intention to attend. Hotel/motel arrangements may be handled at the same time . . . . . OX3BK, with a grid-modulated 100-watter, worked W2GSE for his first QSO . . . . . W4KFC could use info on the present whereabouts of former operators of EP2B and YK1AF. One guess why . . . . . W2HMJ, who has a 205/198 record, figures you have to go back to a dipole for a while to really appreciate a good rotary beam. [Boss, he should try some of your haywire antenna ideas to really appreciate a good dipole. — *Jeeves.*] . . . . . W2BBK (FP8AK) writes that all outbound FP8AK QSLs now have been disseminated through bureaus . . . . . The Annual Informal Get-Together of All New England DXCC Members, 1953 session, took place on October 15th in Cambridge, Mass. Those who stayed home to take advantage of lack of on-the-air competition that evening missed a bang-up time! W1s ADM ATE BFT BGW BIL BLO BOD DSF FH FTJ HA HE HX IKE JOJ JNV KKP KNU KR LMB MCW MIJ MUN NS PDR PKW QXQ RAN TW WK WLW and ZD attended. W1s BFT and HX pushed the organizing and QSL Manager W1JOJ was on hand with his QSL file.

U. S. N. R.

ARRL Delta Division Convention

The Naval Reserve took an active part in the ARRL Delta Division Convention held at the Jung Hotel, New Orleans, La., September 5–6, 1953. Cmdr. W. R. Sherman, USNR, District Reserve Electronics Program Officer, represented the Commandant, Eighth Naval District. Cmdr. Sherman spoke on the Naval Reserve electronics training program, the contributions to radio by amateurs, and the liaison between the amateur and the Naval Reserve in the field of amateur radio. The Eighth Naval District Reserve Master Control Station (W5USN) in coördination with the Naval Reserve Training Center, New Orleans, and the District Industrial Manager, furnished operative duplex radioteletype equipment during the convention. William Hughes,



D. T. Baird, RMC, USNR (W5SPZ) and Cmdr. W. R. Sherman, USNR, District Reserve Electronics Program Officer, manning amateur station W5USN/5 of the District Reserve Master control station at ARRL Delta Division Convention.

RMC, USNR (W5PYU), of the Naval Reserve Training Center, Beaumont, Texas, won the code receiving and hidden-transmitter hunt contests. Messages of greeting were forwarded to the convention by Reserve Electronics Program Officers from various naval districts.

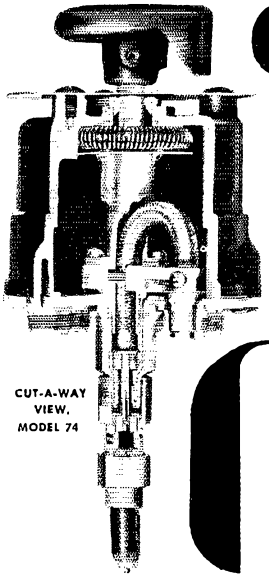
Sixth Naval District Changes

C. C. Wilson, RMC, USNR (W4BL), formerly of the District Reserve Electronics Program Office, Charleston, S. C., has been transferred to Naval Reserve Electronics Facility (K4NBV), Anderson, S. C., as stationkeeper. . . . C. H. Walker, RM1, USNR (W4SSN), formerly of Anderson, S. C., takes over as stationkeeper at Naval Reserve Electronics Facility, Chester, S. C. . . . C. H. Weaver, RMC, USNR (W4PPC), of the Sixth Naval District Reserve Master Control Station (K4USN) has been transferred to the Naval Reserve Training Center (K4NAU), St. Petersburg, Fla., as stationkeeper.

Here and There

Amateurs on duty at the Naval Radio Station, Cheltenham, Md., are: W2SJC/3; W3s HNY MWA PTZ RHF SGO SYL TFD, W4s NCO PMV TKM, W5MQR and W9WMA. . . . Naval Reserve Electronics Division 8–12 (K5NBY), Paris, Texas, placed first in the standing of electronics divisions in the Naval Reserve Electronics Program throughout the U. S. for the month of July, 1953. . . . Lt. William H. Clark, USNR (W6KRO), a member of Naval Reserve Electronics Division 12–16 (K6NRM), Modesto, Calif., was

(Continued on page 144)



CUT-A-WAY VIEW, MODEL 74

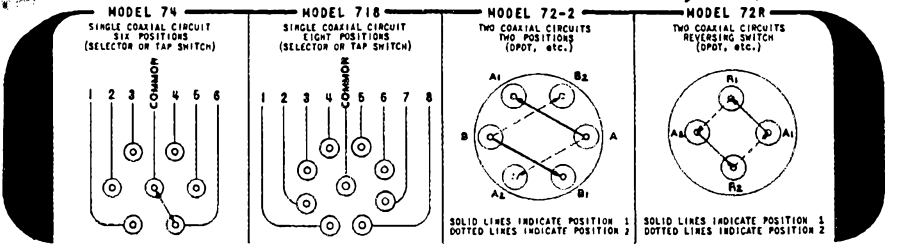
COAXWITCH COAXIAL SELECTOR SWITCH

50 Ohms – Type N Connectors – Manually Controlled

Low VSWR – 4 Models

The COAXWITCH is an RF switch for use in coaxial circuits where it is important that the 50 OHM impedance of the cables be maintained. In a circuit sense, this switch consists of two pairs of "N" connectors spaced 4½" apart using RG-8/U as the connecting link. The COAXWITCH itself introduces no VSWR other than that of connectors. Characteristic impedance is maintained thru all switch details. Cut-away view shows that shield as well as center conductor is switched. Beryllium copper contacts, on the gooseneck, mate directly with male "N" (Type UG-21B/U) connectors, which connect directly to back plate of switch. Since all connectors come out in line with axis of switch, right angle connectors are usually unnecessary.

Literature Gladly Sent



BIRD ELECTRONIC CORP.

1800 EAST 38TH ST., CLEVELAND 14, OHIO

TERMALINE Coaxial Line Instruments

NEELY ENTERPRISES
Hollywood • San Francisco
Albuquerque

EARL LIPSCOMBE ASSOCIATES
Dallas • Houston

CODE – SENDING – RECEIVING – SPEED

Be a Radio Ham or Commercial Operator. Pass FCC code test in few weeks. Fascinating hobby. Good pay, interesting work in Commercial field. Same system used by radiotelegraph specialists. FREE book explains how Amateurs and Operators learn code and develop amazing skill and speed.
Candler System Co., Dept. 4-O, Box 928, Denver 1, Colo., U.S.A. and 52b, Abingdon Rd., Kensington High St., London W. 8, England

---

AN/APR-4 COMPONENTS WANTED

In any condition. Also top prices for: ARC-1, ARC-3, APR-1, APR-5A, etc.; TS-34 and other "TS-" and standard Lab Test equipment, especially for the MICROWAVE REGION; ART-13, BC-348, BC-221, LAE, LAF, LAG, and other quality Surplus equipment; also quantity Spares, tubes, plugs and cable.

ENGINEERING ASSOCIATES
434 Patterson Road — **Dayton 9, Ohio**

"Buy an Xmas Gift for Yourself"

Communications Receivers

Complete Kit **. . . CONTAINS ALL COMPONENTS**

"This kit is complete with every part necessary to assemble into a finished receiver, including tubes and cabinet. Chassis is punched and marked. Mount the parts, wire it, align it and you have a fine receiver of commercial appearance, that can't be beat for 3 or 4 times the price. Parts, layout, schematic diagram and alignment instructions are supplied.

59.50 KIT PRICE EACH

FEATURES:

- 2 Watt P. P. Audio
- Amplified AVC
- Voltage Regulated Oscillator Supply
- Noise Limiter
- Beat Oscillator
- Operates on 105 to 125 Volts AC or DC Power Source
- Air Tuned R.F. Trimmers
- 2-stage Permeability Tuned 455 KC I.F. plus Crystal Filter
- Phone Jack-Built-in Stand-by Relay
- Frequency Range 200 KC to 400 KC and 490 KC to 18 MC in Six Bands
- 40:1 Geared Ratio Dial Drive
- 11 Tubes plus Selenium Rectifier
- 6SG7 RF AMP.
- 6SB7Y Mixer
- 2—6SG7 I.F.
- 6H6 2nd Det & N. L.
- 6SF7 AVC AMP.
- 6SL7 BFO & 1st Audio
- 6SL7 Phase Inverter
- P. P. 25L6GT Audio
- VR-75 Voltage Regulator
- Full Vision Calibrated Dial
- Cabinet 19 ½" long x 10 ½" high x 12 ½" deep
- Front panel silk screened to identify each control
- Finished in fine grain black wrinkle
- Shpg weight 45 lbs.

