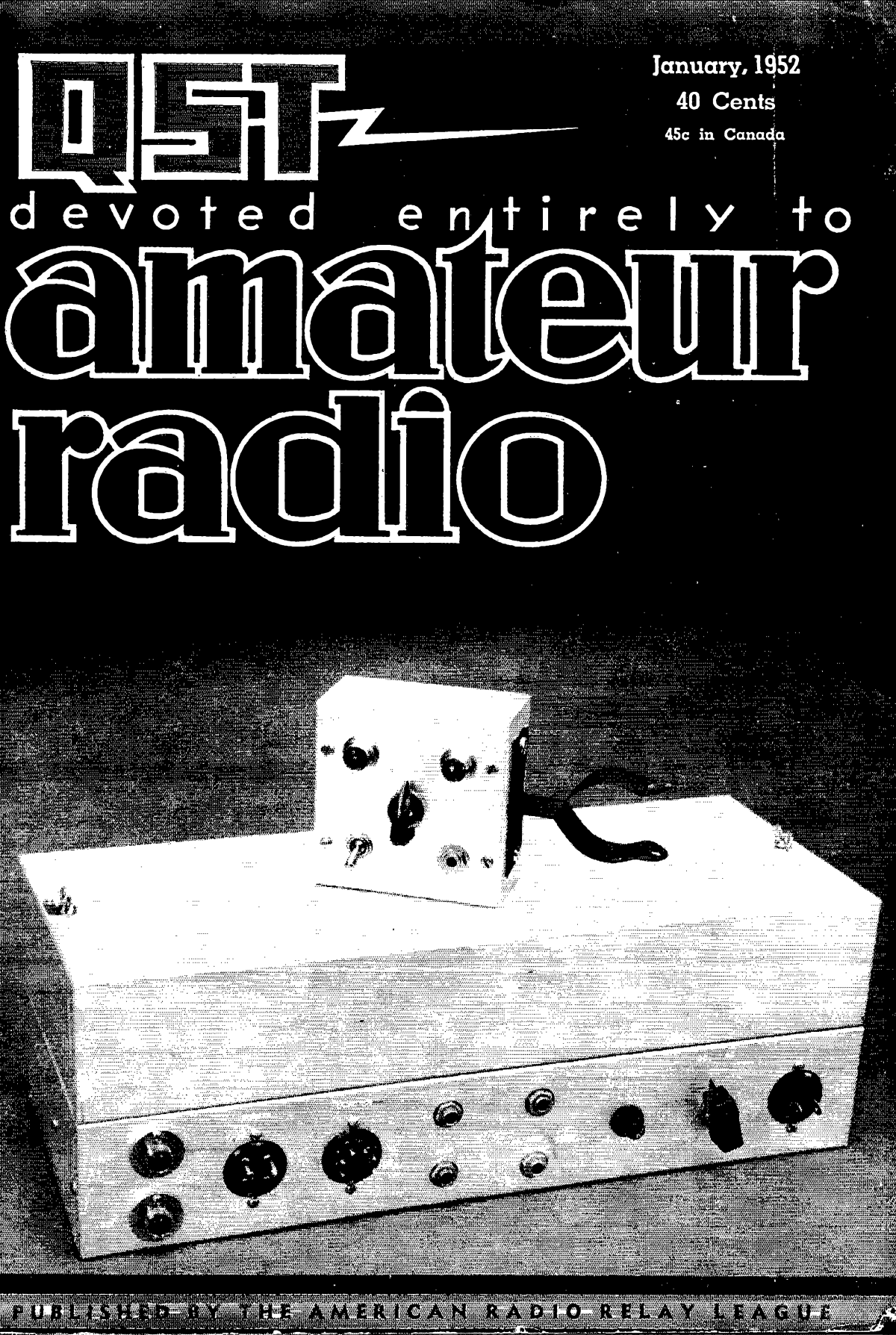
January, 1952
40 Cents
45c in Canada

QST

devoted entirely to

amateur radio



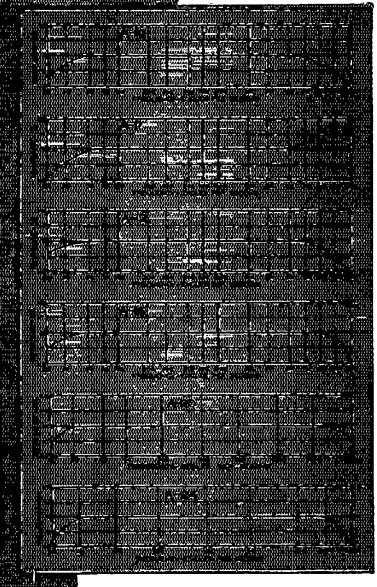
PUBLISHED BY THE AMERICAN RADIO RELAY LEAGUE

ULTRA COMPACT UNITS...OUNCER UNITS

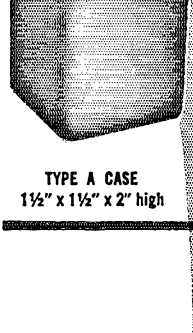
HIGH FIDELITY . . . . SMALL SIZE . . . . FROM STOCK

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

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

● **More-than-adequate input . . .** A single GL-2E26 will handle up to 27 w phone. Check this max against normal usage of 15 w (50 ma at 300 v) for local civil-defense work, and you find yourself with power to spare!

Compact, for compact transmitters! The smaller and lighter your rig the better, whether your purpose is C.D. work or merely to go modern in your home or portable equipment. Note how the GL-2E26 saves space! The tube's height, for example, is a good two inches less than an 807's.

V-h-f . . . up to 125 mc and 175 mc respectively, at max and reduced input! The GL-2E26 gives you band coverage on 2 . . . 6 . . . 10 meters, all popular in point-to-point or fixed-point-to-mobile C.D. service.

Economical! Price the GL-2E26, and you'll find it a real bargain.

Proved in service? Evidence of the tube's worth on the job is the fact that many commercial C.D. rigs use the GL-2E26. Your G-E tube distributor will be glad to tell you more. See him today! *Electronics Division, General Electric Company, Schenectady 5, New York.*

For design help toward a GL-2E26 emergency rig that's tested, practical, low in cost, see Jan.-Feb. Ham News—"A 6-meter C.D. Transmitter". Ask your distributor for your free copy!

GL-2E26
V-h-f beam power tube

G-E MILESTONE:
the screen-grid tube!

Beam power design, typified by the modern, efficient GL-2E26, is a refinement of the screen-grid principle. This important advancement in electronics came from G-E research. In 1925 Dr. A. W. Hull of General Electric originated the screen-grid tube, and in 1927 G. E. made available to users the first screen-grid transmitting type, the 860 . . . More years of experience mean greater know-how in design and manufacture. That's why G.E.'s many electronic "firsts" stand for first quality in G-E tubes!

ELECTRONIC TUBES OF ALL TYPES FOR THE RADIO AMATEUR

GENERAL ELECTRIC

166-181

• these are the AUTHORIZED COLLINS DISTRIBUTORS

. . . buy with confidence from the one nearest you

Albany, New York
• Ft. Orange Radio Distributing Co., Inc., 642-644 Broadway

Albuquerque, New Mexico
• Radio Equipment Co. 523 E. Central Ave.

Amsterdam, New York
• Adirondack Radio Supply P.O. Box 88

Atlanta, Georgia
• Specialty Distributing Co. 425 Peachtree. St., N.E.

Baltimore, Maryland
• Kann-Ellert Electronics, Inc., 9 S. Howard St.

Birmingham, Alabama
• Ack Radio Supply Co. 2205 Third Ave., N.

Boston, Massachusetts
• Radio Shack Corp. 167 Washington St.

Butler, Missouri
• Henry Radio 211 N. Main

Chattanooga, Tennessee
• Specialty Distributing Co. 709 Chestnut St.

Chicago, Illinois
• Allied Radio Corp. 833 W. Jackson Blvd.
• Newark Electric Co. 323 W. Madison St.

Cincinnati, Ohio
• Steinbergs, Inc. 633 Walnut St.

Cleveland, Ohio
• The Progress Radio Supply Co., 413-15 Huron Road
• Radio & Electronic Parts Corp., 3235 Prospect Ave.

Columbus, Ohio
• Thompson Radio Supplies 182 E. Long St.

Concord, New Hampshire
• Evans Radio 10 Hills Ave.

Corpus Christi, Texas
• Electronic Equipment & Engineering Co. 805 S. Staples St.

Council Bluffs, Iowa
• World Radio Laboratories, Inc., 744 W. Broadway

Dallas, Texas
• Crabtree's Wholesale Radio, 2608 Ross Avenue

Dayton, Ohio
• SREPCO, Inc. 135 E. Second St.

Denver, Colorado
• Radio Products Sales Co. 1237 Sixteenth St.

Des Moines, Iowa
• Radio Trade Supply Co. 1224 Grand Ave.

Detroit, Michigan
• M. N. Duffy & Co. 2040 Grand River Ave., W.

Duluth, Minnesota
• Northwest Radio 123 East First St.

El Paso, Texas
• C. C. McNicols 811 Estrella

Everett, Washington
• Pringle Radio Wholesale Co., 2514 Colby Ave.

Greensboro, North Carolina
• Johannesen Electric Co., Inc., 312-14 N. Eugene St.

Hollywood, Florida
• Carl's Radio Shop 2323 Hollywood Blvd.

Indianapolis, Indiana
• Van Sickle Radio Supply Co., 102 S. Pennsylvania St.

Kansas City, Missouri
• Radiolab 1612 Grand Ave.

Lexington, Kentucky
• Radio Equipment Co. 480 Skain Ave.

Long Beach, California
• Scott Radio Supply 266 Alamitos Ave.

Los Angeles, California
• Henry Radio 11240 W. Olympic Blvd.
• Kierulff & Co. 820-830 W. Olympic Blvd.
• Radio Products Sales, Inc. 1501 S. Hill St.

Louisville, Kentucky
• Universal Radio Supply Co., Inc., 533 S. Seventh St.

Madison, Wisconsin
• Satterfield Radio Supply Co., 326 W. Gorham St.

Memphis, Tennessee
• W & W Distributing Co. 639 Madison Ave.

Milwaukee, Wisconsin
• Central Radio Parts Co. 1723 W. Fond du Lac Ave.

Minneapolis, Minnesota
• Lew Bonn Co. 1211 La Salle Ave.

New Haven, Connecticut
• Dale-Connecticut, Inc. 140 Ferry Street

New Orleans, Louisiana
• Radio Parts, Inc. 807 Howard Ave.

New York, New York
• Harrison Radio Corp. 10 W. Broadway
• Harvey Radio Co., Inc. 103 W. 43rd St.

Norfolk, Virginia
• Radio Equipment Co. 821 W. 21st St.

Oakland, California
• W. D. Brill Co. Tenth & Jackson Sts.
• Electric Supply Co. 140 Eleventh St. at Madison

Peoria, Illinois
• Klaus Radio & Electric Co., 707 Main St.

Philadelphia, Pennsylvania
• Radio Electric Service Co. of Pa., Inc., N.W. Corner 7th and Arch Sts.

Phoenix, Arizona
• Radio Parts of Arizona 34-36 W. Madison St.

Pittsburgh, Pennsylvania
• Cameradio Co. 963 Liberty Ave.
• The Tydings Co. 5800 Baum Blvd.

Portland, Oregon
• Pacific Stationery Wholesale Radio Dept., 414 S.W. Second Ave.
• United Radio Supply Co. 22 N.W. Ninth Ave.

Providence, Rhode Island
• W. H. Edwards Co. 94 Broadway

Rock Island, Illinois
• Tri-City Radio Supply 1919 Fourth Ave.

St. Louis, Missouri
• Walter Ashe Radio Co. 1125 Pine St.

St. Paul, Minnesota
• Hall Electric Co. 386 Minnesota St.

Salt Lake City, Utah
• Radio Supply Co., P.O. Box 238, 157 Motor Ave.

San Antonio, Texas
• Amateur Headquarters & Supply, P.O. Box 5086, Beacon Hill Station

San Diego, California
• Western Radio & Television Supply Co. 1415 India St.

San Francisco, California
• San Francisco Radio & Supply Co., 1282-1284 Market St.

Seattle, Washington
• Western Electronic Supply Co., 717 Dexter

South Bend, Indiana
• Radio Distributing Co. 432 Carroll St.

Spokane, Washington
• Northwest Electronic Co. N. 102 Monroe St.

Tacoma, Washington
• C & G Radio Supply Co. 2502-6 Jefferson Ave.

Tampa, Florida
• Kinkade Radio Supply 402-04 W. Fortune St.

Texarkana, Arkansas-Texas
• Lavender Radio Supply Co., Inc. 520 E. Fourth St.

Topeka, Kansas
• The Overton Electric Co., Inc., 522 Jackson St.

Tucson, Arizona
• Elliott Electronics, Inc. P.O. Box 5081 418 N. Fourth Ave.

Tulsa, Oklahoma
• Radio, Inc. 1000 S. Main St.

Washington, D.C.
• Electronic Wholesalers, Inc., 2345 Sherman Ave. N.W.

Watertown, South Dakota
• Burghardt Radio Supply P.O. Box 41

FOR THE BEST IN AMATEUR RADIO, IT'S . . .

COLLINS

COLLINS RADIO COMPANY, Cedar Rapids, Iowa

11 W. 42nd St., NEW YORK 18 **1937 Irving Blvd., DALLAS 2** **2700 W. Olive Ave., BURBANK**

QST

JANUARY 1952

VOLUME XXXVI • NUMBER 1

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

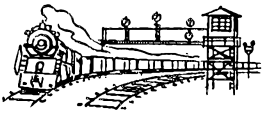
— CONTENTS —

hallicrafters

new communications "TOOL" for industry!

the littlefone®

2-WAY FM RADIO-TELEPHONE



RAILROADING

FREIGHT HANDLING

WAREHOUSE OPERATIONS

RANCHING & LARGE FARMS

MINING (Above & Below Ground)

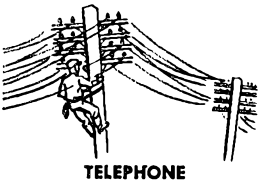
PIPE LINE INSPECTION

ROAD BUILDING

SHIPPING (Dock Operations)

CONSTRUCTION

CIVIL DEFENSE



TELEPHONE

A new Hallicrafters product—the "*littlefone*"—is now ready for thousands of important uses in hundreds of industries.

This light, rugged, dependable radio-phone will be offered through Hallicrafters distribution organization—by the men who know communications best.