ORDER TODAY!
Terms: 25% Deposit with order. Balance C.O.D. Shipped express only. F.O.B. Chicago and subject to change without notice.

FRONT PANEL CONTROLS

- Tuning
- R.F. Gain
- Audio Gain
- BFO-AVC Switch
- BFO Pitch
- Power On-Off
- Stand-by
- Noise Limiter On-Off and Control
- Antenna Trimmer
- Crystal Filter On-Off
- Crystal Phasing
- Selectivity
- Band Change Switch
- Calibrated Dial Face

RADIO AND TELEVISION SUPPLIES

BOULEVARD ELECTRONICS, INC.

808–10 W. Jackson Boulevard, Chicago 7, Illinois
DE-2-4458

recently appointed ARRL Section Emergency Coördinator for the San Joaquin Valley. . . . Amateur radio stations K6USN (Treasure Island), K6NRM (Modesto), K6NCE (Kingsburg), K6NAD (Chico), K6NCD (Auburn) Calif., and others maintain schedules on 3854 kc. (A3) at 1400 PST, Mondays through Thursdays. All stationkeepers in the Twelfth Naval District who are licensed amateur operators are invited to join these schedules. . . . Naval Reserve Electronics Division 4–1 of Chillicothe, Ohio, now signs the amateur call K8NAV and is operated by Don Gallagher, RMC, USNR (W8NTL), stationkeeper, who is very active in amateur radio activities in the Chillicothe area.

—•••—

During the month of August the Sixth Naval District Reserve Master Control Station (K4USN) and the Naval Reserve Training Center (K4NAM), Wilmington, N. C., used amateur radio to reëstablish communications on naval frequencies while preparing to furnish emergency communications during recent local hurricanes.

M.A.R.S.

Age Requirement for MARS Lowered to Sixteen Years

The Army and Air Force have announced that the age requirement for membership in the Military Affiliate Radio System has been reduced to 16 years. Formerly, applicants who did not have officially recognized military status were required to be 21 years of age.

The new age limit became effective November 26, 1953, and was timed to coincide with the Fifth Anniversary of MARS operation.

The lowered age requirement will benefit many of the younger amateurs who are liable for military service under current selective service and military training laws. MARS training will teach the "how" and "why" of military radio operational methods and procedures. Younger amateurs, especially Novices, will be encouraged through participation in MARS activities to continue active in amateur radio work.

Operation for MARS Novices will continue to be limited to the frequencies 3497.5 and 6997.5 kc. A maximum power of 75 watts to the final stage of the transmitter is allowable. Operation will be crystal-controlled A1 emission.

MARS Technicians may use only the frequency 3497.5 kc. Operational limitations otherwise are the same as for MARS Novices. General Class and higher amateurs will continue to receive MARS privileges as at present.

Amateurs interested in MARS may request information about the Army and Air Force programs by writing to:

Chief, MARS (Army), Room BE-1000, The Pentagon, Washington 25, D. C.; or MARS Command Director, Continental Air Command, Mitchell Air Force Base, New York.

Membership in *both* Army and Air Force MARS programs is not permitted except in unusual circumstances.

Correspondence

(Continued from page 56)

NATCH

Post Box 1443
Sao Paulo, Brazil

Editor, *QST:*

With reference to the notice about PY2CK published on page 52 of your July, 1953, issue, I should esteem it a great favour, if you would kindly inform me about the meaning of the word "booboo." I have consulted several dictionaries without finding that word. Upon consulting American friends, I was informed that they did not know its meaning but that it must be a modern slang word. Protesting vehemently, I said that the *QST* was more a technical magazine than one from which to learn slang. Besides the *QST* is not only read in the U. S. A. but all over the world and it can hardly be expected that everybody knows words such as "booboo" which even Americans living abroad do not know.

— *Jan J. Roos, PY2JU*

LET'S GO LINEAR

P. O. Box 302
Siloam Springs, Ark.

Editor, *QST:*

Since I have written you letters at various times regarding the TVI situation as far as I was concerned here in a fringe area — with Channel 6 — I thought the following might be of interest. I recently purchased a s.s.b. exciter, built up an 813 final and have been operating s.s.b. on 20 and 75 for about a month, running 400 watts with a TV set in next room and both 20- and 75-meter antennas close to TV antenna with not a trace of TVI on TV set — no filter on TV set — with final not particularly shielded. It's a ham's answer to a prayer as far as I'm concerned. . . . I think there should be more in *QST* about the fact that you can operate — with considerable power — and have no TVI, when running amp. class B on s.s.b. . . .

— *John L. Stockton, W5DRW*

[EDITOR'S NOTE: You can also run a Class-B linear output amplifier with a.m. and, all other things being equal, enjoy the same freedom from TVI. With a.m., however, a kilowatt input to the linear will only result in a 300- or 350-watt carrier at the most, in contrast to the 600- to 700-watt carrier obtained with a kilowatt input to a plate-modulated Class-C amplifier. It is this reduction in efficiency with *carrier-type* transmissions that has discouraged such use in amateur circles. You can gain a little by using *controlled-carrier* or *double-sideband reduced-carrier* to drive the linear amplifier, but s.s.b. is much more effective than either.]

Hints & Kinks

(Continued from page 57)

NEGATIVE-PEAK MODULATION INDICATOR

HERE is an extremely simple modulation indicator that uses only three resistors and a neon bulb. The circuit makes use of the fact that only one element of a neon bulb will light up on d.c.; if the polarity of the starting voltage is reversed, the other element will light up (the first one goes out). When connected to a transmitter as shown, one element of the bulb is made approximately 60 volts positive with respect to ground by connecting it to a voltage divider, R_2 and R_3. The second element of the bulb is returned to the r.f. amplifier side of the modulation transformer through a series resistor and is normally maintained at a higher voltage than the element which is returned to the divider. However, during the process of modulation, the nega-

(Continued on page 148)

tive peaks will reverse the d.c. polarity across the bulb, thus causing the dark element to flash.

The values shown in Fig. 3 are suitable for low- and high-voltage supplies of 300 and 500 volts, respectively. Additional resistors (½-megohm, 1-watt) should be connected in series with R_1 if the amplifier plate voltage exceeds 500 volts

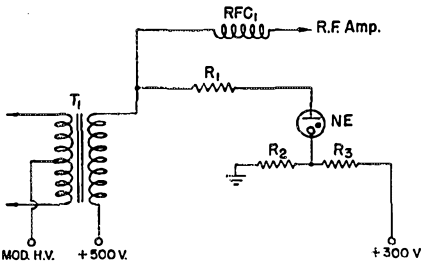


Fig. 3 — Circuit of the negative peak modulation indicator.
R_1 — 0.5 megohm, 1 watt; for 500-volt supply.
R_2 — 20,000 ohms, ½ watt; see text.
R_3 — 0.15 megohm, 1 watt; see text.
RFC_1 — Final amplifier r.f. choke.
NE — ¼-watt neon bulb.

by any great amount. R_2 and R_3 should have new values if the divider is connected across a source delivering other than 300 volts. If a redesign of the divider is necessary, remember to keep the center point approximately 60 volts above ground. Of course, this point may be set at a slightly higher voltage in order that the bulb can be made to flash just before overmodulation occurs.

Incidentally, the Type NE-51 neon bulb is not particularly well suited for this application because the lighted element makes it difficult to see the dark element flash. In any event, make sure that the bulb is mounted with the dark element exposed to view. — *William E. Rose, jr., W9KLR*

CATHODE-FOLLOWER ISOLATION STAGE

THE following information received from VE3DKG should be of interest to many *QST* readers and is passed along for their benefit.

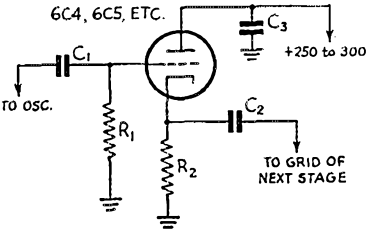


Fig. 4 — Circuit diagram of the cathode-follower isolation stage.
C_1, C_2 — 100 μμf. R_1 — 50,000 ohms.
C_3 — 0.001 μf. R_2 — 1500 ohms.

While working with a transmitter consisting of a 6C4 Clapp oscillator, two 6F6 intermediate stages and a final amplifier, it was discovered that the oscillator keyed well only when disconnected from the rest of the line-up. Furthermore, when the complete line-up was in use, the oscilla-

(Continued on page 160)

tor frequency was shifted as much as 1 kc. whenever the final was tuned through resonance. Inasmuch as a careful check showed the intermediate stage to be working properly, it looked like a clear case of oscillator loading and inadequate isolation.

Both problems were cured by using a cathode follower circuit, shown in Fig. 4, immediately after the oscillator stage. The oscillator can now be keyed without chirp and amplifier tuning has no detectable effect on oscillator stability. It would seem that the input circuit of the cathode follower presents a load of nearly infinite impedance to the oscillator and that Miller effect has been overcome by use of the arrangement.

— *A. R. Williams, VE3BSH*

SIMPLE V.T. KEYER CIRCUIT

THE v.t. keyer shown in Fig. 5 is used here at W5DF to key the buffer stage of a push-pull 807 rig. The circuit introduces a new angle in the v.t. keyer arrangement, in using the same bias source for both the keyed stage and the amplifier stage.

A 45-volt battery is used as the bias source for the Type 6V6 keyer tube and for the 807 out-

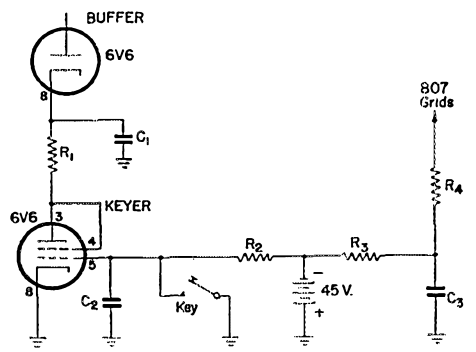


Fig. 5 — Circuit diagram of W5DF's v.t. keyer.
C_1 — 0.001 μf.
C_2 — 50 μμf.
C_3 — 0.005 μf.
R_1 — 1000 ohms, 5 watts.
R_2 — 10,000 ohms, ½ watt.
R_3 — 5000 ohms, 1 watt.
R_4 — 100 ohms, ½ watt.

put amplifier. R_3 and R_4 are the grid-leak and decoupling resistors for the amplifier grid circuit and R_2 prevents a short circuit across the battery when the key is closed. Although R_2 has a resistance of only 10,000 ohms, it does not load the battery appreciably because the current through this branch of the circuit is nearly balanced by the amplifier grid current. Even a half-dead battery with high internal resistance does not show much change of voltage when the circuit is keyed and, as a result, a block of this type may be used as long as it still delivers approximately 45 volts — enough to cut off the 6V6. C_2 is an r.f. by-pass for the grid of the keyer tube.

— *A. D. Mayo, W5DF*

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) Remittance in full must accompany copy. No cash or contract discount or agency commission will be allowed.

(5) Closing date for Ham-Ads is the 25th of the second month preceding publication date.

(6) A special rate of 7¢ per word will apply to advertising which, in our judgment, is obviously non-commercial in nature and is placed and signed by a member of the American Radio Relay League. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, if by a member of the American Radio Relay League take the 7¢ rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising by him takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) Because error is more easily avoided, it is requested signature and address be printed plainly.

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 719 World Bldg., New York City.

MOTOROLA used communication equipment bought and sold. W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

SUBSCRIPTIONS. Radio publications. Latest Call Books, $3.50. Mrs. Earl Mead, Huntley, Montana.

QSL's-SWL's Meade WØKXL, 1507 Central Avenue, Kansas City, Kans.

QSLS, SWLS. Samples, 10¢. C. Fritz, 1213 Briargate, Joliet, Ill.

WANTED: Cash or trade, fixed frequency receivers 28-42 Mc. W9VIY, Troy, Ill.

QSLS, SWLS. High quality. Reasonable prices. Free samples. Write to Bob Teachout, W1FSV, Box Q124, Rutland, Vermont.

WANTED: All types of aircraft radios, receivers and transmitters. Absolutely top prices. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

QSL samples. Dime, refunded. Roy Gale, W1BD, Waterford, Conn.

QSLS-SWLS, as low as $1.50 per color. Samples dime. Stronberg, P.O. Box 151, Highland Station, Springfield, Mass.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSL's, SWL's. Fair prices for excellent quality cards. Eleven styles for you to choose from. Samples, 10¢. Almar Printing Service, 602 Barker Bldg., Omaha, Nebraska.

CODE Slow? Just the help you need in psychological aids booklet. Two dollars postpaid. Inquiries invited. Donald H. Rogers, 41 Fourth St., Fanwood, N. J.

ATTENTION Bargain hunters! Dozens of real trade-in values including Collins, Vikings, Nationals, Hallicrafters, Elmac, Gonset, RME, Morrow, Harvey-Wells. Write for free bargain bulletin. Complete stocks, all leading brands. We trade and sell on time. Burghardt Radio Supply, Watertown, South Dakota.

WANT *QST*'s older than 1920. Have 200 copies from 1932 to 1953 at 25¢ each. WØMCX Jablonsky, 1022 No. Rock Hill Road, Rock Hill 19, Mo.

DELUXE QSLS. Petty, W2HAZ, 17 Southard, Trenton, N. J. Samples 10¢.

QSLS-SWLS, samples, 10¢. Malgo Press, 1937 Glendale Avenue, Toledo 14, Ohio.

DON'T Fail! Check yourself with a time-tested Surecheck Test. Novice, $1.50; General, $1.75; Amateur Extra, $2.00. Amateur Radio Supply, 1013 Seventh Avenue, Worthington, Minn.

QSLS. Something new, something different, samples free. CPS, Bladensburg, Md.

CALL Letters: 25 cents a set. Dress up your rig, car, etc. For samples, write to Robert Connick, Nickcon, P.O. Box 272, Cincinnati 1, Ohio.

WANTED: Bargains in transmitters, receivers, laboratory and test equipment, power supplies, miscellaneous gear and parts. What have you? Please state price desired. Harold Schonwald, W5ZZ, 718 N. Broadway, Oklahoma City, Okla.

QSLS! We've printed a million. Hams all over the world use our QSLs. Samples 10¢, refunded. VVS Print, 1704 Hale, Ft. Wayne, Ind.

QSLS. Taprint, 205 South, Union, Miss.

RT34/APS-13 UHF transceiver. Complete 420 Mc. transmitter/receiver with RF heads, 5 stages of 30 Mc IF, in excellent condition, less tubes and dynamotor, with circuit diagram, $6.95. 420 Mc. coil assembly, 49¢. $2.00 minimum order. APS-13 spare parts prices on request. Kennedy Associates, 2618 Rigsby Avenue, San Antonio, Texas.

QSLS-SWLS. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore 29, Md.

QSLS? SWLS? America's finest and largest variety, super-gloss QSLS! Samples, 25¢. Subscriptions, renewals accepted to both ham magazines. W8DED, Sakkers, Ham Print Shop, 53 E. 7th St., Holland, Michigan.

TV set, 10 in. and 12 in., excellent condition, also Webster wire recorder and Ampro tape recorder, like new. Sell any or all, cheap or swap for good camera. W2FUB, S. Cohn, 84-20 126th St., Kew Gardens 15, L. I., N. Y.

THE Perfect Gift! For your radio shack. Large (8 inches in diameter) practical ceramic ashtray with your call-letters, hand-lettered on center island. Colors, mahogany or green. Price $3.00. Send money order or check along with name, address and call-letters to Carl Bozenski, New England Ceramics, Inc., Torrington, Conn.

NATIONAL 101X receiver, $60. 7" TV, $30, 10", $40.00. Want SSB exciter. W4API, 1420 South Randolph, Arlington, Va.