USES OF "LITTLEFONE" CHALLENGE YOUR IMAGINATION!

There are literally thousands of industrial uses for the "*littlefone*" radio—anywhere where powerful, dependable, "on the move" contact is required.

AMONG THE MORE IMPORTANT PRESENT USES ARE:

LUMBERING

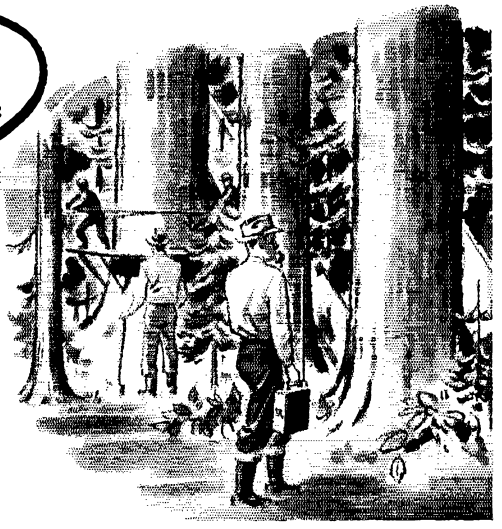
POLICE & FIRE CONTROL

DISASTER EMERGENCIES

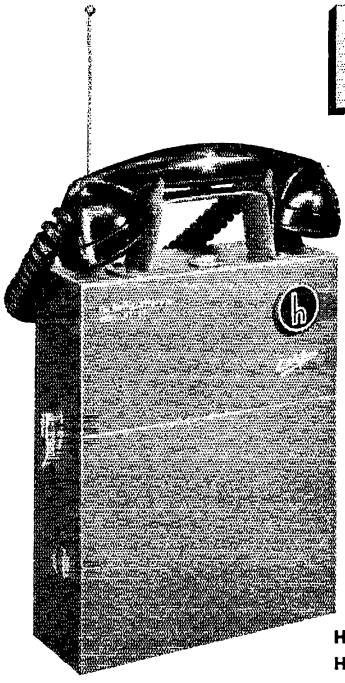
FACTORY INSPECTION

FORESTRY CONTROL

INTER-CITY BUSES



hallicrafters littlefone®



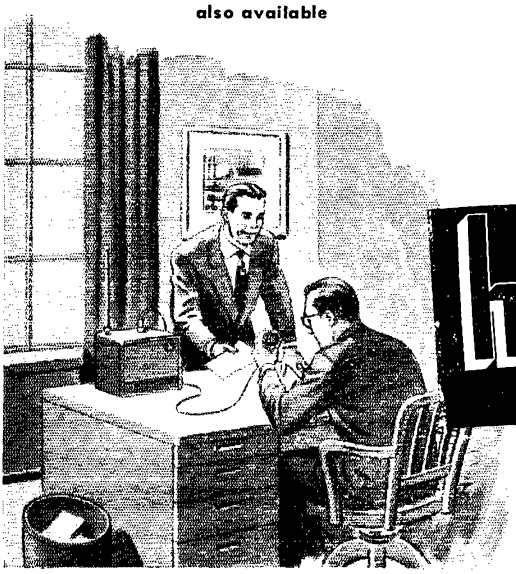
HAND CARRY

HT-21 (25-50 Mc.)
HT-22 (150-174 Mc.)

- FULL TWO-WATT ANTENNA OUTPUT*
- Weighs only 14 pounds!
- Complete, self-contained 2-way radio-telephone station!
- Powered by Dry, or Wet Rechargeable Batteries (can be recharged from car battery or 117 Volts AC)
- Rugged, weatherproof
- 22 sub-miniature tubes!

*On 25-50 Mc. • One-Watt output on 150-174 Mc.

10 lb. lower powered models also available



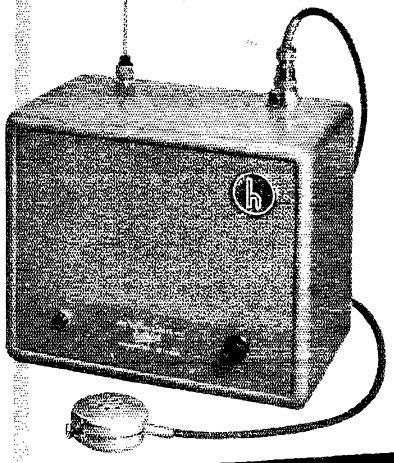
CENTRAL STATION

HT-23 (25-50 Mc.) HT-24 (150-174 Mc.)

Same performance and specifications as the "Littlefone" Hand Carry.

- AC-operated Central Station
- Audio-amplifier, providing one watt of audio for loudspeaker
- Power consumption is 35 watts
- Plugs in any AC outlet (117 Volts)

Where one or more extra stationary receiving stations are desired, Hallicrafters economical S-81 receivers may be added.



hallicrafters
"The Radio Man's Radio"

World's Leading Manufacturer of *Precision* Radio and Television — Chicago 24

Section Communications Managers of the ARRL Communications Department

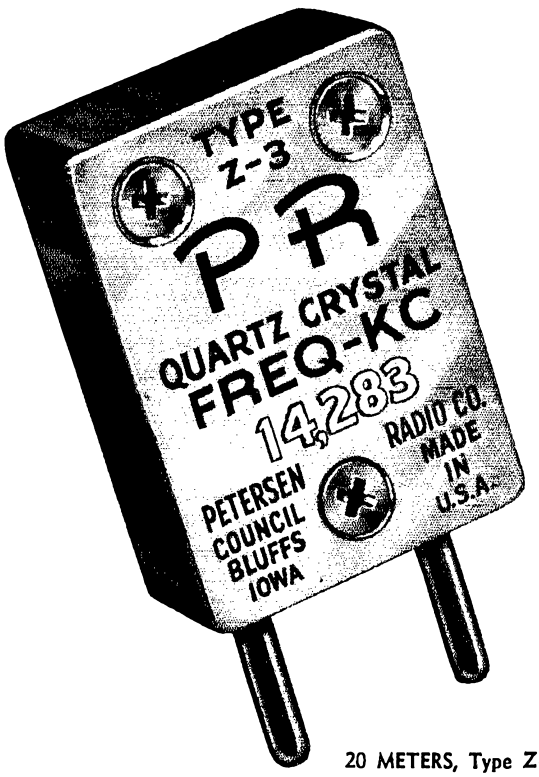
Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio Club reports are also desired by SCMs for inclusion in QST. **All ARRL Field Organization appointments** are now available to 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	W3BXE	John H. DuBois	4105 E. Elbridge St.	Philadelphia 35
Maryland-Delaware-D.C.	W3OMN	James W. John	29 Fawcett St.	Kensington, Md.
Southern New Jersey	W2UCV	Lloyd L. Gainey	Hoffman Ave. & Marlton Pike	Merchantville
Western New York	W2SJV	Edward Graf	81 King St.	Tonawanda
Western Pennsylvania	W3KWL	Ernest J. Hlinsky	509 Beechwood Ave.	Farrell
CENTRAL DIVISION				
Illinois*	W9KQL	H. F. Lund	3135 S. 5th St.	Springfield
Indiana	W9DGA	Clifford C. McGuyer	1321 South Governor St.	Evansville 13
Wisconsin	W9RQM	Reno W. Goetsch	929 S. 7th Ave.	Wausau
DAKOTA DIVISION				
North Dakota	WØVKP	Everett E. Hill	406 South 8th St.	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	W5DRW	Dr. John L. Stockton	P. O. Box 302	Siloam Springs
Louisiana	W5GHF	Robert E. Barr	Box 446	Springhill
Mississippi	W5IHS	Norman B. Feehan	P. O. Box 491	Gulfport
Tennessee	W1AFI	D. G. Stewart	McAlice Drive	Fountain City
GREAT LAKES DIVISION				
Kentucky	W4KKG	I. W. Lyle, jr.	R. R. 3	Jeffersontown
Michigan	W8DLZ	Norman C. MacPhail	1340 Giddings, S.E.	Grand Rapids
Ohio*	W8AJW	John E. Siringer	2972 Clague Rd.	Cleveland 16
HUDSON DIVISION				
Eastern New York	W2CLL	George W. Sleeper	76 Fuller Road	Albany 3
N. Y. C. & Long Island	W2OBU	George V. Cooke	88-31 239th St.	Bellerose 6, L. I.
Northern New Jersey	W2NKD	Thomas J. Ryan, jr.	1082 Anna St.	Elizabeth 4
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	WØKJP	Guy R. Bailey	133 North 38 St.	Omaha 3
NEW ENGLAND DIVISION				
Connecticut*	W1HYF	Roger C. Amundsen	RFD 4	Ridgefield
Maine	W1PTL	Orestes R. Brackett	Goodrich St.	Bingham
Eastern Massachusetts	W1ALP	Frank L. Baker, jr.	91 Atlantic St.	North Quincy 71
Western Massachusetts	W1EOB	Victor W. Paounoff	702 Rogers Ave.	West Springfield
New Hampshire	W1JNC	Norman A. Chapman	98 South St.	Concord
Rhode Island	W1CJH	Roy B. Fuller	17 Ledge Road	East Greenwich
Vermont	W1FPS	Raymond N. Flood	2 Marlboro Ave.	Brattleboro
NORTHWESTERN DIVISION				
Alaska*	KL7BK	Jack Walden	Box 879	Anchorage
Idaho	W7IWU	Alan K. Ross	2105 Irene St	Boise
Montana	W7KGJ	Edward G. Brown	421 Yellowstone Ave.	Billings
Oregon	W7MQ	J. E. Roden	519 N.W. Ninth	Pendleton
Washington	W7CZV	Laurence Sebring	Route 2, Box 384	Everett
PACIFIC DIVISION				
Hawaii	KH6RU	John R. Sanders	c/o Mackay Radio & Telegraph Co. Inc., Box 2993	Honolulu
Nevada	W7BVZ	Carroll W. Short, jr.	1608 Arizona St.	Boulder City
Santa Clara Valley	W6UZL	Roy I. Couzin	7 Englewood Ave.	Los Gatos
East Bay	W6JZ	Ray H. Cornell	909 Curtis St.	Albany 6
San Francisco	W6ATO	R. F. Czeikowitz	243 Colon Ave.	San Francisco 12
Sacramento Valley*	W6CKV	Willie van de Kamp	RFD 1, Box 492A	Chico
San Joaquin Valley	W6FVM	E. Howard Hale	741 E. Main St.	Turlock
ROANOKE DIVISION				
North Carolina	W4DLX	J. C. Geasler	1832 Logie Ave.	Charlotte
South Carolina	W4ANK	T. Hunter Wood	1702 North Rhett Ave.	North Charleston
Virginia	W4FF	H. Edgar Lindauer	Route 1, Box 431	Annandale
West Virginia	W8JM	Donald B. Morris	303 Home St.	Fairmont
ROCKY MOUNTAIN DIVISION				
Colorado	WØIQZ	M. W. Mitchell	1959 Uinta St.	Denver 7
Utah	W7SP	Leonard F. Zimmerman	House 4	Saltair
Wyoming	W7HNI	A. D. Gaddis	P. O. Box 786	Gillette
SOUTHEASTERN DIVISION				
Alabama*	W4RTI	Wm. H. McGowen, jr	302 Massey Bldg.	Birmingham
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	KZ5AW	Everett R. Kimmel	Box 264	Gamboa, C. Z.
SOUTHWESTERN DIVISION				
Los Angeles	W6ESR	Samuel A. Greenlee	1701 Sepulveda Blvd.	Manhattan Beach
Arizona	W7MID	Jim Kennedy	4511 N. 8th St.	Phoenix
San Diego	W6YYM	Mrs. Ellen White	3677 Wightman St.	San Diego
WEST GULF DIVISION				
Northern Texas	W5BKH	William A. Green	1834 University Blvd.	Abilene
Oklahoma	W5AHT/AST	Frank E. Fisher	104 East 11th St.	Pawhuska
Southern Texas	W5FF	Dr. Charles Fermaglich	618 Medical Arts Bldg.	Houston 2
New Mexico	W5NXE	Robert W. Freyman	2255-46th St.	Los Alamos
MARITIME DIVISION				
Maritime (Nfld. & Labr. att.)	VE1DQ	A. M. Crowell	69 Dublin St.	Halifax, N. S.
ONTARIO DIVISION				
Ontario	VE3IA	G. Eric Farquhar	16 Emerald Crescent	Burlington, Ont.
QUEBEC DIVISION				
Quebec	VE2GL	Gordon A. Lynn	R.R. No. 1	Ste. Genevieve de Pierrefonds, P. Q.
VANALTA DIVISION				
Alberta	VE6MJ	Sydney T. Jones	P. O. Box 373	Edmonton, Alta.
British Columbia	VE7US	Wilf Moorhouse	324 Regina Ave.	Lulu Island
Yukon				
PRAIRIE DIVISION				
Manitoba	VE4AM	A. W. Morley	26 Lennox Ave.	St. Vital
Saskatchewan	VE5HR	Harold R. Horn	1044 King St.	Saskatoon

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

QUALITY

IS THE CHEAPEST THING YOU BUY!



There is a deep, understandable satisfaction in owning something truly fine. It can't be exactly measured in dollars or in words. Maybe it boils down to this: A good thing is worth a hundred times its price; a poor thing isn't worth having around. It's this way with Crystals. When you buy PRs you know you're getting many times your money's worth. You're buying the finest precision frequency control that modern science has made . . . you get (in super-abundance) the things you want most . . . dependability, accuracy, long life, freedom from drift, unfailing activity. Yes—you can be proud to own PRs . . . everybody is!

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

PR Crystals

Since 1934

USE PR AND KNOW WHERE YOU ARE

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

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

• • • • •

Officers

President . . . . . GEORGE W. BAILEY, W2KH
1 East 79th St., New York 21, N. Y.

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

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

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

Treasurer . . . . . DAVID H. HOUGHTON
38 LaSalle Road, West Hartford, Connecticut

• • • • •

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

Assistant Secretaries . . . . . JOHN HUNTOON, W1LVQ
RICHARD L. BALDWIN, W1IKE HARRY PASTON, W1DJV
38 LaSalle Road, West Hartford, Connecticut

DIRECTORS

Canada

ALEX REID VE2BE
240 Logan Ave., St. Lambert, P. Q.
Vice-Director: William W. Butchart VE6LQ
10740 107 St., Edmonton, Alta.

Atlantic Division

ALFRED C. HECK W3GEG
515 Cedar Ave., Sharon, Pa.
Vice-Director: Charles O. Badgett W3LVF
725 Garden Road, Glenside, Pa.