SELL new 1625 tubes, same as 807 with 12-volt filament. 97¢ each, plus 3¢ postage. W7TBE, 318 W. Galer, Seattle, Washington.

FREE List! New and reconditioned receivers, transmitters, etc. A hundred big bargains every month. Highest trade-in allowance. Fast four-hour shipping service. Special Novice department. Write us today. Dossett, W9BHV, 855 Burlington, Frankfort, Indiana.

SURPLUS Specials! RG-8/U cable, 225 ft., $12.25; RG-59/U cable, 250 ft., $15.00; coaxial connectors PL-259, 5 for $2.25; SO-239 5 for $2.00; manuals for SCR-522; BC-610, BC-779, BC-348 J, N, Q, $1.00 each (plus postage); new tubes 1619, 1625, 1626, 1629, 6 for $1.80; 813, $10.50; 866A, $1.48. Postage extra. Request our Free Bulletin. Lectronic Research, 719 Arch St., Philadelphia 6, Penna.

SELL complete fixed station. Going mobile. Viking II, Viking VFO, LP-7 filter, HQ-129-X. Also VOM, grid-dipper, miscellaneous surplus and other gear. K2BTR, Barney Rawlings, 467 Chestnut Lane, East Meadow, L. I., N. Y. Telephone Hempstead 7-3175.

TRADE: Remington sportsman 12 ga. automatic shotgun with poly choke (never fired) for Elmac A54. W6QWJ.

WANTED: 10/20 rotator, Johnson, Amphenol, Workshop or Gordon. W8LLX, Terrace Park, Ohio.

FOR Sale: complete 1 Kw xmitter, built to commercial standards in closed rack. Remote Collins 310B-1 drives pp 813's. Coils for 80, 20 and 10. D-104 mike, self-contained speech amplifier and self-contained pp 805's modulator. Best cash offer as unit. Taggart, W9DGM, 1636 S. Biltmore St., Indianapolis 1, Ind.

WANTED: Cash for HF 10-20 or VHF 152A. M. Weinberg, W2YYL, 987 E. 178th St., New York 60, N. Y.

COLLINS 75A2, $375.00; 32V2, $525.00; new condition; BC-474A, $50.00; BC-348, $80; BC-221, $70. QST binders $1.25. F.o.b. W1THM. Brizzolari, Dunbarton, N. H. R.F.D. 2.

FOR Sale: Two HT9's in perfect condition with coils, xtals, low band pass filters and extra 814 final tube. The two for $250.00 or $150.00 each. Moving to smaller quarters. W2PFY, Adams, 9121 81st St., Woodhaven 21, L. I., N. Y.

SONAR 2-mtr receiver and transmitter, excellent condition, $90.00. SW-54, used 8 hours, $29.00; Leica G to trade towards Collins receiver. Rosencrans, W2HQH, 644 Wildwood Road, W. Hempstead, N. Y.

SELL: New Meissner Signal Shifter, new Bud 47" steel cabinet, pr. 811 modulators, pr. 866 pwr supp., same chassis, 1500 VDC pwr supp, separate chassis, all parts for 813 all-band final, all tubes included. Valued $319.00. Best offer over $100 takes it. WØLZI/5, 249 E. Egan, Shreveport, La.

MUST sacrifice: Hi power deluxe all-band 'phone/c.w. station, input power in steps from 150 to 2500 watts, P.P. 304 TLs in the final amp., 813 driver, P.P. 250 THs mod., 5 meters, 5 power supplies, final supply adjustable in 4 steps up to 3000 volts D.C. at 1.2 amps c.c.s. Less speech amp and VFO. Any reasonable offer will be considered. Also 150 watt 75-meter 'phone xmitter for $95.00; 1000 watt G-E modulation xformr, ratio 2.4 to 1, $40.00; Gonset 2-meter communicator, like new, in the carton, $185.00; RCP signal generator, 5 bands, 100 KC to 50 Mc $20.00. W6UVF, Black, 839 N. June St., Hollywood, L.A. 38, Calif.

HRO 50 T, speaker, coils, A, B, C, D, $259.00; calibrator, NBFM adapter, BC and AA coils available; following all new, BC-645, $15.00; BC-453, $20.00; Amertran, 110/220 pri. 2500 v.c.t. sec. at 350 Ma., $15. 110/6200 v.c.t. at 700 Ma., $45.00; 832A, $6.00; 813, $7.50; 815, $3.00; hi pwr chokes, fil and other xformers. Wait Morrison, W2CXY, 383 N. Grove St., East Orange, N. J.

HARVEY-WELLS Deluxe TBS50D and APS50 power supply, new, pick up for $100.00. W2NZG, J. P. Wood, 97 Forrest Ave., Hawthorne, N. J. HA 7-3893.

SELSYNS or synchros wanted: Navy or Army ordnance 60 cycle types. Will pay $35.00 each for 1DG, 1DF, 1CT, 1G, 1F; $25.00 each for 5DG, 5G, 5F, 5CT; $20.00 each for 5D, 6G, 6CT, 6DG, or sizes 7. Subject to inspection. Other types advise. Also want: Autosyns, Servo Control motors, PM motors, inverters, tubes and other electronic components. Electro Sales Co., Inc., 50-58 Eastern Ave., Dept. Q, Boston 13, Mass.

SELLING out surplus equipment. ½ kilowatt final 100TH; B&W Butterfly tank; B&W coils, vacuum cond, 20 watt, AM/CW xmitter, many other items. Write for list. Will trade for photo equipment. W9ZKD, Robinson, 2912 Holmes St., Springfield, Ill.

FOR Sale: Viking II, latest model, commercial wired. Used less than 10 hours, $265.00 F.o.b. New Orleans. W5EVR, Batson, #3 Spanish Fort Blvd., N.O., La.

FOR Sale: 1 BC-459 with xtal; 1 BC-946 broadcast rcvr; 1 BC-453 rcvr; 1 BC-221 with factory a.c. pwr supp. with mod. and original charts, r.f. and osc. tuning units and main tuning condenser for BC-342 rcvr. A. M. Bart, W9ITL, 5406 N. Neenah Ave., Chicago 31, Ill.

TRANSMITTER Subraco 75T with 10, 20, 40, and 80 coils, $175.00. Mrs. Ralph L. Buckley, West Scarboro, Maine.

VIKING I completely wired with Viking VFO, Johnson low pass filter, coax relay and xtal mike. Will sell for $275.00 cash. BC-221 with A.C. supply $65.00 cash. W4RTI, 4215 Cliff Road, Birmingham, Ala.

NEW 2-meter 5-element Yagi beam, $3.00. George Storz, KN6BXS. 6227 S. Noroco, Rivera, Calif.

ART 13 in excellent shape; no dynamotor. Best offer or what have you to trade? RME 55 converter, $50.00. Used 1 week. New 304 TL, $4.00. Want Panadapter. "Larry", 2312 You St., Sacramento, Calif.

AMECO Senior code course, almost brand new, $9.00. 6–18 w.p.m. W9TRK, Rubel, 1964 Sheridan Road, Highland Park, Ill.

SELL pair Eimac 250TH and sockets. Used less than 100 hours. Pair 20 amp filament transformers, $40.00. National MB40SC, $6.00. Victor E. Chamberlain, W9BBC, 1500 Thompson Avenue, Evansville, Ind.

QST 20 volumes, 1924 thru 1943 in ARRL binders. $90.00 express collect, or will trade for Harvey-Wells xmitter. Art Stansfield, W1QD, 31 Gayland Road, Needham 92, Mass.

SALE: Wire recorder-record player. Will transmit to radio without connecting wires. Two one-hour spools, microphone. In excellent condition, $45.00. Gerdes, W5NUN, Tucumcari, New Mexico.

W5ATQ is selling out. Kilowatt and low power components. Send self-addressed stamped envelope for list. Childers, 1322 Eastus Drive, Dallas 8, Texas.

SWAP only. Any 15 copies of *QST* 1917 to 1921 for March and May 1916 issues. Have 100 copies *QST* 1933 to 1946 at 25¢ each. Jablonsky, W9MCX, 1022 N. Rockhill Road, Rock Hill 19, Mo.