Central Division

WESLEY E. MARRINER W9AND
844 N. Galena Ave., Dixon 7, Ill.
Vice-Director: Charles F. Reberg W9MVZ
3900 W. 10th Ave., Gary, Ind.

Dakota Division

GOODWIN L. DOSLAND . . . . . WØTSN
Moorhead, Minn.
Vice-Director: Alfred M. Gowan . . . . . WØPHR
325 S. Menlo Ave., Sioux Falls, S. D.

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

JOSEPH M. JOHNSTON W2SOX
423 Monmouth Ave., Bradley Beach, N. J.
Vice-Director: George V. Cooke, jr. W2OBU
88-31 239th St., Bellerose 6, L. I., N. Y.

Midwest Division

WILLIAM J. SCHMIDT . . . . . WØOZN
305 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
810 W. Orange Ave., So. San Francisco, Calif.
Vice-Director: Richard F. Czelkowitz W6ATO
243 Colon Ave., San Francisco 12, Calif.

Roanoke Division

WILLIAM H. JACOBS W4CVQ
Route 6, Raleigh, N. C.
Vice-Director: Gus M. Browning W4BPD
135 Broughton St., S. E., Orangeburg, S. C.

Rocky Mountain Division

FRANKLIN K. MATEJKA . . . . . WØDD
P. O. Box 212, Estes Park, Colo.
Vice-Director: Ramon S. Walker . . . . . WØOWP
P. O. Box X, Brush, Colo.

Southeastern Division

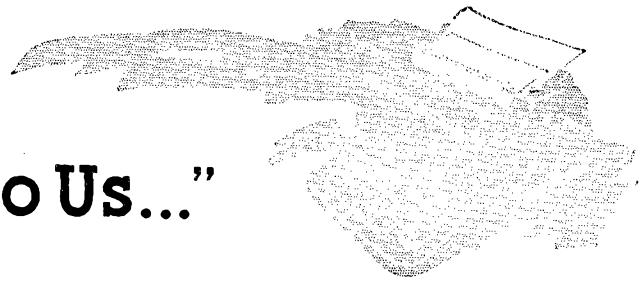
LAMAR HILL W4BOL
104 Myrtle, Cochran, Ga.
Vice-Director: Ernest W. Barr W4GOR
911 Rosemary Ave., SW, Atlanta, Ga.

Southwestern Division

JOHN R. GRIGGS W6KW
10412 Don Pico Rd., RFD 2, Spring Valley, 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: Frank E. Fisher W5AHT/AST
104 E. 11th, Pawhuska, Okla.



"It Seems to Us..."

THE YEAR IN REVIEW

As Old Man 1951 starts down the road to oblivion, we can look back upon a year that is noteworthy for its progress in many phases of amateur radio.

Perhaps the outstanding development was the introduction of the new Novice and Technician classes of license, particularly the former as the stepping-stone into permanent amateur ranks. Hard on its heels in importance was the finalization of civil-defense frequency planning by the Government's earmarking portions of amateur bands for use even in the event of war; c.d. planning proceeded apace; mobile activity reached even greater heights; ARRL's Field Day and Simulated Emergency test were the biggest ever; priorities in procurement of equipment were provided amateurs, with double quotas for those engaged in c.d. and defense programs.

Organizationwise, the League got a new Charter, and has some revised By-Laws in the works. After its meteoric rise immediately at the end of war and subsequent drop to below normalcy, the League's membership seemed to have settled down to its characteristic steady growth. The boys (and gals) in Seattle threw a bang-up National Convention. Two notable victories in the courts were won by the League in assuring the individual amateur's right to erect and maintain reasonable antenna towers on his property.

There was steady technical progress in licking the problems of TVI; amateurs in Dallas set the pace for the country by forceful action at the club level; FCC joined in by endorsing the principle of formation of interference committees and offering the full coöperation of its field staff to that end.

Regulationwise, the Extraordinary Administrative Radio Conference came and went without immediate effect on amateur radio; its long-term effects in implementing the Atlantic City allocations table are not yet perceptible. A third-party traffic agreement was concluded with Liberia, and another with Cuba was about completed. Docket 9295 passed into history, amid comment from all sides of "never again!" New rules for the Disaster Communications Service leaned heavily upon amateur participation. We (and other services) got some unwelcome FCC rules on antenna height and construction, more an irritation than anything else. The reciprocal licensing agreement with Canada awaited Senate action.

What the amateur body totals is difficult to say with accuracy and must await detailed announcement by FCC. We had some regular growth the first half of the year, overshadowed after July by the influx of Novices and Technicians; at the same time old licenses were coming up for expirations by the thousands and the percentage of non-renewal was high, undoubtedly due to the cumulative effect of the new five-year tickets. But it was possible to say that amateur radio was not only very much alive but healthy and progressing, and anticipating with considerable keenness whatever 1952 might have in store.

I'LL TELL THE WORLD

American colloquialisms usually can be twisted about quite readily to suit the occasion at hand. But the one heading up this offering is something that has a positive meaning which we as amateurs have been putting to a good workout this past year. Individuals, club groups, emergency and traffic nets — all have been helping tell the world about amateur radio through their community papers, by speeches before civic and service groups, at demonstrations and exhibits and even through company and national magazine articles. In fact, the final analysis shows that this past year has been a banner one for amateur radio publicity.

Your service headquarters continues to supply many aids to help make this possible: our specially-prepared fifty-page publicity instruction manual for affiliated clubs, individual and personal assistance, information and material for exhibits, sample speeches, interviews and broadcast scripts are some of the things available. But, these are merely tools of the trade. The most rewarding part of the job — the legwork and placement of publicity — is up to the fellows in the field. And they have come through admirably.

The League has an active public relations program. Let it be of more assistance to *you*. With each of us an active publicity agent for our hobby, every person in every hamlet in every corner of this country will know about amateur radio.

Practical Applications of Pi-Network Tank Circuits for TVI Reduction

Circuit Arrangements for Suppressing V.H.F. Harmonics

BY GEORGE GRAMMER,* W1DF

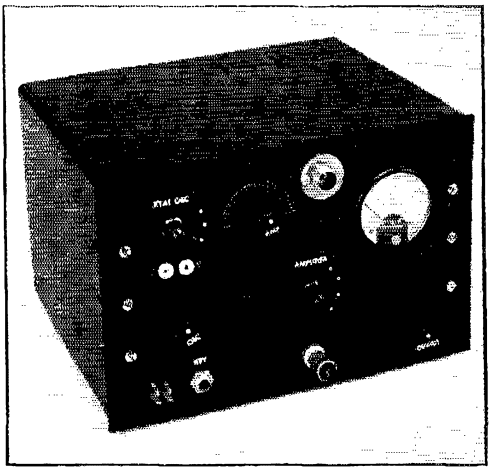
FOR various reasons the pi network has had little use in amateur-built transmitters, one of the principal ones perhaps being that it has mostly seemed to be just an alternative to the ordinary tank circuit. Purely from a circuit standpoint this is probably not far from wrong. However, we believe the network has something to offer in reducing harmonics in the TV region, for reasons that have had little or no attention in the past since they are concerned more with layout possibilities than theoretical circuit performance. This is not to say that the pi network is a cure-all for TVI, because it is not. But from our experience with it in several transmitters over the past year we believe that it can make the harmonic-reduction job *easier*, provided it is used properly.

One of the possibilities it offers, for example, is that of constructing a compact bandchanging transmitter. This helps simplify the constructional problems that shielding presents, since it is easier to build little shields than big ones — and it is much simpler to "button up" a transmitter that does not have to have means for access for plug-in coils.

A few points about transmitter design have to be accepted before any benefit can be certain. One is something that we have learned ought to be done anyway in cleaning up a transmitter by simple, logical methods — design the transmitter to work into coax line, and take the necessary measures to see that the line is flat. If you don't use coax to your antenna it doesn't matter; an antenna tuner can easily take care of transferring to coax. As we have said many times before, coax offers the sure-fire way to use a low-pass filter successfully, and because the tuner itself helps cut the harmonics it often makes the filter unnecessary. The other points have to do with the network itself. A screen-grid final amplifier must be used; neutralization is decidedly inconvenient in the circuit arrangements to be discussed. And push-pull is out, because the network gets to be too cumbersome with anything except a single-ended amplifier.

• Here are some ideas for making pi networks go to work for you in reducing TVI. Properly applied, the network is useful in cutting down harmonic output, although not a substitute for shielding, lead filtering, and low-pass filters. But it can help make the harmonic-elimination job easier, both electrically and constructionally.

* Technical Editor, *QST*.



This small transmitter illustrates the use of pi networks for both interstage and output-amplifier coupling. Bandswitching from 80 through 10, its dimensions are 9¼ inches wide, 6 inches high, and 7¼ inches deep. The box is a cut-down tuning-unit shield from a BC-375-E, with new top and bottom plates.

Network Behavior

Fig. 1 is the pi-network tank circuit as it is ordinarily used. The loading on the tube is determined by the values of L_1 and C_2, the principal function of C_1 being to retune the circuit to resonance when either of the other two elements is varied. Ideally, both L_1 and C_2 should be continuously variable, since this permits adjusting the load on the tube while maintaining a desired value of Q. (If C_1 has the same value that it would in a conventional tank, the two circuits can be considered to have the same Q.)

In practice, L_1 is frequently made adjustable in steps and C_2 is the continuous loading adjustment. This gives satisfactory control by varying the Q of the circuit, a method that is not objectionable so long as the Q does not reach such a low value that the tube efficiency is affected, nor such a high value that the circulating current increases the tank losses unduly. In a practical amplifier using a beam tetrode, there is considerably less danger that the Q will be too low than that it will be too high, especially at the higher frequencies. This is because the Q is determined by the input capacitance of the network, a ca-

pacitance made up of the tube output capacitance, minimum capacitance of C_1, and unavoidable strays, all of which may total up to such a value that the minimum possible Q at 28 Mc. is 20 or more. The higher the Q, the larger the capacitance required at C_2 for a given degree of loading on the amplifier tube.

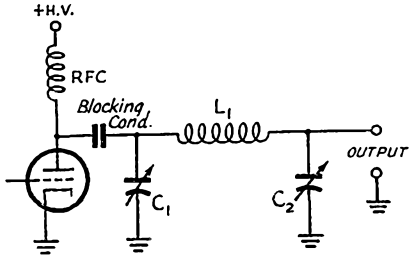


Fig. 1 — The basic pi network as used with an r.f. amplifier.

If the load connected to the output terminals in Fig. 1 is a pure resistance of known value it is possible to predetermine a fixed value for either L_1 or C_2 and adjust the tube input to the desired figure by varying only one of these two circuit elements. (C_1 must, of course, always be variable in order to maintain resonance.) If L_1 is variable the optimum capacitance at C_2 is such that its reactance is equal to the resistance of the load connected to the output terminals.[1] It happens that when the load is a resistance of 50 to 75 ohms this value of capacitance at C_2 is just about right for maintaining the circuit Q within a reasonable range, with most transmitting tubes.

For loads of 50 to 75 ohms the capacitance at C_2 should be about 100 $\mu\mu$fd. at 28 Mc. Since the reactance increases with decreasing frequency, the capacitance needed is about 200 $\mu\mu$fd. at 14 Mc., 400 $\mu\mu$fd. at 7 Mc., and 800 $\mu\mu$fd. at 3.5 Mc. This is quite a range for a variable condenser to cover, although it is not impossible. However, from the TVI angle there are some very good reasons why the condenser capacitances should be fixed and the inductance made variable, even though variable inductances are complete strangers to most ham-built transmitters.

Working into Coax

One of the reasons why coax output is desirable is that you *know* where the r.f. is going — provided the transmitter is adequately shielded, including proper filtering of power leads — because the only place it can get out is through the coax. This includes the harmonics. It becomes possible to do something about stopping harmonics from getting out when you know exactly how they are leaving. A short circuit across the coax fitting will stop them pretty effectively.

The pi network offers a very handy means for making something closely resembling a short circuit in the TV range when a fixed condenser is used at C_2. The general idea is quite similar to that behind the type of by-passing described some months ago,[2] and as applied to the pi network is shown in Fig. 2. Here the output condenser, C_2, and its leads form a series circuit that is deliberately resonated at some point in the 56–88 Mc. range so that the impedance for TV harmonics is very low. This low impedance shunts the coax and by-passes most of the harmonic current, preventing it from getting into the cable.

The "short-circuit" frequency can be definitely established only when a fixed condenser is used. A variable condenser and its leads will show similar series resonances but it is seldom possible to take advantage of them. This is because varying the condenser to adjust the loading on the tube also varies the series-resonant frequency. Consequently, it is pure happenstance if the setting that gives proper tube loading also gives maximum suppression of a troublesome harmonic.

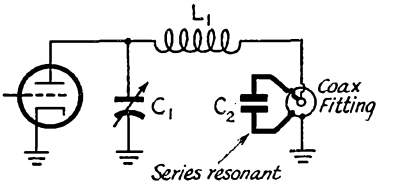


Fig. 2 — With fixed output capacitance, the condenser circuit may be series-resonated to provide a very low impedance for v.h.f. harmonics across the coax terminal.

As a means for getting around the necessity for a variable inductance while still retaining the harmonic-short feature, it is natural to think of using an arrangement such as is shown in Fig. 3A, where a variable condenser is connected in parallel with the fixed condenser. It can be done but there are some dangers associated with it. In this drawing L_2 represents the inductance of the leads to C_2, and the two together form a series-resonant short. The inductance in the leads to the variable condenser, C_3, is similarly represented by L_3. L_3 and C_3 form a series-resonant circuit having a frequency determined by the setting of C_2, and will short-circuit a harmonic that happens to fall on that frequency. However, the loop formed by C_2, C_3, L_2 and L_3 will be *parallel*-resonant at some frequency *between* the two series-resonant frequencies. The parallel-resonant condition represents a very high impedance, and any harmonic current that happens to be of that frequency will be forced to flow into the coax. Varying C_3 changes the parallel-resonant frequency over a wide range in the average case, so that in the course of adjusting C_3 to give proper tube loading it is only too easy to hit on a tuning condition that greatly increases the harmonic output. Our experience

[1] By "optimum" is meant a value that is least critical with respect to load resistance. The behavior of the network with variable constants can be visualized with the aid of a calculator (Bruene, "Pi-Network Calculator," *Electronics*, May, 1945), or from L-network design charts. The writer used a chart of the latter type contained in an unpublished paper, "Plate Tank Circuits and Antenna Coupling," a copy of which was very kindly furnished him by the author, Warren B. Bruene, WØTTK.

[2] Grammer, "By-Passing for Harmonic Reduction," *QST*, April, 1951.

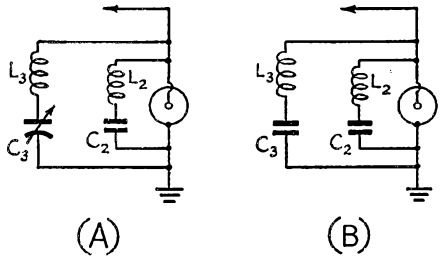


Fig. 3 — In varying loading by changing the output capacitance, the parallel circuit formed by C_2, C_3, L_2 and L_3 may inadvertently be tuned to a TV harmonic and greatly increase its amplitude. This can be avoided by using fixed output condensers, (B), and adjusting the resonances to be harmless.

with this type of circuit is such that we would not want to use it on frequencies above the 3.5-Mc. band, even with low-power transmitters, unless a TV receiver was on hand to show the effect of every change of adjustments.

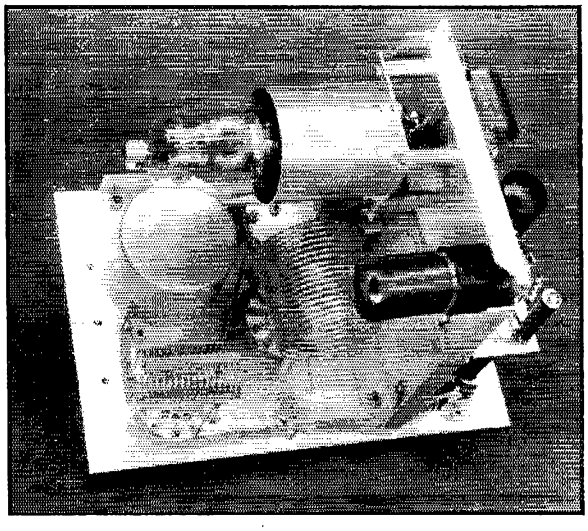
If both C_2 and C_3 are fixed, as in Fig. 3B, the situation can be kept under control. In this case, L_2C_2 is made series-resonant in the TV range as before, but the length of the leads to C_3 (represented by L_3 in the diagram) is adjusted so that the parallel-resonant frequency of the whole combination falls at some harmless frequency below 50 Mc. Still more fixed condensers can be added so long as the leads to each are adjusted to make the various parallel-resonant frequencies harmless. Such extra circuits do not affect the series-resonant operation of L_2C_2 as a harmonic short. Switching in additional fixed condensers to obtain the values mentioned earlier, when progressing from 28 Mc. through lower-frequency bands, thus can be done without inadvertently increasing the harmonic output. However, fixed values of output capacitance require that the inductance of L_1 be variable — preferably continuously variable — for smooth control of the tube input.

Variable Inductances

One of the oldest schemes for varying inductance is the tapped coil, and it can easily be applied in the pi-network tank at power levels of 100 watts or so. At higher powers the principal limitation is the lack of availability of suitable switches, but ordinary ceramic wafers serve nicely for 100 watts or less. The transmitter shown in the photographs uses this method of varying inductance; the set is shown here not so much in the thought that it is something many people would want to duplicate (it was built by the writer as a small crystal-controlled portable and auxiliary c.w. unit and also as a TVI-proofed exciter for testing amplifiers requiring 25 watts or less of driving power) but simply to illustrate an application of pi networks in a bandswitching unit. The main tank coil, L_2 in Fig. 4, is tapped at points determined experimentally to be appropriate for the 7- and 14-Mc. bands; the whole coil is used for 3.5 Mc. and it is shorted out completely for 28 Mc. The small coil, L_3, is tapped at frequent intervals to serve as a fine adjustment for each of the lower three bands, and as the adjustable tank coil for 28 Mc. In this particular set 28-Mc. operation was a secondary consideration, so the output amplifier was used as a doubler on this band. However, using it as a straight amplifier would not change the tank set-up.

While the adjustment of loading on the tube is not truly continuous with such an arrangement, the steps can be made sufficiently fine so that the effect is nearly the same. The adjustment range is naturally greater — and the steps more coarse — at the higher frequencies, where a small change in inductance means a fairly large change in reactance. On 3.5 Mc. the inductance variation in the set shown is just about ample to take care of resistive loads from 50 to 75 ohms but the range could be increased by providing more taps on the larger of the two coils instead of having just one tap for each band.

The question of efficiency always comes up



Both the main tank coil and the fine-adjustment coil (*lower left corner*) are ready-wound coil material cut to size and adjusted as described in the text. This method of varying inductance can be used at power levels up to the current-carrying capacity and voltage limitations of the switches available.

Note the tube mounting above the subchassis, for reasons discussed in the text. The meter shield shown here is a cut-down coil shield, 2½ inches in diameter.

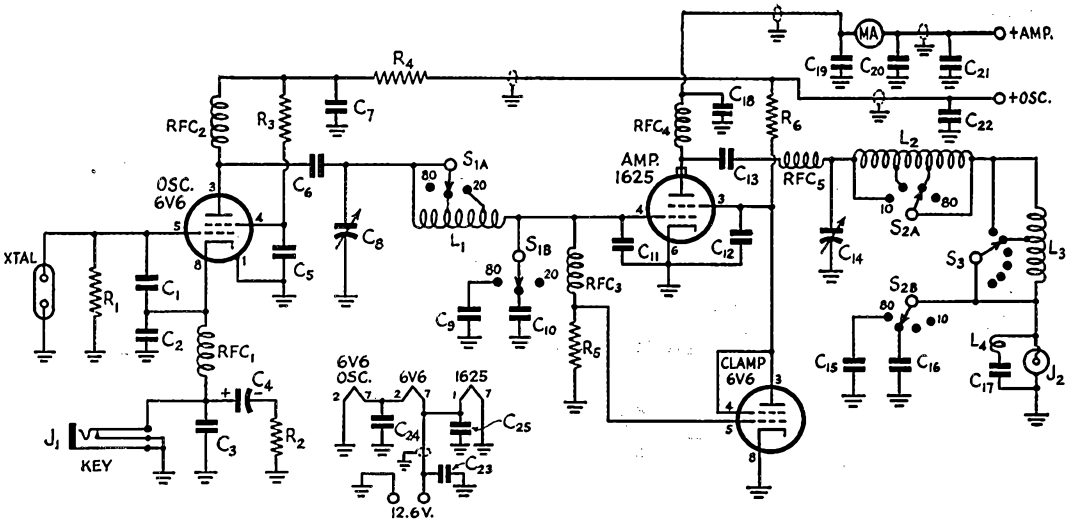


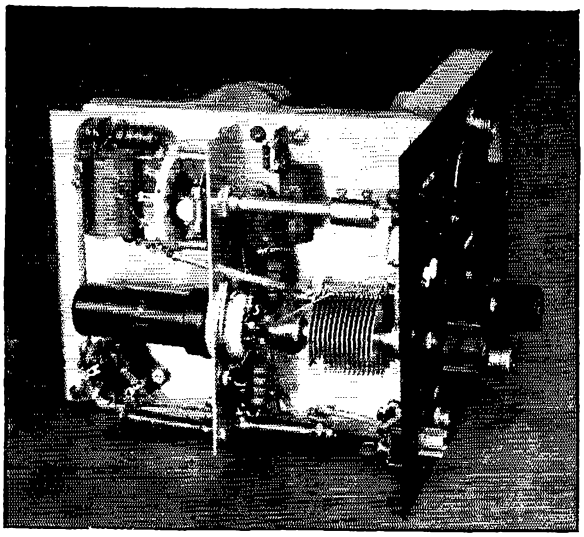
Fig. 4 — Circuit diagram of the low-power transmitter. Separate high-voltage leads are brought out for the oscillator and amplifier so the latter can be operated at voltages up to 600 (the working voltage rating of the bypass condensers) if desired, although the set has normally been used with a 400-volt supply with both high-voltage leads connected together. For other voltages, R_4 and R_6 should be chosen so that the oscillator plate voltage and amplifier screen voltage do not exceed 300 volts. An 807 can replace the 1625 with appropriate changes in the heater wiring.

C_1 — 22-$\mu\mu$fd. zero temp. coeff. ceramic.
C_2 — 150-$\mu\mu$fd. silver mica.
C_3, C_7 — 0.001-μfd. mica, 500 volts.
C_4 — 10-μfd. electrolytic, 50 volts.
C_5, C_6, C_{12} — 0.005-μfd. disc ceramic.
C_8, C_{14} — 200-$\mu\mu$fd. receiver-type variable, 0.022" air gap (Millen 19200).
C_9 — 100-$\mu\mu$fd. mica.
C_{10} — 47-$\mu\mu$fd. mica.
C_{11} — 47-$\mu\mu$fd. mica.
C_{13} — 470-$\mu\mu$fd. mica, 500 volts.
C_{15} — 680-$\mu\mu$fd. mica, 500 volts.
C_{16} — 220-$\mu\mu$fd. mica, 500 volts.
C_{17} — 330-$\mu\mu$fd. mica, 500 volts.
C_{18}–C_{25}, inc. — 0.001-μfd. disc ceramic, miniature size.
R_1 — 27,000 ohms, ½ watt.
R_2 — 1800 ohms, ½ watt.
R_3 — 0.1 megohm, 1 watt.
R_4 — 5000 ohms, 10 watts.
R_5 — 27,000 ohms, 1 watt.
R_6 — 15,000 ohms, 10 watts.
L_1 — 43 turns 1-inch diam., 32 turns per inch (B&W 3016 Miniductor) tapped at 12th and 19th turns from grid end.
L_2 — 16 turns No. 14, 2½-inch diam., 8 turns per inch (B&W 3900).
L_3 — 15 turns 1-inch diam., 8 turns per inch (B&W 3014 Miniductor) tapped at 2, 3, 4, 5, 6, 7, 9, 11 and 13 turns from end connected to L_2.
L_4 — Lead length to C_{17} adjusted to resonate at approx. 70 Mc. with J_2 short-circuited.
J_1 — Closed circuit jack.
J_2 — Coaxial connector.
MA — 0–200 d.c. milliammeter.
RFC_1, RFC_2, RFC_3 — 2.5-mh. choke, pigtail type.
RFC_4 — 2.5-mh. choke, stand-off type.
RFC_5 — Parasitic choke, 18 turns No. 22 on high-value 1-watt resistor as form.
S_1, S_2 — 2-circuit 5-position ceramic switch (Centralab type 2503).
S_3 — 1-circuit 11-position ceramic switch (Centralab type 2505).

when tapped coils are used in a tank circuit. It is true that the losses are somewhat higher than they would be with coils of comparable construction without taps. In our opinion the question isn't worth worrying about, at least over three bands, if the unused turns are shorted. (In the arrangement suggested here the fourth band is covered by a separate coil.) The measured output of the transmitter shown is 25 watts on all bands on which it is driven as a straight amplifier, with an input of 36 watts. The overall efficiency, 70 per cent, compares very favorably with what is obtained with plug-in coil transmitters, especially considering that the tube is handicapped by having only 400 volts on its plate. The output doubling to 28 Mc. is 13 watts with the same input, which is less a reflection on the efficiency of the tank circuit than on the inefficiency of frequency multiplication.

There are other possibilities in variable inductances. We have used the roller-type inductance from the antenna circuit of the BC-375-E with very satisfactory results at power inputs up to 400 watts, using an 813 amplifier. This unit is still in the experimental stage at this writing but checks so far have indicated that the coil will stand up satisfactorily. Barker & Williamson makes a series of similar units in 500- and 1000-watt power ratings. We have not had an opportunity to try the roller coils used in the antenna circuit of the 274 series transmitters, but they look very attractive for sets using a couple of 807s or the equivalent.

Altogether, the variable-inductance problem is much less tough on close inspection than at first glance. The tendency to shy away from variable coils is partly because of the suspicion that they are not efficient enough — although it seems to us that swapping a few lost watts, if necessary, for the convenience and easier TVI-proofing of a compact bandchanging rig is a worth-while trade — but mostly because we're used to doing it the other way.



In the oscillator section, the tank coil for the interstage network is at the upper left, mounted on the bandswitch. Additional output condensers used on 7 and 3.5 Mc. are hidden by the switch wafer in this view, but are mounted near the chassis so the leads to the switch contacts are short. The amplifier grid lead runs through a hole in the subchassis directly to the grid terminal on the tube socket. The output condenser for 14 Mc. is mounted directly on the socket.

Adjusting the Output Circuit

The optimum values for C_2 mentioned earlier may not be usable at the high-frequency end of the spectrum. The total capacitance across the input side of the network may run the Q to such a high figure (especially with tubes operating at a high ratio of plate voltage to plate current) that C_2 must be larger. The larger capacitance is not entirely undesirable, since it represents a still lower-impedance shunt across the TV range.

If the capacitance of C_2 is too small for the minimum capacitance at the input end of the network the tube will be overloaded no matter what value of inductance is used at L_1. The first step in adjusting such a circuit, therefore, is to determine how much capacitance is actually needed at C_2, particularly at 28 Mc. — and possibly also at 14 Mc. — to permit proper loading. The coax line should first be made as flat as possible; the s.w.r. bridge is the simplest gadget for this purpose.[3] The most convenient way to find the proper value for C_2 is to connect a variable condenser of about 300-$\mu\mu$fd. maximum capacitance across the coax and find the setting that permits satisfactory control of loading by varying L_1, keeping C_1 near minimum, but at resonance in all cases. The lead length to the condenser does not matter particularly for this test. Alternatively, a number of 100-$\mu\mu$fd. fixed condensers can be connected in parallel, determining by trial how many are needed to accomplish the same purpose. In the average case, a capacitance of 200 to 300 $\mu\mu$fd. should be about right, and with most beam tetrodes the Q will be amply high — and the tank efficiency greatest — with C_1 at or near minimum capacitance, on 28 Mc. Select the nearest *larger* size of capacitance available in a single fixed condenser as the value to be used for 28 Mc. at C_2. If the capacitance is 200 $\mu\mu$fd. or more the same condenser will serve for 14 Mc. also.

The output condenser for 28 Mc. should be as close as is humanly possible to the coax fitting. Ground one side close to the fitting and then adjust the "hot" lead to resonate at the desired TV frequency. The frequency may be 70 Mc. for best average results, but where one special channel is most troublesome the resonant frequency can be set there, preferably to the harmonic in that channel that comes nearest the picture-carrier frequency. A grid-dip meter is needed for this adjustment. Short-circuit the coax fitting on the *inside* of the chassis to form a parallel-resonant circuit and adjust the lead length to get the meter to dip at the chosen frequency when coupled to the lead. Do this before connecting anything else to the fitting.