DUMONT 'scope, Model 164; BC-458 unconverted, new; Master Mobile Mount antenna, Model 132 w/8' steel whip, brand new; '49 Merc radio; 12 volt SC-5749A dynamotor 500/275 volts, output at 50/110 Ma. Will sell all or part to best offer. Shipped prepaid in U.S. Socol, W2RUK, 3½ Hulbert St., Auburn, N. Y.

MICHIGAN Ham! Amateur supplies. Store hours 0800 to 1800 Monday through Saturday. Purchase Radio Supply, 605 Church St., Ann Arbor, Michigan. Phones 8696 and 8262. Roy J. Purchase, W8RP-Leroy Reichenberger, W8LJD-Edmund E. Gunther, Jr., W8HMW.

VAN SICKLE has Eldico, Sonar, National, Hallicrafters, Hammarlund, Elmac, Gonset and Johnson-Viking in stock at lowest prices. "Gene", W9KJF, Van Sickle Radio Supply, 1320 Calhoun, Ft. Wayne 2, Ind.

WANTED: BC-348 receiver and parts. Write to James S. Spivey Co., 1406 "G" St., N.W. Washington 5, D.C.

BIRTH Announcements, ham-styled. 25 for $1.00. Carl Narvestad, Granite Falls, Minn.

POSTCARD brings you free information on our new Amateur Desk Signs and money-saving club purchase plan. Hawkins Distributing Co., Paquatuck Terr., East Moriches, N. Y.

PUSH-Pull HK-54 final, B&W butterfly tank, with tubes, $30.00; Millen 6L6-807 exciter, $20.00; 811-A class B modulator, UTC Varimatch output, Weston meter, $25.00; 1250 volt 250 ma. power supply, $20.00; Bell 10 watt amplifier, 2 mike, 1 phono input, $20.00. R. W. Emott, W2AI, East Madison Ave., Florham Park, N. J.

MOBILE Ham! Use Police Special Vita Plate battery. Lasts six times longer. Write for data. Give car and year. General Communications, Inc., 1420 E. 25th St., Cleveland 14, Ohio.

FOR Sale: Novice 7 mc. portable xmitter, complete and compact: $15.00. Marriner, W6BLZ, 528 Colima St., La Jolla, Calif.

FOR Sale: Heathkit GDO in excell. condx, complete, $15.00, ant. rotator, sturdy, will hold any bm w/control box, less indicator, $15.00. Talamian, W2UUQ, 108 Westminster St., Hyde Park 36, Mass.

SELL converted Meissner 150-B 300 watt, ten thru eighty meters, AM/FM 'phone/c.w. xmitter. New modulation xformer, xtal mike, etc. With Model EX Signal Shifter, all coils, tubes and spare 813,811 complete, $195.00. Charles Walcott, W1SYV, 81 Sparks St., Cambridge 38, Mass.

WILL trade for Johnson Viking or sell for cash. Kay Electric Co. Mega-Sweep, jr. In new condition. Sweeps up to 1000 megacycles and will give sweep widths up to 30 megacycles. George C. Boles, 315 51st St., Brooklyn 20, N. Y.

SELL: One Sky Buddy, S19R, in excellent condition, $30.00. Glenn F. Markley, W8VLB, R.F.D. #4, Mansfield, Ohio.

WANTED: Complete file of *QST*, January 1946 to October 1953. Must be complete and in perfect condition. W5QMI, 3518 Hidalgo, Dallas 20, Texas.

FOR Sale: Stancor 60N transmitter. All coils, tubes; operating condition. Best offer over $35.00. Express collect. W2QNI, Lindstrom, 86 Steele Ave., S.I., 6, N. Y.

TOP cash for your HQ-129X. Electronic Labs, 2444 "D", Lincoln, Nebraska.

MOBILEERS! CD Men! New PE-101C Dynamotor converts easily to mobile supply unit: output (with 6VDC input): 160V at 110 Ma, plus 300V at 90 Ma. Output (with 12 VDC input): 610V at 150 Ma plus 325V at 125 Ma. Brand new PE-101-C, complete with conversion data: $3.75. Send money order or check. Pay shipping charges on delivery. "Communications", 131 Liberty St., New York 7, N. Y.

TRADE: Two Eimac 50T's, new, unused (max. output 250 watts each) for one R.F. milliammeter (about 100 mills) or one each D.C. 100 and 200 mills. Make an offer. M. Tanenbaum, W2AQ, 1535 East 8th St., Brooklyn 30, N. Y.

RECORDINGHAMS: Join world-wide tape club. Swap tapes and make friends everywhere. Details free. P.O. Box 1404-b, San Francisco, Calif.

CAUTION! Before you act, send for our list of good used items. Antenna, Inc., Box 149, Wakefield, R. I.

SELL: HT-9 xmitter, 130W fone, 150W c.w. Coils: 20, 40, 80. In excellent condition. Make reasonable offer. Cash and carry deal. D'Onofrio, 1537 Central Ave., Yonkers, N. Y.

FOR Sale: Harvey-Wells TBS50-C Bandmaster Senior with APS 50 power supply. In excellent condition. Will sell both for $125.00. Arthur R. Rauch, W4CAZ, c/o MARS Radio Station, K4WAR, Camp Gordon, Ga.

WANT: AN/ARC-1's, AN/ARC-3's, BC-610E's and components. Write to B. Spivey, 7013 Rolling Road, Chevy Chase, Md.

WANTED: Used receiver, good condition, for East African ham. SX-71, NC-173, NC-183, NC-125, S-76, NC-240-2 or RME-45. George Brown, W8VET, 7001 Bancroft St., Toledo, Ohio.

SELL or trade: BC-610 transmitter (HT-4B), $325; 32V-3, $695; #21A tape printer, $49.00; 7-B tape transmitter, $25.00; #12 Page printer, $60.00; 75A-1 with speaker, $260.00; LM frequency meter, $65.00. Want: BC-939, BC-614-E, technical manuals, SIG-5 catalogs. Tom Howard, W1AFN, 46 Mt. Vernon St., Boston 8, Mass. Richmond 2-0916.

BARGAINS: MD-7/ARC-5 modulators, $5.95; RT-19/ARC-4 transceivers (2 meters) with xtals, $39.50; T-30 throat mikes, 69¢; screen mod. xfrmer BC456, 95¢; ARC-5 plugs, #5842, 35¢; #5577, 35¢; PL-154, 70¢; PL154A, 70¢; #7027, 45¢; #7025, 45¢; PL 152, 65¢; C-30/ARC-5 control boxes, $1.65; BC 433-G compass, used, excellent, $32.50. Circuit breakers: 500 Ma at 1000 UDC, $2.25; 10 Ma. insulated for 5000 V., $1.95. Many other items. Send M.O. or check. Shipping charges C.O.D. World Wide, 88 Cortlandt St., New York 7, N. Y.

SUPREME AF100 transmitter, 150 watts on 8010 meters. TVI proof, VFO, spare final tube, and in top condition. $200. With complete information on changes, also Hallicrafters SX71 receiver, $160.00. In top condition. David Donath, W6JPM, P.O. Box 161, Fallbrook, Calif.

WANTED: AN/ART-13 transmitter and/or parts. Robert Wegelin. 410 Cedar Street, NW, Washington, D. C.

NEED: BC-348 radio receiver. Hoffman, 1406 G Street, N.W., Washington, D. C.

REGULAR or Jumbo aluminum call signs, day or night reflecting letters. Overnight service. $1.50. J. Whitley, W2LPG, 133 Airsdale Ave., Long Branch, N. J.

SALE: QST Dec. 1930 to present, almost solid run. Best offer. A. Denson, Box 122, Rockville, Conn.

1 full KW transmitter. Pp 4-250A, complete with speech, modulator and power supplies. All you need is the antenna. TVIproofed. 32V2 used for exciter and standby 100 watt transmitter. Price: $1250.00. C. Jones, W9ILH, 606 E. 8th St., Alton, Ill.

FOR Sale: Lampkin 105 frequency meter. Excellent condition. $100. Walter N. McPherson, W8ZKF, 551 S. River St., Newcomerstown, Ohio.

REAL Bargains! New and reconditioned Collins, Hallicrafters, National, Hammarlund, Johnson, Elmac, Gonset, Babcock, Morrow, Harvey-Wells, RME, Millen, Lysco, others. Reconditioned S38, $29.00; S38C, $35.00; S40A, $69.00; S40B, $79.00; S27, $79.00; S76, $129.00; NC125, $129.00; NC173, $149.00; NC183, $199.00; NC183D, $299.00; VHF152A, $49.00; Meissner bandswitching VFO, $49.00; HQ129X, SX71, SX24, SX25, SX71, HRO50T1, HRO60, HRO Sr., 32V2, 32V3, HT9, Vikings, many others. Shipped on approval. Terms. Write for our free list. Henry Radio, Butler, Mo.

BARGAINS: Extra Special: Motorola P-69-12 mobile receivers, $19.50; 32V1, $395.00; Globe King, $299.00; HT-9, $199.00; Supreme AF100 or Temco 75GA, $225.00; HRO-50, $275.00; 75A1, $250.00; SX-71, $169.00; S-76, $149.00; SX-42, $189.00; SX-43, $129.00; HRO Senior, $99.00; RME 2–11, $99.50; RME-45, $99.00; EX Shifter, $69.00; S-40A, $75.00; SX-16, $69.50; VHF-152, $49.00; HF 10–20, $59.00; Globe Trotter, $69.50; MB611 Mobile Transmitters, $14.95; 90800 exciter, $22.50; DM-36-10 meter verter, $19.50; XR-10, $14.95; Gonset 10–11 converter, $14.95; and many others. We need used receivers: we give highest allowances for S-20R; S-40A, B; NC-57, NC-100; NC-125; SX-24; SX-25; HQ-129X and similar receivers. Free trial. Terms financed by Leo, W9GFQ. Write for catalog and best deal to World Radio Laboratories, Inc., Council Bluffs, Iowa.

SELL: Instructograph (for radio or Morse), manual, 10 Morse records, $15.00. Johnson 500 watt coils, links, 100ED30 condenser, Millen 12515 condenser, prices upon application. Ross Moorhead, Route One, Findlay, Ohio.

FOR Sale: Raytheon plate transformer 735 volts at 1200 mils or use bridge rectifier for 1470 volts at 600 mils. $17.50. W1TJK, La Har, 305 Percival Ave., Kensington, Conn.

WANTED: Base station, two mobile units to work industrial service, surplus converted okay if quality job and pass FCC. O. E. Salley, Clover Hill Lab, Lyon, Miss.

QSLS! QSLS! Wide variety! High quality! Fast delivery! Samples, 10¢. Tooker Press, Box T, Lakehurst, N. J.

VIKING owners! Are you interested in remote control with push-to-talk and receiver quieting circuit? We can do this for you; send for special bulletin. We can also incorporate above features in new orders for Viking II wired and tested. We can also supply these transmitters with a 4D32 final, or modify yours; write for details to Carl, W1BFT, Evans Radio, Concord, N. H.

HALLICRAFTERS 340B, $75, Heathkit 0–7 'scope, $35.00; Columbus Electronics HFC101 10-meter converter, $25.00; RCA M17814 10-meter mobile transmitter, $20.00; ARC-5 transmitter 75 meters converted for mobile use, 6BQ6 final 6N7 modulator 12AU7 speech amplifier, $20.00. Joseph Hargrove, 101 Mashnee Village, Buzzards Bay, Mass.

SELL: VHF 152H, $50.00; 4D32, $12.00, both guaranteed. Roy Sawdey, Harper Road, Solon, Ohio.

MAKE offer on '53 HQ129X. Cost $239.00. In excellent condition. W4VRF, 731 West Jordan, Pensacola, Fla.

WANTED: Good TVI-proof plate modulated xmitter, 100 watts with power supply, give description and price in first letter. William L. Casteel, W8LTO, Terra Alta, W. Va.

10, 15 and 20 meter beams, aluminum tubing, etc. Perforated aluminum sheet for shielding. Radcliff's, 1720 North Countyline St., Fostoria, Ohio.

"DX Log of Awards", the information you have been looking for. Contains the official rules for more than 30 awards with check lists to record your progress. DXCC covers nine pages alone on 8½ x 11 pages. Only one non-DX award, WAS. Contains also postal data, countries cross-index, list of banned countries and other valuable information. The prepaid price to any country only one dollar, U. S. funds. Write for price if to be sent by Air Mail. Ed. Frierson, W4RKJ, Hobby Publishing Co., Easley, S. C.

QSLS. Samples free. Albertson, W4HUD, Box 322, High Point, N. C.

NC 46 receiver, completely serviced and aligned, with speaker, $60.00. Leo Liebl, Medford, Wis.

FOR Sale: Meck T-60 in perfect condition, with coils for 75 and 10, $75.00. F.o.b. Sundown, Texas. Clark, W5UWQ, Box 186.

COMPLETE Station: transmitter on casters, final pushpull 813's, mod. 100THs, VFO, REC. BC348Q, Co-ax, ant., spares, plenty of extras. Everything goes. Best offer. List from S. H. Pearsall, Springvalley Road, Donelson, Tenn.

300 watt 813 final 'phone and c.w. 80–40–20 completely band-switching with silent VFO and broadband doublers enclosed in 19 in. cabinet, completely self-contained for table-top operation with only three variable controls. Best offer over $200.00; also 2000 volt Kw power supply with two 1-amp. chokes and 8μfd filter in 6 ft. telephone type rack with plenty of space above for high powered final on dolly, $100 or best offer. Pick up at 65 Emerson Ave., Pittsfield, Mass. Clayton C. Gordon, W1HRC.

NOVICE Station, complete, commercial receiver transmitter, low pass filter, 50 watts, 40–80, $100.00. W2AEV, 14 Carol Road, Bethpage, L. I., N. Y.

HAMMARLUND Super Pro with 12 speaker & power supply, in gud condx, $125.00; new power supply for Super Pro, $20.00; Sky Champion w/squelch, good shape, $50.00; S-38-W Hallicrafters, good shape, $22.50; New VHF-152-A, $50.00; H.F. 10–20, as new, $40.00; 2500 v. 1500 mil. power transformer, $15.00; 5-304T1, $4.00 each; 4-304TL Johnston sockets, $3.00 for all; 1 pair Johnston N-cond, 125, pair $4.00; 1 pair Johnston N-cond, 250, pair $4.00; 2-BC-683-B receivers, 12vdc-110vdc, 27 to 39 meg, F.M. 2-684 xmitters; 1-12vdc 1-110 VAC rec., $15.00; trans. $15.00 each, all in gud condx. M. Chambless, W5PAR, Box 1648, McAllen, Texas.

UTC 5v fil. transformer 22 amps 5000 wv $4.00; fil transformer 7.5v ct 15 amp; UTC power transformer 3500-3000-3500-0 c.t. $49.00, 1 amp; BC-375, 7 tuning units, Dynamotor, tubes, cables and plugs ant. tuning unit, $40.00; modulation transformer 500 watt multi-imped. c.t., pri. 3500, 4700, 6000, 7000 ohm, $25.00; modulation transformer 175 watt, pri. 6900, 2 T240S or 811s sec. 2850–4500–6000, $6.00; Par-Metal cabinet with a.c. boxes, 72" panel space rack mounts, doors, $38.00. All F.o.b. Louisville, Ky. Chokes, condensers and other parts. Write for complete list: Milt. Berman, W4URG, 1809 Hartman Ave., Louisville, Ky.

QSLS-SWLS. Bartinoski, W1YHD, Box 617, Houlton, Maine.

COLLINS 30K complete, $995.00; BC-223, $40, selsyns G-E, $6.00 pair. Micro ampere meter, $5.00. F.o.b. Dunbarton, N. H., W1THM.

SELL: One BC459, brand new, $17.00; one AC459 VFO with PM and built-in power supply, $30.00; BC455-B, $10.00; BC522, receiver, $10.00 and transmitter, $20.00; Mark II tank radio, $35.00. Very little conversion done to Mark II or BC522. J. Nosbaum, W9BJP, 2540 W. Gunnison St., Chicago 25, Ill.