Once the 28-Mc. condenser is set, add the additional capacitance needed, if any, for 14 Mc. and adjust its lead length to resonate below 50 Mc. with the coax fitting *not* short-circuited. Continue with the 7- and 3.5-Mc. condensers successively, and after they are all in place check again with the grid-dip meter through the TV range to make sure that no resonances show up between 54 and 88 Mc. It is just as well, too, to make sure that none of the parallel resonances that do exist will fall on a harmonic that could cause interference to other services than TV — including the amateur bands! It is easy to avoid such resonances, and once done the job is done for good.

Condenser Ratings

Postage-stamp mica condensers are quite adequate at C_2 for 50- or 75-ohm outputs at power levels of 100 watts or so. At 100 watts output the peak voltage across a 75-ohm load is 122 volts, and with 100 per cent modulation it will be 244 volts. This is well within the 500-volt rating of these condensers, and experience has shown that they stand up with no trouble at all.

[3] The proper method of adjusting an antenna coupler to make the coax link line flat is described in the transmission line chapter in the current *Radio Amateur's Handbook*. For information on dummy antennas capable of handling the transmitter's power output see Grammer, "Adjustable Dummy Antennas," *QST*, March, 1951.

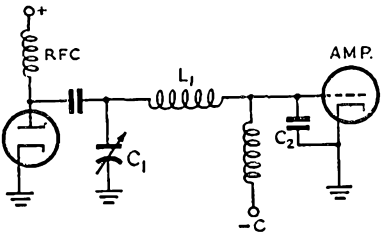


Fig. 5 — The pi network used to couple a driver and amplifier. The fixed output condenser, C_2, serves as an effective harmonic short across the grid-cathode circuit of the amplifier, when properly installed.

The voltages are lower across 50 ohms. At 700 watts, which is a reasonable figure for a kilowatt input, the peak voltage across 75 ohms is 322 volts, or 644 volts with 100 per cent modulation. Condensers with a 1250-volt working rating should handle this satisfactorily.

These figures are based on a purely resistive load, of course, and the voltage across the condenser may be either higher or lower if the s.w.r. on the coax line is greater than 1 to 1. However, the safety factor is about 2 with both types of condensers mentioned, which means that the s.w.r. can be as high as 4 to 1 without exceeding the working voltage rating.

The blocking condenser between the tube plate and C_1 should have a capacitance of 500 $\mu\mu$fd. or more for operation at 3.5 Mc. and above, and be rated to stand the d.c. plate voltage plus the peak r.f. voltage across it. The latter ordinarily runs less than 10 per cent of the plate voltage. With 100 per cent modulation both voltages are doubled.

The Input Side

Every effort should be made to provide a low-impedance path, for the TV harmonics, from plate to cathode of the tube. It is especially important to keep the impedance between the rotor of the tuning condenser and cathode very low, since harmonic currents flowing between these two points cannot very well be kept out of other parts of the circuit where they may cause trouble. There is no better method than to ground the condenser frame directly to the chassis, as close as possible to the point where the tube cathode is grounded. The tube socket preferably should be mounted *above* the chassis so that a short, direct connection can be made to chassis from the cathode pin. When the socket is mounted in this way it is unnecessary for the current to follow a roundabout path to go from the condenser to cathode — as it frequently does in the more conventional method where the socket is sunk beneath the chassis. The tube socket in the transmitter shown here is mounted in the recommended way, with the input condenser about as close as is physically possible.

The pi network lends itself well to this type of construction, since it requires parallel plate feed. Although for safety reasons parallel feed is more desirable than series feed, it does raise something of a problem in that r.f. chokes frequently go bad somewhere in the 3.5-30 Mc. range. For plate voltages up to 750 the ordinary small 2.5-millihenry chokes give no trouble at all in the amateur bands, but they are unable to take voltages much over that figure. Most of the larger transmitting-type chokes will work quite well on two or even three bands, but frequently fail somewhere along the line. One that we have found to be good on all bands, including 21 Mc., is the National R-175, providing it is not mounted too closely to a shield. Close to metal, it is likely to develop a bad resonance at 14 Mc., but if there is at least an inch and a half of clear space in all directions it works very well at plate voltages up to 2000, which is as far as our present tests have gone.

The coax connector for the output should be fairly close to the point where the input condenser and tube cathode are grounded — or at least placed in such a way that the current does not have to wander all over the chassis to flow between the grounded sides of the input and output condensers. A little thought devoted to placing the components so that the currents will flow where you want them will pay off in lesser harmonic output and also in better performance at the fundamental. Some screen-grid tubes that are ordinarily so hard to tame that they usually require neutralization become well-behaved when the amplifier is laid out with these points in mind.

Interstage Coupling

The pi network also has its points as a means for coupling a driver to an amplifier. The reason is very similar — the output condenser, properly installed, can be used as an effective by-pass for harmonics generated by rectification in the amplifier grid circuit. The circuit is shown in Fig. 5. C_2 is a fixed condenser, mounted as close as possible to the grid and cathode terminals on the socket, with the shortest possible leads. In the case of larger tubes, especially those with directly-heated cathodes, or with tubes having indirectly-heated cathodes where the cathode is grounded through a by-pass condenser, the condenser should be returned to ground rather than to the cathode itself. In such case the leads should be kept short and the condenser grounded to the chassis at the nearest available point.

A good by-pass from grid to cathode keeps the impedance of the path followed by the harmonic currents very low, with the result that relatively little harmonic voltage is present at the grid to be amplified in the plate circuit. In some cases it is amplification of this sort that is responsible for harmonic output rather than harmonics actually generated in the plate circuit. With a conventional parallel-tuned tank in the grid circuit of an amplifier, the inductance of the grid lead is usually large enough to represent an appreciable impedance at v.h.f., and the loop formed by the lead and the grid tuning condenser often actually resonates in the TV range. In either case a large harmonic voltage is developed at the grid.

(*Continued on page 104*)

Three Channels on Ten

A 28-Mc. Mobile Transmitter for Civil Defense

BY C. VERNON CHAMBERS,* W1JEQ

• Here is a mobile transmitter that can be shifted back and forth between 28-Mc. civil defense channels merely by the flip of a switch. Complete with modulator and power supply, this unit is ideal for the fellow who wants multi-channel crystal-controlled operation along with freedom from retuning each time a frequency shift is made.

RECENT months of operation on the local civil defense nets have given this operator several ideas concerning the design of a mobile transmitter intended principally for civil defense work. In the order of their importance, these ideas or requirements are as follows:

First, the transmitter should be crystal controlled to assure on-the-nose operation at the net frequencies. Second, in the interests of snappy communication it should require no retuning when a frequency shift is made. Third, it need not operate at a power level greater than that necessary to provide dependable contacts within the local area. This power restriction results in longer life for the car battery and, at the same time, assists in reducing QRM. In addition, the transmitter should be a basically simple and inexpensive unit and it should be self-contained if possible. Cost is a factor which ties in with local defense budgets and simplicity is a sales point to offer if it's your job to get more mobiles on the road. Making the unit self-contained does away with much of the cabling that ordinarily complicates a mobile installation. These, then, are the features which were incorporated in the transmitter to be described.

The r.f. section of the transmitter employs a crystal oscillator and a single-tube amplifier that operates with a power input of approximately 10 watts. An inexpensive rotary-solenoid unit, remotely controlled from the operating position, is used as the r.f. switch and permits instantaneous selection of any one of three output frequencies. A two-tube plate modulator system and a combination vibrator-a.c. power supply are built into the transmitter. When operated at full power input, the unit draws less than 15 amperes from the car battery.

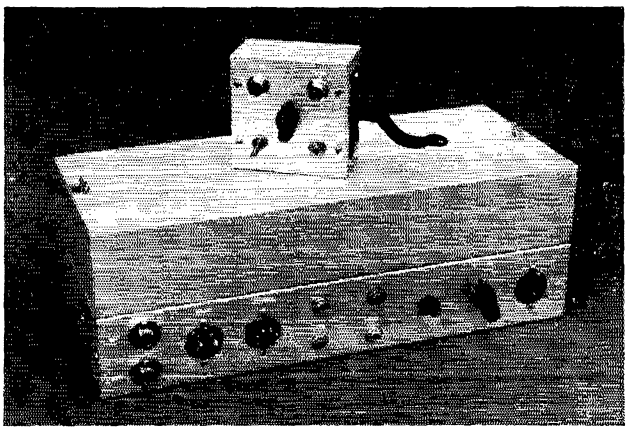
*Technical Assistant, *QST*.

Circuit

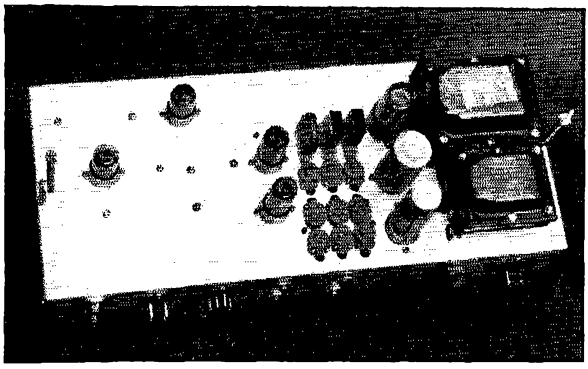
The circuit diagram of the transmitter, Fig. 1, may be divided in four sections — r.f., audio, power supply and control — and the sections will be discussed in that order.

Type 5763 tubes are used in both r.f. stages. The oscillator employs 7-Mc. crystals in a grid-plate circuit that delivers output at 28 Mc. Section A of S_1 is the crystal switch and Wafer B is used to switch the tuning capacitors, C_1, C_2 and C_3, across the plate circuit inductor, L_1. J_1 is the metering jack for the oscillator and L_2 is one end of a neutralizing link which is used to stabilize the power amplifier.

Excitation for the amplifier is coupled to the grid through capacitor C_{14}. Grid-leak bias is used in the amplifier and J_2 and J_3 are the metering jacks for the grid and the cathode circuits. Section C of the rotary solenoid unit is used as the selector switch for the plate-tuning capacitors C_4, C_5 and C_6. L_5 is the 28-Mc. plate tank coil, L_3 is a parasitic choke and L_6 is the output coupling link. The neutralizing winding, L_4, connects back to L_2 of the oscillator circuit. Wafer D of S_1 is the switch for the antenna tuning capacitors,



The mobile transmitter and the control box are both enclosed in standard aluminum chassis. As seen in this view, the antenna connectors, J_8, J_9, the metering jacks, the fuse holder, and S_2 and J_7 are mounted on the front wall of the transmitter base. The control box has the frequency-selector switch centered on the panel and I_1 and I_2 are centered above S_5 and J_{10}, respectively.



A top view of the transmitter chassis showing the vibrator transformer mounted to the rear of the filter choke at the right end of the unit. The vibrator is centered between the 6AX5GT and the dual-electrolytic capacitor and the crystal sockets are mounted at the rear of the r.f. trimmers. The oscillator tube is located to the rear of the amplifier tube and the 12AX7 is at the rear of the chassis to the right of the 12AU7. This view shows the threaded brass rods — one at each end of the chassis — which extend up through the dust cover when the latter is in place.

C_7, C_8 and C_9. Send-receive relay Ry_1 is connected to the antenna input and the output jacks.

Section S_{1E} and switch S_2 of Fig. 1 are integral parts of the rotary solenoid assembly. The complete unit was advertised by Srepco, Inc., in *QST* for August and October, 1951. The switch is a surplus item which requires modification before it can be used in the transmitter (more about this later). Be sure to list the extra section which bears Stock No. E-86 when placing your order. Should this particular assembly be unobtainable in the future, it will be possible to obtain a non-surplus unit from the manufacturer.[1]

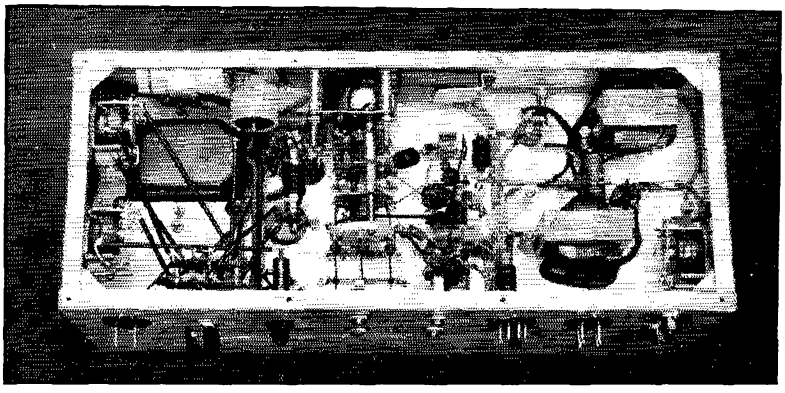
One half of a Type 12AU7 is used in the grounded-grid input circuit of the speech equipment. The second half of the tube operates in a Class A driver stage which is in turn transformer-coupled to a Class B modulator. D.c. voltage for a s.b. carbon microphone is obtained by connecting the microphone in series with the cathodes of the 12AU7. The modulator employs a Type 12AX7 tube and delivers approximately 7 watts output. J_6 is the cathode metering jack for the 12AX7.

The power supply for the transmitter uses a combination-type transformer which may be operated from a primary source of either 6 volts d.c. or 115 volts a.c. A 6AX5GT rectifier tube is employed along with a condenser-input filter, and r.f. filters for reducing hash are incorporated in both primary and secondary circuits. The r.f. filters consist of C_{21} and RFC_6 in the secondary and C_{24} and RFC_7 in the primary. The 6-volt lead for the vibrator enters the chassis through J_8.

When S_3 of the power supply is positioned as shown in Fig. 1, all primary power for the transmitter is taken from the car battery. The supply is converted for a.c. input by switching S_3 to the second position and by feeding 115 volts a.c. to J_7. Notice that the heater line of the transmitter is transferred from the battery to a heater winding of T_3 when the transition from d.c. to a.c. operation is made.

A power cable connected between J_{11} of the control box and J_9 of the transmitter chassis carries all of the remote-control wiring for the mobile installation. S_5 is the heater switch which controls the starting relay, Ry_3, and S_4 is the frequency-selector switch which is connected back to the control wafer of the rotary solenoid. Voltage for the solenoid enters the control box through J_{12}. The antenna and the push-to-talk relays, Ry_1 and Ry_2, respectively, are made operative by the microphone switch. J_{10} is the microphone jack, I_1 is the heater pilot lamp and I_2 is the plate-circuit on-off indicator. A pair of

[1] G. H. Leland, Inc., 123 Webster St., Dayton 2, Ohio.