WANTED: Cabinet for Super Pro (BC-1004-C) receiver, 10¼" high, 19" wide and 15¾" deep. Also will trade Meissner 9–1090 signal shifter and FMX phase modulator for RME VHF-152A or RME HF 10–20 converter. S. Cokas, 1 Acorn St., Lynn, Mass.

UNFORESEEN emergency arose. All new gear for sale. Johnson-Viking II transmitter with VFO both wired. Latest Hammarlund HQ-140-X receiver with speaker. Buyer pays shipping costs. Joseph R. Lebo, W2OEU, 145 West 88th Street, New York 24, N. Y.

RECEIVER SX71, new, never been used, $200.00. Robert C. Dunham, W3ARR, Tudor Lane, R.D. #2, Morrisville, Penna.

EIMAC 4–1000-A, brand new, $50.00. F. Merry, W2DSU, E. Greenbush, N. Y.

PLANNING SSBC? New (surplus) crystals type FT-241-A, 2 and 3 digit channels, matched sets for any published circuit, $1.00 per crystal postpaid. Special service available for Weaver-Brown (Aug. '51 *QST*) lattice set; 8 crystals custom worked to 15 cps or better, $20.00 the set postpaid. Calif. buyers add tax. Orco Products, Box 51, Downey, Calif.

USED Western Electric 2-B rectifier, 220 volt, three phase, 60 cycle, good electrical condition; secondaries: –200 volt bias; two high voltages, 1000–1150 DC, 2500–2900 DC, at 600 Ma. each; 10 volt AC at 31.5 amperes, conservative Western Electric ratings. Bias and high voltages separately fused and metered. Uses seven 249B or 866A rectifiers. Less tubes. Wt. 665 lbs. Size 3'2" x 2'1" x 22". All inquiries answered. Right reserved to reject offers. Best offer over $225.00 takes. Make offers F.O.B. Little Rock, Arkansas. W. Charles Webster, W5WEF, 21 Shannon Drive, Little Rock, Arkansas.

QSLS. High quality, samples 10¢. Dortch, W4DDF, Jocelyn Hollow Rd., Nashville, Tenn.

SUPER PRO BC779, 5.5–20 mc; Gonset 3/30; Stancor 10P xmitter; reasonable, cash or trade. Cannot ship. W2CE, Roosevelt, L. I., N. Y.

WANTED: New PE-103 Dynamotor, Philadelphia area preferred. Joseph Hauss, 2858 N. Fairhill St., Philadelphia 33, Penna.

VIKING II, wired model, Johnson VFO, Baluna, $300. W8DXR, 1511 Woodview, Hamilton, Ohio.

TRADE or sell: BC221AK, $75.00; Philco tube tester, #7050 $30; Heathkit 5" 'scope, $25.00; A.E.I. Signal Generator, #A200 $20; Echophone EC3 receiver with matching speaker, $35.00. Want S76 receiver or equivalent. Frank Reda, WN3WQZ, 6350 Leonard, Philadelphia 49, Penna.

FOR Sale: 40 mtr, K.W. 6 ft. enclosed Par-Metal cabinet, VFX680 exciter 807 driver P.P. 4–250A's final, spare 4–250A. Separate power-supplies, $300.00. John Stass, W1BNV, 12 Seminary, Middlebury, Vermont.

FOR Sale: ART-13, not modified, perfect condition, $175.00; BC-224B converted to 110 V.A.C. $65.00; BC-348Q 110 V.A.C., very hot rec'vr, $75.00; BC-459A, $10.00, 2 BC-645A's, brand new, $25.00 for the pair, RME VHF-152A gud condx, $45.00; RME HF-10-20, like new, $45.00; Millen R-9'er, $15.00; National Co. 1" 'scope, $10.00. Will pack and ship. Wayne Phelps, W5OQK, 26 N. Wynden Drive, Houston 19, Texas.

CODE Slow? Webster-Chicago model 178 wire recorder w/1 hour spool, 5 to 15 wpm, $50.00. National FB-7 receiver with general coverage coils, 4 to 21 Mc and separate bandspread coils for 80, 40 & 20 m; spreads each band over entire dial, very selective, $50. Howard model 430 receiver ,55 to 30 Mc, $10. Modulator w/power supply, 6SJ7, 6J5, 6L6, PP w tubes, $10. L. See, W4WED, 1115 Alleghany Rd., N.A.S., Jacksonville, Fla.

HIYA, OM! If I were going to buy a new receiver, I'd see Uncle Dave, W2APF, at Fort Orange Radio Distributing Co., Albany, N. Y.

FOR Sale: Eldico xmitter and Howard receiver, model 460 $75.00. B. Parisi, Box 1005, Onset, Mass.

WANTED: ART-13 or parts, also fixed frequency receiver mobile or A.C. Must be on or close to 10 meters. Please give price and condition. W9NAT, 617 Monroe, Evansville, Ind.

MEMBERSHIP-Plus-Safety with "Ray-Diant" Scotchlite Bumper signs: "Member A.R.R.L." or "Member I.A.R.U." $1.00 postpaid. Special discounts to clubs for one of these or their own signs. Details on request. Wilton Printing Service, Wilton, Maine.

YOUR Photo on Stamps: stick onto your QSLs. Send any size photo or negative (returned unharmed). Sheet of 100 glossy photographs, perforated, gummed backs, stamp size, $1.50; double size, $3.00. W6MFP, Langevin, P. O. Box 4624, Los Angeles 24, Calif.

FOR Sale: 15 watt 2-meter Motorola transmitter complete with tubes and dual 400V, 150 mil vibrator supply, 6V. input less xtal, $50. each. WØDOA, RFD #1, Box 319, St. Louis 24, Mo.

QSLS. We've printed a million for hams all over the world. VYS Print, 1704 Hale Ave., Ft. Wayne 6, Ind.

WANTED: BC-348-R, BC-342, BC-312, APN-9, BC-610-E, BC-939-A, BC-729, BC-614-E, Collins 32V-2, 32V-1, 75A-1, 310B, ART-13, DY-17, CU-25, CU-32, BC-221, LM, TCS, GN-58, Teletype, AR-88, manuals. Will take any electronic equipment in trade for new amateur equipment. Alltronics, Box 19, Boston 1, Mass. (Richmond 2-0048, 2-0916).

NC-57, new condx, SX-25 and spkr, very gud shape, Galvin RM 29A Bud Codemaster $8.00, Ford Model T generator with base & pulley $10.00; Policalarm 30–50 Mc. radio, $25.00. L. Blum, 2661 Dibblee Ave., Columbus 4, Ohio.

BEST offer takes complete mobile station. Elmac, PE 103, Morrow converter, antenna. Also, Presto K7 recorder $125.00 (New model costs $350.00). NRI course, $10.00. Box 382, Main P.O., Newark, N. J.

RECEIVERS BC455E, 3-GMC, $7.50; BC455B, 6-9MC, $7.50, FT220 rack with plugs, $2.75; FT226 rack with plugs, $2.25; Astatic T3 mike, new condx, $8.00; UTC S21 110 watt Universal modulation transformer, $9.50; UTC 957 2.5V 10A 10000V test filament transformer, $2.75; I 196A signal generator, $4.75; new F15U filter, $2.50; new 803A tubes, $2.50. All F.o.b. North Plainfield, N. J. Joe Harms, 225 Maple Ave.

SELL: RME converter 152A brand new, out of its carton less than 5 hours, $70.00. James Hartshorne, W2RKG, 502 Veterans Place, Ithaca, N. Y.

VIKING II, used very little, with original manuals, $250. Sonar VFO, $20.00; D-104 mike, $10.00; SX-71, $145.00; all above equipment like new in appearance and performance, is only a few months old and has been used very little. I will deliver within 200 miles of Atlanta. Jack D. Patterson, W4YUC, 573 West St., S.E., Atlanta, Ga.

FOR Sale: Collins 32V1, Hallicrafters SX71 and R42, spare 4D32, $500. Will split. W7RAG, 409 Hartford, Richland, Wash.

TOWER, 85 foot triangular, guyed, galvanized steel, 20 ft. sections, excellent condition. Best offer over $125.00. J. Hulme Woodward, W2TDU, New Egypt, N. J.

SELL HQ-129X receiver, has had very limited use and is in perfect condition, $140.00. W. W. Barkdoll, Box 739, Rt. 4, Kenosha, Wisconsin.