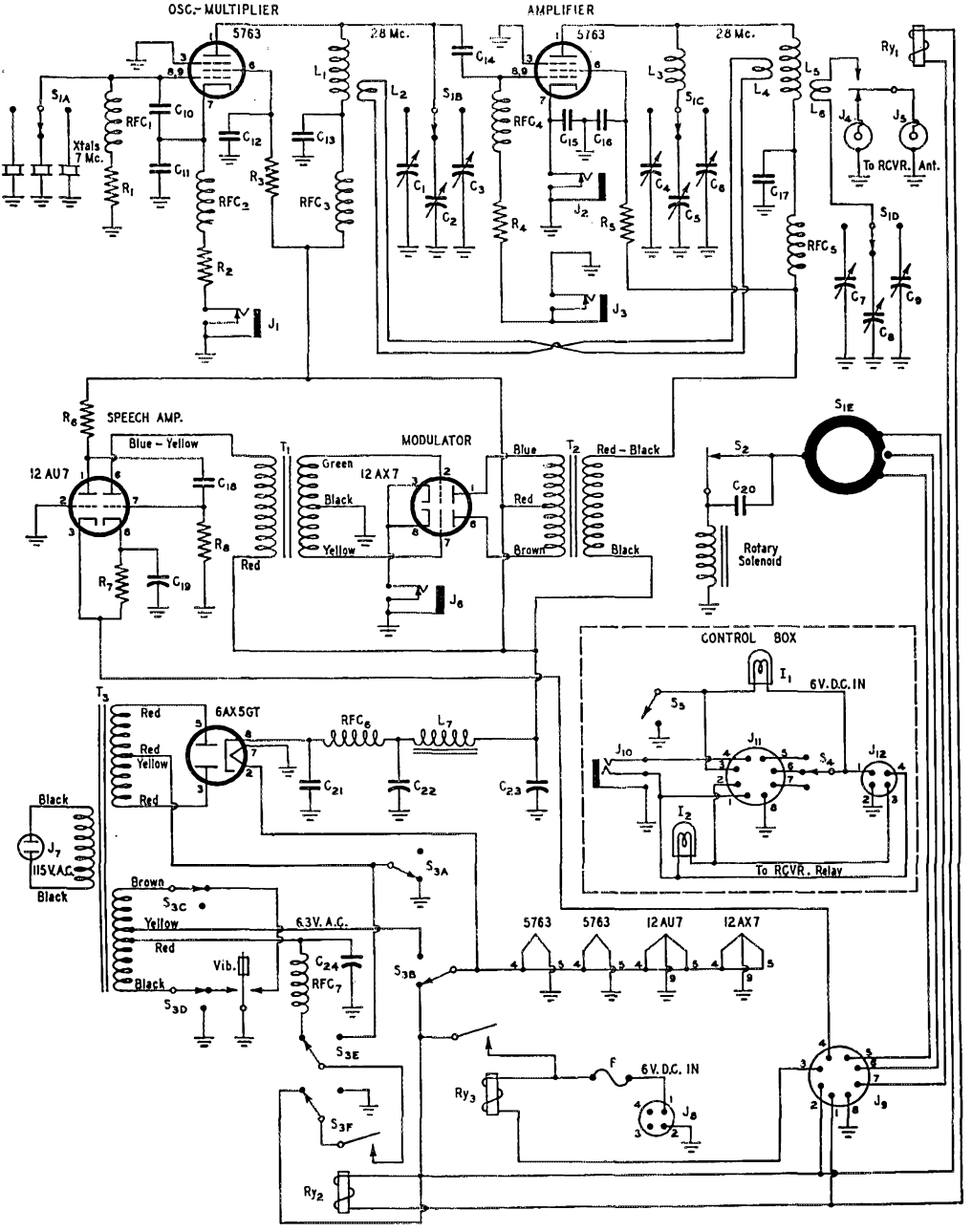
This bottom view of the civil defense transmitter shows the rotary solenoid switch mounted on the rear wall of the chassis along with C_{20}, C_{24} and RFC_7. Ry_2 and Ry_3 are at the left end of the base and the antenna relay is bolted in place at the lower right-hand corner of the chassis. This view also shows the shell for T_3 extending through a rectangular cutout at the upper left-hand corner of the unit. The modulation transformer is mounted to the rear and right of T_1 at the right end of the chassis.

leads connected between J_{11} and J_{12} provides control terminals to which a receiver on-off relay may be connected.

Construction

The base and the dust cover for the transmitter each measure 3 by 7 by 17 inches. Top and bottom views of the transmitter show that the parts are well spaced out and, as a result, it should not be difficult to duplicate the original job. We recommend that the r.f. section be laid out first.

As seen in the top view, the tuning capacitors form three lines across the chassis with C_7, C_8 and C_9 being closest to the front edge of the base. Capacitors C_1, C_2 and C_3 are mounted in between the crystal sockets and the amplifier trimmers, C_4, C_5 and C_6. The center row of capacitors — C_2, C_5 and C_8 — is centered 7¾ inches in from the right end of the chassis. Each capacitor is fastened to the chassis with two No. 4 machine screws and the stator and the rotary terminals of the units pass through ¼-inch holes to the



contacts of the solenoid switch.

On top of the chassis, the power transformer and the filter choke are mounted on their sides with the aid of No. 8 machine screws. Although this method of mounting requires that a rectangular cutout for the transformer be made in the chassis, it does allow a standard 3-inch deep chassis to be used without modification as the dust cover.

A bottom view of the transmitter shows the rotary solenoid switch mounted on metal pillars against the rear wall of the chassis. Before the switch is mounted, it is necessary to replace the last wafer of the assembly — the one farthest from the solenoid — with the Type E-86 section. This new wafer serves as Sections C and D of Fig. 1. As seen in this view, the control wafer, S_{1E}, is at the top of the photo and the crystal and the oscillator plate switches, Sections B and C, respectively, are next in line.

All of the below-deck r.f. components are grouped to the right of the selector switch. C_{13}, R_1, L_1, RFC_1 and RFC_3 are terminated at a 3-terminal tie-point strip which is located at the rear of the oscillator-tube socket. A second 3-terminal strip, mounted to the right of this same socket, supports R_2 and RFC_2 and provides B-plus connecting points for R_3 and RFC_3. The 4-terminal strip to the right of the amplifier tube socket helps to support C_{17}, R_4, R_4, L_5 and RFC_4. One end of the neutralizing winding is wrapped around the amplifier plate coil and the oscillator end of the link is soldered to lugs which are in turn fastened to a ¾-inch stand-off insulator. The antenna-coupling coil, L_6, is cemented to a strip of polystyrene which is held away from the chassis by means of a ⅝-inch metal pillar. Layout of the audio and the power supply components requires no special attention.

When wiring the transmitter, we used No. 16 tinned throughout the r.f. circuits and No. 12 wire, covered with spaghetti, for all of the 6-volt primary leads. Shielded wire was used for the remainder of the interchassis connections.

Testing

With the control box cabled to the transmitter, and with S_5 and the microphone switch closed, the power supply output should measure in excess of 400 volts with 115 volts a.c. applied to J_7. S_3 must be in the a.c. position and the r.f. and the audio tubes should be removed from the tube sockets during this test. If 6 volts d.c. is now used as the primary source of power (S_3 must be set at the d.c. position), the output voltage will be slightly lower than that measured with a.c. input. Naturally, 6 volts d.c. for the control relays must be available during the testing of the supply.

Current-Voltage Chart

Input	*6 Volts D.C.*				*115 Volts A.C.*			
Tube	E_p	E_s	I_R, Ma.	I_k, Ma.	E_p	E_s	I_R, Ma.	I_k, Ma.
Osc.	280	205	—	22	315	250	—	30
Amp.	"	180	2.7	38	"	240	3.5	45
12AU7 Pin 1	72	—	—	*9	82	—	—	*14
Pin 6	280	—	—		315	—	—	
12AX7	"	—	—	10/30	"	—	—	15/35

* Total cathode current for tube.

Fig. 1 — Wiring diagram of three-channel mobile transmitter. The schematic diagram of the control box is shown in the insert.

C_1, C_2, C_3, C_4, C_5, C_6, C_7, C_8, C_9 — 50-$\mu\mu$fd. ceramic trimmer (Centralab 822-AN).
C_{10} — 15-$\mu\mu$fd. ceramic.
C_{11}, C_{14} — 100-$\mu\mu$fd. ceramic.
C_{12}, C_{13}, C_{15}, C_{16}, C_{17} — 0.001-μfd. disc ceramic.
C_{18} — 0.005-μfd. disc ceramic.
C_{19} — 10-μfd. 50-volt electrolytic (Mallory TC-32).
C_{20} — 1.0-μfd. 200-volt paper (Mallory UB-351).
C_{21} — 0.01-μfd. disc ceramic.
C_{22}, C_{23} — 20-μfd. 450-volt electrolytic (Aerovox AFH-44J).
C_{24} — 500-μfd. 25-volt electrolytic (Sprague TVA-10).
R_1 — 68,000 ohms, ½ watt.
R_2 — 470 ohms, ½ watt.
R_3, R_4, R_5 — 22,000 ohms, ½ watt.
R_6 — 47,000 ohms, ½ watt.
R_7 — 1000 ohms, ½ watt.
R_8 — 0.47 megohm, ½ watt.
L_1 — 8 turns No. 20 tinned, ½-inch diam., ½ inch long (B & W 3003).
L_2 — 1 turn No. 18 enamel, ½-inch diam.
L_3 — 9 turns No. 16 tinned, 3/16-inch diam., ⅝ inch long.
L_4 — 1 turn No. 18 enamel wound around center of L_5.
L_5 — 10 turns No. 20 tinned, ½-inch diam., ⅝ inch long (B & W 3003).
L_6 — 10 turns No. 24 tinned, ½-inch diam., 5/16 inch long (B & W 3004).
L_7 — 10-hy. 110-ma. filter choke (Merit C-3193).
F — 20-amp. fuse.
I_1, I_2 — 6.3-volt pilot lamp.
J_1, J_2, J_3, J_6 — Closed-circuit jack.
J_4, J_5 — Coaxial-cable connector.
J_7 — Retainer-ring type 115-volt receptacle (Amphenol 61-M1).
J_8, J_{12} — Retainer-ring type plug, 4-pin male (Amphenol 86-RCP4).
J_9 — Retainer-ring type plug, 8-pin male (Amphenol 86-RCP8).
J_{10} — Three-circuit microphone jack.
J_{11} — Retainer-ring type plug, 8-pin female (Amphenol 78-RS8).
RFC_1, RFC_2, RFC_3, RFC_4 — 2.5-mh. r.f. choke (National R-50).
RFC_5 — 2.5-mh. r.f. choke (National R-100-S).
RFC_6 — 2.5-mh. r.f. choke (National R-100).
RFC_7 — 25-30 μh. r.f. choke (Mallory RF-583).
Ry_1 — S.p.s.t. 6-volt relay (Potter & Brumfield MR5D).
Ry_2, Ry_3 — S.p.s.t., normally open, 6-volt relay (Potter & Brumfield MR1D).
S_1 — 4-pole 6-position rotary solenoid switch; see text.
S_2 — Interrupter switch; see text.
S_3 — 6-pole 3-position rotary switch (Centralab 1417).
S_4 — 1-pole 6-position rotary switch (Centralab 1401).
S_5 — S.p.s.t. toggle switch.
T_1 — Driver transformer, variable ratio, s.p. to Class B grids, pri. rating 20 ma. (Merit A-2922).
T_2 — 10-watt modulation transformer, variable ratio, pri. rating 70 ma., secondary rating 60 ma. (Merit A-3008).
T_3 — A.c.-d.c. vibrator transformer with 6-volt and 115-volt primary windings. Secondary windings: 330 v. d.c., 100 ma.; 6.3 v. a.c., 4 amp. (Merit P3075.)
VIB — Vibrator unit (Radiart 5314, James Vibrapower J-2), etc.

The solenoid circuit may now be checked out by connecting 6 volts d.c. to J_{12} and rotating the frequency switch, S_4. Down in the transmitter, the r.f. switch should rotate to a position that corresponds to the setting of S_4. It is not necessary to have the plate or the heater power for the transmitter turned on during this preliminary test.

It is convenient to have two milliammeters available during the alignment of the r.f. and the audio circuits. A low-range job — 10 or 15 ma. — will suffice for the amplifier grid-circuit readings and a 100-ma. meter will take care of the other circuits. Plate and screen voltage should be disconnected from the amplifier tubes before the testing is started.

With the high- and the low-range meters plugged into J_1 and J_3, respectively, power is applied to the oscillator and the circuit is resonated at the three different crystal frequencies. The two meter readings observed during these adjustments will be somewhat higher than those tabulated in the Current-Voltage Chart.

The next step is that of neutralizing the final amplifier. This can be done most effectively with the oscillator delivering output at the center of the band. Neutralization is accomplished by varying the position of L_2 with respect to L_1. When the link has been correctly poled and coupled, it will be possible to resonate the amplifier tank circuit without affecting the grid-current reading.

A 15-watt lamp bulb may now be connected to J_5 and the plate and screen leads for the output tube should be reconnected. The 100-ma. meter is now transferred to J_2 and, with the power turned on, the amplifier is resonated at the three operating frequencies by means of capacitors C_4, C_5 and C_6. The antenna-tuning capacitors, C_7, C_8 and C_9, and the coupling between L_5 and L_6 are now adjusted to load the transmitter on the three channels in use. A final check of the amplifier stability may now be made by removing the crystals and rotating the frequency-selector switch through the full swing. This test will result in an amplifier plate current of approximately 70 ma. and a zero-current grid circuit reading. If these conditions are not obtained, it is an indication that the neutralizing link needs further adjustment.

If the 100-ma. meter is now plugged into J_6, it should show current excursions of approximately 20 ma. (see chart) with speech.

In our installation, an 8-foot whip antenna is coupled to the transmitter by means of a 2-foot length of RG-58/U coaxial cable. This system plus careful adjustment of the coupling between L_5 and L_6 of the transmitter has resulted in nearly equal loading at all three output frequencies.

CD work was foremost in mind when this rig was put together and, for that purpose, "Three Channels On Ten" fills the bill very nicely. However, a real honest-to-goodness 28-Mc. mobile fan may want a couple of off-the-net rag-chewing frequencies to play with. Well, there is plenty of room on the chassis and the solenoid unit has *six* sets of contacts!

U. S. N. R.

Message from the Director, Naval Communications

Captain W. B. Goulett, USN, director, Naval Communications, sent the following message to the ARRL Central Division Convention held at French Lick, Ind., in October 1951:

"On behalf of the Naval Communications Service I extend best wishes for the success of your convention. The unselfish service of the American amateur has become more important in these troubled times than ever before. The same skills and enthusiasm which contribute so much to civil security have made an invaluable contribution to the armed services. More than 8000 amateurs served in the Navy with distinction during World War II. When the Korean operations began, the radio amateurs again furnished the Navy with an important source of experienced and resourceful technicians and operators.

"Radio amateurs always have given much valuable support to the Naval Reserve training programs. The fact that non-Reservist amateurs serve as volunteer instructors in several Reserve electronics units points up the traditional amateur spirit of coöperation. The affiliation of radio amateurs with the Naval Reserve is both welcomed and appreciated.

"A spirit of friendliness, respect, and active coöperation has long existed between the League and the Navy. I anticipate that this same spirit will continue in the years ahead, for our mutual benefit and in the national interest."

Radio Drills for Amateurs

Radio amateurs who are members of the Naval Reserve, Marine Corps Reserve, or Coast Guard Reserve, and amateurs in the regular Navy, Marine Corps, or Coast Guard, may request authorization to participate in the Naval Reserve radio drills from their home stations. Special circuits, made up entirely of such service-affiliated amateurs, are in operation in most naval districts. All operation is outside the amateur bands, using Naval Reserve call signs and frequencies. Application to participate should be made to the Commandant of the Naval district in which you reside, attention of the District Reserve Electronics Program Officer.

Schedules of Reserve drills for authorized radio amateurs, and the addresses of naval district headquarters, follow:

First Naval District (Hq., 495 Summer St., Boston 10, Mass.): Sunday, 0900–1000 EST, 4105 kc.

Third Naval District (Hq., 90 Church St., New York 7, N. Y.): Write for schedule.

Fourth Naval District (Hq., Naval Base, Philadelphia 12, Pa.): Sunday, 0900–1000 EST; Friday, 1930 EST, 4010 kc.

Fifth Naval District (Hq., Naval Base, Norfolk 11, Va.): Sunday, 0800–0900 EST, 7385 kc.

Sixth Naval District (Hq., Bldg. 4, U. S. Naval Base, Charleston, S. C.): Sunday, 1400–1500 EST, 7455 kc.

Eighth Naval District (Hq., New Federal Bldg., New Orleans 12, La.): Sunday, 0800–0900 CST, 8000 kc.

Ninth Naval District (Hq., Naval Training Center, Great Lakes, Ill.): Sunday, 0930 CST, 4075 kc.

Eleventh Naval District (Hq., 1027 W. Broadway, San Diego 30, Calif.): Write for schedule.

Twelfth Naval District (Hq., Federal Office Bldg., San Francisco 2, Calif.): Sunday, 0900–1030 PST, 7535 kc.

Thirteenth Naval District (Hq., 1611 W. Wheeler St., Seattle 99, Wash.): Write for schedule.

Potomac River Naval Command (Hq., Naval Gun Factory Washington 25, D. C.): Monday, 2000 EST, 3415 kc.

The Novice Round-up

January 12th through 27th

ARRL cordially invites the Novices — and Old-Timers — to take part in a new operating activity designed especially for the newcomer to amateur radio. Here is an opportunity for the Novices to fill out their Worked All States lists and have a lot of fun while doing so. Every Novice works toward the day when he can qualify for a higher class license and it is a known fact in amateur radio that contests are great builders of code speed and operating skill.

To acquaint Novices with the League's field organization, the Round-up is fashioned after other League activities where the participant aims at working all of the League's sections. To help the Novice understand, a word about the sections is in order. The League operating territory consists of 72 sections. Larger states are divided to make more than one section for operating-administrative purposes. Your Section Manager invites news of your operating activities and interests. His address and the list of sections appear on page 6 of every issue of *QST*.

The rules are simple to follow. The extended Round-up period allows participants 40 hours' total operating time. The sample reporting form shown must be followed. A supply of these plus a map of the United States, suitable for posting on the wall of your shack, will be sent gratis upon request to ARRL Headquarters, West Hartford, Conn.

ROUND-UP PERIODS

Start	*End*
Jan. 12th	Jan. 27th
6:00 P.M.	9:00 P.M.
Local Time	Local Time

Many Novices are already holders of Code Proficiency awards. Under the rules, they are entitled to an extra scoring credit equal to their certified speed. Any nonholder of a Code Proficiency award can apply for this extra credit by attaching a copy of one of the qualifying runs sent from W6OWP on January 5th or from W1AW and WØTQD on January 17th to his contest reporting form. Complete details of the Code Proficiency runs will be found in the Operating News section of this issue of *QST*.

All participants submitting reports will be listed in *QST*. A certificate award will go to the highest-scoring Novice in each section.

It is suggested that Novices looking for contacts with non-Novice stations check the frequencies immediately above and below the 3700–3750 kc. region. It is earnestly requested that non-Novice stations avoid operating in the Novice subband to lessen the QRM. No special precautions about contest work in the 11- and 2-meter bands.

Don't forget to send for reporting forms and map and be all set for a rip-roaring good time.

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. 12						
80	1800	1	Conn.	5	WN8AAA	Ohio	1
	1810	2	"	3	WN4ABC	E. Fla.	2
	1815	3	"	6	W2CD	W. N.Y.	3
	1825	4	"	2	WN9DDD	Ill.	4
	1835	5	"	10	WN3RRR	E. Penn.	5
	1840	6	"	4	WN3TTT	E. Penn.	–
	1852	7	"	7	WN2OOO	W. N.Y.	–
2	1855	8	"	11	W1BDI	Conn.	6
	Jan. 15						
80	0800	9	"	14	W2RRR	E. N.Y.	7
	0810	10	"	21	WN1CCC	Maine	8
	0820	11	"	15	WN2RRR	N. N.J.	9
	0835	12	"	14	W1XXX	Maine	–

Total operating time: 1 hour 30 min.
Bands used: 80 and 2

Total Points 12
CP Credit 15
Diff. Sections 9

Claimed score: 12 points plus 15 CP = 27 × 9 (sections) = 243

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 up as one desires 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-, 11-, 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 is the "sec-

(*Continued on page 106*)

FCC's Plan for Handling TVI

A Double-Barreled Approach: Interference Committees, and Manufacturers' Installation of Filters

BY GEORGE S. TURNER*
Chief, Field Engineering & Monitoring Division, FCC

• Experience with TVI over the past several years has demonstrated to all parties concerned the importance of *cooperation*. On this premise, FCC has built a two-pronged plan looking toward further progress in the TVI problem — (1) endorsement of the community interference committee idea; (2) obtaining agreement from receiver manufacturers in special cases to install high-pass filters or make other necessary modification to existing sets without cost when the interference results from a receiver deficiency.

FCC Regional Managers have been directed to encourage and sponsor the formation of community interference committees. For the name of the FCC man you and your club will be in touch with, see the list at the end of this story.

THE Commission has appreciated the peculiar problems with which amateur radio station operators have been faced since the advent of f.m. and TV broadcasting. Prior to the arrival and widespread use of these two new forms of communication and entertainment, the amateur stations were, in practically every instance, operated on frequencies which were higher than the frequencies to which their neighbors' broadcast receivers were tuned. F.m. and TV, of course, changed all this. Now, the amateur operates generally, if not always, on frequencies lower than those in use by his neighbors' f.m. and TV receivers. Consequently, if these receivers accept interference due to his operation, it is due either (1) to emission of harmonic or other spurious frequencies by the amateur transmitter, or (2) to acceptance by the f.m. or TV receiver of amateur signals due to a lack of selectivity in the receiver or to blanketing effects resulting from close proximity of the transmitting and receiving apparatus.

Two far-reaching steps have recently been taken by the Commission to solve the interference problems which have arisen as a result of the rapidly accelerating use of home TV receivers.

TVI Committees

First, realizing that the problem is one which can best be resolved through coöperation on the part of TV owners, servicemen, amateurs and TV distributors, the FCC's Regional Managers now sponsor the organization, community-wise, of persons in these groups to mutually work out plans and procedures for the elimination of all-too-prevalent interference to which TV receivers not infrequently are receptive. This plan, operating in the communities under the coöperative drive of the people vitally affected, is expected to offer the most prompt correction of the interference, as a "home-cure" can, in most cases, be prescribed and applied immediately by the local committee without resorting to correspondence or recourse to outside aid. In the event interference is experienced in a community operating under this plan, steps could be taken as follows:

1) The person receiving the interference, the FCC to whom it is reported or the amateur involved, would telephone the chairman or other designated officer of the committee, giving all facts such as time and date of interference, visual or aural defects noted as coming from the television set, any identifying sounds such as station call letters, length of time interference was on, make and model number of set and whether it is covered by a service contract — if so, by what agency.

2) Upon receiving the above information, the committee, or specially designated members thereof, would make an appointment with the complainant (and with the licensee of a radio transmitting station, if one was involved) for the purpose of running tests to determine the cause of the interference and remedies to be applied.

3) At the time agreed upon, the committee would visit the complainant, observe his television programs, alert the transmitting station to transmit (if involved) or perform any other observations or tests indicated as necessary, to arrive at a conclusion as to causes and remedies. The committee, in the course of their investigation, would inspect the amateur station and observe the degree of suppression of harmonics, including the insertion of a low-pass filter at the antenna input of the transmitter, following which they would apply a high-pass filter to the input (antenna lead-in) of the television receiver and check to see whether this reduced the extent of the interference. Also, a line filter would be "plugged in" between the television set and the wall outlet to determine whether the interference was coming over the electric power lines. In difficult cases, it may

* W3AP.

be found necessary to change the position or direction of the transmitting antenna and/or the receiving antenna or to attach a more efficient receiving antenna in some cases.

4) When a determination has been made, it would indicate (a) whether the interference was due to improper operation of a radio station or some electrical device in the neighborhood (and the radiation of improper signals on television frequencies), or (b) whether the television receiver was non-rejective to electrical impulses including radio waves on frequencies to which the television set was not intended to respond. If situation (a) is indicated, the owner of the radio station or the interfering device would be afforded the opportunity to take the necessary steps with a view to eliminating the objectionable interference. If (b) is found to be the case, the owner of the TV receiver would be notified of the situation and advised to make the necessary correction or have it made by those in a position to do it for him. As previously pointed out, coöperation between the interested parties is extremely important in achieving a solution. If either or both parties refuse to cooperate, the interference will be much more difficult to clear up. Therefore, wholehearted coöperation should be urged on the owner of the equipment requiring improvement. If coöperation is not forthcoming or for other reason the interference cannot be satisfactorily resolved, the matter should be promptly reported to the nearest FCC field office together with all known facts having a bearing on the interference problem at hand. Television set owners who refuse to coöperate should be advised of the committee's findings and the fact that in their opinion no improvement can be achieved without the corrective measures recommended by the committee. It should be pointed out that satisfactory, uninterrupted reception should not be expected in communities more than 40 miles from a television transmitting station, nor can satisfactory reception be expected in communities which are shielded from television service by high mountains or where the local "noise level" from various electrical devices used in industry or in the home create interference patterns on a television screen. In these noisy localities, the interference investigating committee might well start with the sources of this noise and after achieving satisfactory noise reduction generally within the community, concentrate on a case-by-case basis on recurrent or exceptionally noisy cases of interference which rise noticeably above the average. It should be remembered that that which helps the TV viewer insofar as the reduction of the local noise level is concerned, also helps the amateur.

Manufacturers Install Filters

There is another important phase of our approach to the solution of this TVI problem. Under this second plan, the Commission has interested manufacturers of television receivers in a program which will materially aid and supplement the first coöperative plan mentioned above. This manufacturers' coöperative action results in their attachment to the television receivers of their manufacture of a "high-pass filter" where the radio transmitter originally causing the interference has been corrected to prevent radiation of harmonic or spurious signals but the television receiver, nevertheless, receives some form of interference due to the receiver's inherent lack of selectivity or rejectivity to signals on other than television frequencies.

Manufacturers in general are becoming increasingly aware of the susceptibility of television receivers to the operation of licensed radio stations in the vicinity and have, in general, wholeheartedly coöperated in the over-all interference suppression program.

The fine coöperation achieved in Dallas, Texas, by the amateurs bringing to the attention of the large TV manufacturers just how this situation could be satisfactorily cured to everybody's satisfaction is worthy of mention here. It points up the fact that at least 90 per cent of the difficulties which arise in connection with radio interference can be cured if prompt coöperation is rendered by the parties involved. Likewise pointed out is the fact that until coöperation was achieved, remedial action was extremely difficult.

About two years ago, the Commission's Field Engineering & Monitoring Division, realizing that coöperation was the keynote to the solution of the rapidly accelerating TVI problem, began interesting TV manufacturers in a plan to afford to their purchasers a form of guaranteed protection from television interference.[1] The mechanics of this protection were so simple and yet so all-effective that one by one TV manufacturers have adopted it. It works very simply as follows:

1) A TV owner complains to the Commission's field office that he is receiving interference from an amateur or other radio station.

2) The FCC engineer obtains the complainant's name and address, the make and type of TV receiver, and the call letters of the station said to have caused the interference.

3) The FCC engineer promptly refers the complaint to the local interference committee, provided such a committee has been organized, which committee will proceed as previously outlined. In the event the committee finds that the amateur's harmonics have been satisfactorily suppressed and that the TV receiver still is inoperative because of interference, then

[1] For his splendid work in initiating this project and carrying it through, Harold R. Richman, W4CIZ, was given a "superior accomplishment award" by FCC's Efficiency Awards Committee.

the assistance of the FCC is again solicited.

4) The FCC engineer contacts the transmitting station owner relative to steps which he has taken to assure that his transmitting station does not emit harmonic or other spurious signals which of themselves could cause interference to television, particularly the emission of signals on TV frequencies.