TRADE: KW transmitter for late model TV receiver. Oscar Floy, Thornton, Iowa.

RECEIVERS: NC-125, with speaker, $139.50; NC-100A, modernized, $69.50; Scott RCH, $119.50; K-42 speaker, $17.50; 813 tube, not JAN, $9.75; Price antenna relay, 300-ohm, 110 A.C., $7.50. Shipping charges additional. J. T. Maloney, W2BE, 33–63 154th St., Flushing, L. I., N. Y.

COLLINS 32V1, spare final tube, $350.00. Collins 75A2 with calibrator and speaker, $325.00. Elmac PMR6 mobile receiver with 6V power supply, $120.00. Morrow 3BR $35.00. All excellent with instruction manuals. Jones MicroMatch, $20.00. PE-103 $20.00. Frank Shopen, 4466 Bedford, Omaha, Nebr.

FOR Sale: Brand new NC-125, in original carton, $160.00. Robert Champlin, Jr., K2BKX, 131 Bryant Ave., Springfield, N. J.

FOR Sale: S40 receiver, $45.00; S53A receiver, like new, $59.00; BC459A with regulation and power supply, $25.00; express collect. Henry Mohr, W3NCX, 1005 Wyoming St., Allentown, Penna.

LM-18 power supply for sale, best offer. For LM4-18 frequency meters, excellent, used condition with mount, input output plugs and cables. Want RAK-7. W4UBE, Stewart, 26 West Spring, Alexandria, Va.

FOR Sale: 52 issues "Cleveland Institute of Radio Electronics" communications course part 1 & 2 to obtain first class commercial 'phone license. $22.50. J. R. Driver (W4ZRS), 6419 Fitzhugh Ave., Richmond, Va.

FOR Sale: Complete 300 watt c.w. transmitter 813 final, partially TVI-proofed, schematic in 1952 Handbook. Separate low and high voltage power supplies, rack mounted 72 in. open relay rack, price, $150.00. RME45 receiver Cal-O-Matic dial in good condition, complete with speaker, cabinet, $100; PE100A 6V dynamotor power unit $15.00; BC638A frequency meter and signal calibrator, part of BC639A receiver equipment, $25.00. W4IGE, 1001 Knollwood St., Winston-Salem, N. C.

ANNOUNCING New Hayes Antenna System for 20 meters. Small, compact, rigid construction, low cost. Information on request. Arrow Industries, 143 N. Main St., Oakland, Iowa.

XMAS gift. Call letters and name painted on a necktie, $3.00. Satisfaction guaranteed. 2-week delivery. State 2 choices of tie and paint color. Youngs, W5UZA/2, P. O. Box 266, Cedar Knolls, N. J.

Index of Advertisers

PRINTED IN U.S.A.
RUMFORD PRESS
CONCORD, N. H.

in stock at ALLIED

hallicrafters

great new SX-88

Dual-Conversion Receiver

Outstanding achievement in receiver design. Features: two RF stages, double-conversion, super-sharp 50 kc second IF, crystal-controlled second-conversion oscillators, precision gear-drive turning. Covers 535 kc to 33.3 mc in 6 ranges; electrical bandspread calibrated for 160, 80.75, 40, 20, 15 and 11-10 meter bands. For AM phone, single sideband phone, and CW. Includes three 50 kc IF amplifiers with 8 tuned circuits; selectivity variable from 10 kc to 250 cps at 6 db down, in 6 steps; built-in crystal calibrator; two BFO positions; buffer between BFO and 2nd det.; amplified and delayed AVC; "S" meter; headphone jack; 10-watt push-pull audio output; for 3.2, 8, or 500-600 ohm speakers; socket for external power supply, etc. Includes the finest professional communications features. All-steel cabinet, 10⅜ x 20 x 18¼" deep. Shpg. wt., 85 lbs.

98 SX 715. Net..... **$499.95**

we stock ALL Hallicrafters Models

S-53A	Communications Receiver...	**$99.95**
S-40B	Communications Receiver...	**129.95**
S-77A	Communications Receiver...	**129.95**
S-76	Communications Receiver...	**199.95**
S-72A	4 Band Portable Receiver..	**109.95**
S-72L	Portable with Long Wave Band.....	**119.95**
SX-73	Communications Receiver...	**975.00**
SX-62	All-Wave Receiver.....	**349.95**
SX-71	Dual IF Receiver.....	**249.95**
S-38C	Low-Cost Receiver.....	**59.95**
HT-20	Phone-CW Transmitter.....	**449.50**
S-81	"Civic Patrol" Receiver (153-173 mc).....	**59.95**
S-82	"Civic Patrol" Receiver (30-50 mc).....	**59.95**
R-46	Matching Speaker for Hallicrafters Receivers, SX-62, SX-88, SX-71, SX-73, S-76, etc.....	**24.95**

ultra-modern facilities to serve you best

FREE 268-Page Buying Guide

Make your selections from the world's most complete stocks of Amateur gear and electronic supplies. You'll find everything you need—all the latest equipment—in the new 1954 ALLIED Buying Guide. If you haven't a copy, write for it today.

ALLIED RADIO

Everything for the Amateur

ALLIED RADIO CORP., Dept. 15-M-3
100 N. Western Ave., Chicago 80, Ill.

☐ Send FREE 1954 ALLIED Catalog

Ship Hallicrafters Model.....

$.....encl. ☐Full Pay. ☐Down Pay.

Name.....

Address.....

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

★ QST ★

Index to Volume XXXVII — 1953

ANTENNAS — GENERAL

ANTENNAS — TRANSMISSION LINES

AUDIO-FREQUENCY EQUIPMENT & DESIGN

CIVIL DEFENSE

COMMUNICATIONS DEPARTMENT

CONSTRUCTION PRACTICES

CONTESTS & OPERATING ACTIVITIES

CONVENTIONS

EDITORIALS

EMERGENCIES & EXPEDITIONS

FEATURES & FICTION

FOR THE BEGINNER

HAPPENINGS OF THE MONTH

HINTS & KINKS

IARU NEWS

KEYING & CONTROL CIRCUITS

MEASUREMENTS & TEST EQUIPMENT

MISCELLANEOUS — GENERAL

MISCELLANEOUS — TECHNICAL

MOBILE

MODULATION

POWER SUPPLY

RADIOTELEPHONY

(See "Audio-Frequency Equipment & Design;" also "Modulation")

RECEIVING

REGULATIONS

SINGLE SIDEBAND

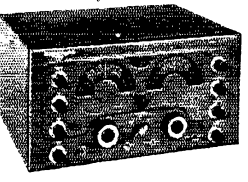
TRANSMITTERS

TRANSMITTING

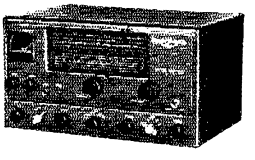
TVI

V.H.F. & MICROWAVES

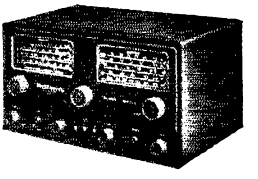
it's not her perfume— it's the *National* she bought him for Christmas!



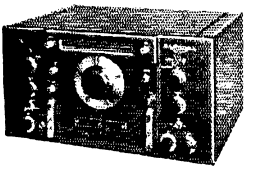
NC-183D
One of the most popular amateur receivers ever designed. Includes every desirable feature — dual conversion, 12 tuned I.F. stages, temperature compensation, hi-fi audio. $383.50
(less spkr.)



NC-125
Incorporates famed National Select-O-Ject for un-heard-of selectivity at the price! Edgelighted, direct-reading scales show amateur, police, ship and foreign frequencies. $199.95
(less spkr.)



NC-88
World Master. Top receiver dollar value. Tuned R.F. stage. Two I.F. stages. Cal. bandspread for 80, 40, 20, 15, 11 and 10 meter bands. $129.95



HRO-60
Latest and best of the world-famous HRO series — Utilizes dual conversion and 12 permeability tuned I.F. circuits for the highest skirt selectivity ever achieved! $533.50
(less spkr.)

NATIONAL COMPANY, INC., MALDEN, MASS.

Merry Christmas

and good hunting in

1954

from the Hams of the RCA Tube Department

TMK.