5) After the Commission's engineer is assured that the owner of the transmitting station has brought about the elimination from his transmitter of spurious signals and that the interference appears to be due to improper functioning of the TV receiver, and further provided the receiver is a product of a manufacturer participating in the plan, he gives the case to the receiver manufacturer's local representative, who when appraised of the facts in the case, provides for the installation of the necessary high-pass filter or such other modification as may be necessary without cost. This is on the basis of arrangements which have been worked out over a considerable period of time, whereby many of the leading manufacturers have adopted the plan of installing such high-pass networks on receivers of their manufacture. They are in much the best position to do this and not prejudice the service contract as would probably result were the installation to be accomplished by others; further, they generally place the filter at the most effective point, namely, at the input transformer rather than at the input terminals of the receiver, some distance away. The outstanding benefits accruing from this fine coöperation are manifest by the interference-free reception thereafter enjoyed by the complainant, the good will accruing to the manufacturer and by the improved neighborhood relations which ensue.

The Commission is pleased to lend its support to such a far-reaching and important plan. This coöperative effort is another milestone in the progressive utilization by the American people of the great potentialities of radio communication and entertainment.

—•••—

North Atlantic Region (Districts 1, 2, 3, 4, 5): Charles C. Kolster, 506 Federal Bldg., 641 Washington St., New York 14, N. Y.

South Atlantic Region (Districts 6, 7, 22): Paul H. Herndon, jr., 411 Federal Annex, Atlanta 3, Georgia.

Gulf States Region (Districts 8, 9, 10): Joe H. McKinney, 7300 Wingate St., Houston 11, Texas.

South Pacific Region (Districts 11, 12, 15): Kenneth G. Clark, 323A Customhouse, San Francisco 26, California.

North Pacific Region (Districts 13, 14): George V. Wiltse, 801 Federal Office Bldg., Seattle 4, Washington.

Central States Region (Districts 16, 17, 18): William J. McDonald, 1300 U. S. Court House, Chicago 4, Illinois.

Great Lakes Region (Districts 19, 20): Emery H. Lee, 1029 New Federal Bldg., Detroit 26, Michigan.

Hawaiian Region (District 21): Lee R. Dawson, P. O. Box 1142, Lanikai, Oahu, T. H.

Alaska Region (District 23): Charles T. Manning, Room 52, P. O. & Courthouse Bldg., Anchorage, Alaska.

[NOTE: If you do not know which FCC district you are in, see page 43 of June, 1951, *QST*.]

January 1927

. . . The IARU News section announces a new and revised list of intermediates for international use. The great increase in number of stations active in DX works makes this a welcomed and necessary development.

. . . In the world of DX, Belgium's amateurs are officially licensed. New Hebrides and Portuguese East Africa join the growing list of countries represented on the amateur bands.

. . . "Low-Power Crystal-Controlled Transmitters," by Assistant Technical Editor John M. Clayton, describes the construction and performance of all-a.c. or all-d.c. quartz-stabilized rigs for 160, 80 and 40 meters.

. . . Zane Grey's schooner *Fisherman* sails for the South Seas with 6ZCB at the key of the on-board installation, KNT. Contacts with amateurs will be made using 33 and 40 meters.

. . . Mass production of broadcast receivers is discussed by Technical Editor Robert S. Kruse. The example unit is a 5-tube t.r.f. receiver, considered to be Mr. Average Man's set of the day.

. . . The Armstrong and Meissner oscillator circuits are analyzed in the second of Mr. Kruse's articles entitled "How Our Tube Circuits Work."

. . . 1ER's 5-meter work between Italy and Tripoli has been confirmed and these prophetic words appear: "Evidence is gradually accumulating as to what we may expect from 5-meter waves. They seem likely to have communication value when used at the proper time and for the proper distances."

. . . Curves and other data on the UX-213 Rectron and the UX-874 voltage regulator appear.

. . . Some of the leading stations of the day described and pictured are 1AAO, 2SC and 9DTK, all prominent in traffic and DX.

Silent Keys

IT IS with deep regret that we record the passing of these amateurs:

W1CGM, Stanley F. Janik, Braintree, Mass.
W1HMK, George E. Surette, Malden, Mass.
W2NRU, Harold J. Leddy, Bayonne, N. J.
W2OYH, Guernsey H. Day, Morristown, N. J.
W3GBX, John B. Slack, Philadelphia, Penna.
W4IWJ, Jethro D. Long, E. Gastonia, N. C.
W5BAA, Rev. R. B. Gettys, Canton, Okla.
W5MII, James W. McEwin, Paris, Texas
W6DPF, Lt. Arthur A. Trautmann, USAF, Santa Rosa, Calif.
W6DTA, Albert W. Brunner, San Francisco, Calif.
W6SG, ex-KA1AW, Col. Alan D. Whittaker, jr., San Francisco, Calif.
W6WN, O. Arthur Arrigoni, San Francisco, Calif.
W8EXF, Arthur Z. Hurteau, Allegan, Mich.
W6BGQ, Harold E. White, Sonora, Calif.
W8NGC, Hazen P. Brown, Flint, Mich.
ex-FD, Fred Dulaney, Bristol, Tenn.
VE2ARR, Jean Paul Daoust, Montreal, Que.
G6JB, Joseph C. Payne, Salcombe, Devon.
G6WT, Dr. John R. Wortley-Talbot, Torquay, Devon.

Adding an Amplifier to the Novice One-Tuber

A Simple 60-Watt Final for 80 Meters

BY DONALD H. MIX,* W1TS

• **This article describes a simple amplifier that can be added to the Novice crystal-oscillator transmitter described in the May and June, 1951, issues of *QST*. It will boost the power output about eight times. Construction similar to that used in the little rig makes it unnecessary to drill holes and most of the work can be done with a pair of pliers and a screwdriver.**

MANY of those who have built the Novice one-tube rig described in the May and June issues of *QST* [1] can attest to the fact that it is by no means a toy. Nevertheless, a time always comes in the life of the advancing ham when he begins to sprout wings and look toward higher power. The simple amplifier shown in the photographs can be easily added by anyone who has built the original crystal-oscillator transmitter. It will provide a healthy boost in power — from the 5 watts or so in the antenna from the one-tuber to about 40 watts output. Since operation is confined to the 80-meter band, tests have shown that the complication of shielding will not be required for most TV areas and therefore the same type of simple construction can be employed. Like the little transmitter and its power supply, the amplifier can be built without drilling holes.

The circuit diagram of the amplifier is shown in Fig. 1. An 807 is used here, although a surplus 1625 would work as well if a 12-volt filament supply is provided. R_1 is the grid leak that furnishes bias for the amplifier grid. R_2 is the series resistor that reduces to proper value the voltage applied to the screen. C_2 augments the output capacitance of the pi-section tank of the oscillator to provide proper coupling, but, more important, it is very effective in reducing TVI and stabilizing the amplifier at the operating frequency when connected directly across the tube terminals. Two cathode by-pass condensers are used, C_4 for v.h.f. and C_5 for the operating frequency. The plate is parallel fed through RFC_2. I_1 is provided as a resonance indicator. It also will serve as a fuse in case of a short circuit across the high-voltage supply. L_1 is a small coil required to suppress oscillation in the v.h.f. range. Oscillation of this type invariably takes place in an r.f. amplifier because of unavoidable resonances in connecting leads. C_9 and L_2 form the output tank circuit tuning to the operating frequency. C_{10} and L_3 comprise the antenna tuning and coupling system. I_2 is a flashlight bulb used as an output indicator.

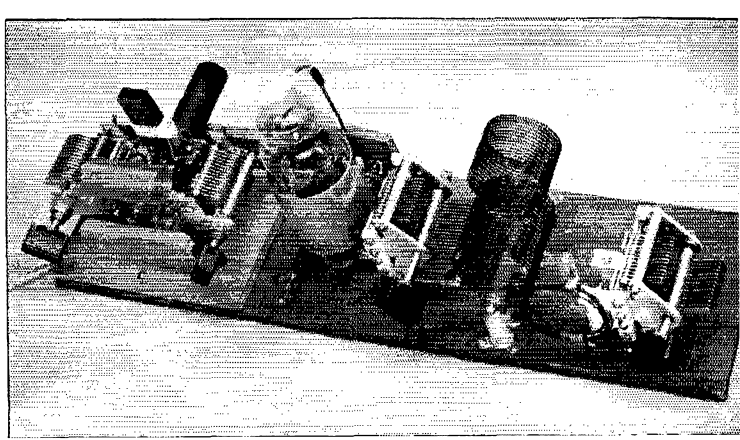
Construction

The complete transmitter, including the original crystal-oscillator unit, is assembled on a board 19 inches long and 5 inches wide. To provide a conducting ground base, the board is covered with copper (or bronze) window screening. The piece of screening should be cut two or three inches wider and longer than the board. It is stretched across the top side of the board and tacked fast underneath. The top surface of the screen should be sandpapered thoroughly to remove any enamel or lacquer protective coating that might prevent good electrical contact with the screening.

The oscillator unit should first be nailed or screwed to the baseboard at the left-hand end. Connections should be made to the Millen type 33005 tube socket before it is mounted, as shown in the sketch of Fig. 2. The two shielded wires shown should be long enough to reach to the key and power supply. After pushing back the shielding of one piece to expose the inner conductor, the shielding is soldered to Pin 5, while the inner conductor goes to Pin 1. The shielding serves as

* Assistant Technical Editor, *QST*.

[1] Mix, "The Novice One-Tuber, May, 1951, *QST*, page 18, June *QST*, page 32.



Front view of the Novice amplifier showing the r.f. indicator pick-up loops and the mounting of the grid choke and grid-leak resistor.

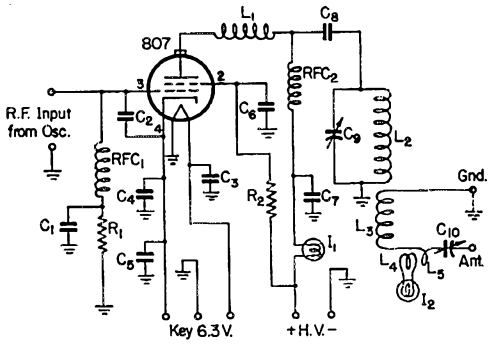


Fig. 1 — Circuit diagram of the Novice amplifier.

C_1, C_3, C_4, C_6, C_7 — 0.001-μfd. disk ceramic.
C_2 — 100-μμfd. mica.
C_5 — 0.01-μfd. disk ceramic.
C_8 — 0.001-μfd. 1000-volt mica.
C_9 — 250- or 300-μμfd. variable (National TMS-250 or TMS-300).
C_{10} — 300-μμfd. variable (National TMS-300).
R_1 — 15,000 ohms, ½ watt.
R_2 — 50,000 ohms, 10 watts.
L_1 — 1 μh. — 25 turns No. 24 enam., 3/16-inch diam., ½ inch long (National R-33 choke).
L_2 — 9 μh. — 15 turns No. 16, 1½ inches long, 2-inch diam. (B & W 3907 strip coil).
L_3 — 15 μh. — 22 turns No. 16, 2¼ inches long, 2-inch diam. (B & W 3907 strip coil).
L_4, L_5 — See text.
I_1 — 150-ma. dial lamp.
I_2 — 60-ma. dial lamp.

the grounded side of the filament line. Similarly, the inner conductor of the second piece of shielded wire goes to Pin 4 and its outer conductor is used as the grounded side of the key circuit. Both outer conductors should be grounded close to the socket as described later. Make sure that the parts under the socket are mounted firmly and with enough clearance between leads so that there will be no danger of a short circuit when the socket is mounted.

The socket is fitted with a Millen type 80008 shield can. Then the assembly is mounted on 1-inch tubular spacers with long wood screws to the baseboard. Make sure that none of the connecting wires (except the shield braid) touch the ground screening, the metal mounting spacers or the metal flange on the socket.

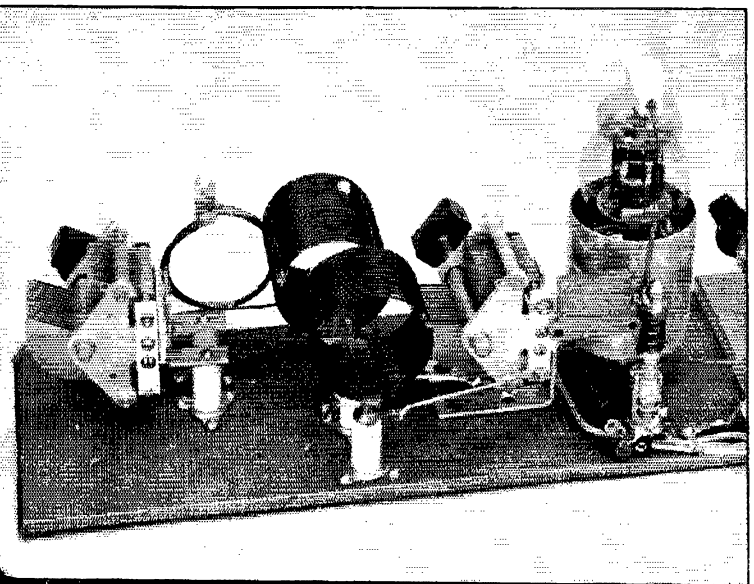
The free end of the grid choke, RFC_1, is fastened to an insulated terminal of a small lug strip. The grid leak, R_1, and the grid by-pass condenser, C_1, are fastened at the same point, while the free ends of both are soldered to a grounding lug on the strip.

The plate choke, RFC_2, is threaded into the top of a National type GS-1 pillar insulator that can be fastened to the base with small wood screws. L_1 is inserted between the choke and the plate cap of the tube. For the sake of safety to the operator, the plate cap should be of the insulated type. Wires are soldered to the terminals of I_1 and it is connected between the bottom terminal of the choke and an insulated terminal of a small lug strip fastened to the baseboard behind the choke. The free end of R_2 and a length of shielded wire, with the shield braid grounded to the base screen at the lug-strip mounting screw, also are soldered to the same terminal. The three shielded wires are bunched together at this point and the outer shields anchored to a soldering lug screwed to the baseboard. From this point on, the power wires from the amplifier and those from the oscillator should be bunched together in cable form as much as possible, considering where the various leads must go.

The plate tank condenser, C_9, is mounted on dime-store angle pieces screwed directly to the baseboard. These measure 2 inches on each leg. A soldering lug fastened at one of the lower bracket holes makes a convenient ground connection for the two shielded wires from the tube socket.

The two coils, L_2 and L_3, are mounted, end to end, as close together as possible on four National type GS-1 insulators. Two soldering lugs placed at the top of each of the insulators make connections convenient to the coil ends and the circuit. The antenna condenser, C_{10}, is fastened to the tops of two similar insulators by the use of small 1-inch angle pieces also found in dime and hardware stores.

L_5 is a single turn of reasonably heavy wire connected between the ungrounded end of L_3 and the stator terminal of C_{10}. L_4 is a similar turn



Rear view of the Novice amplifier showing the mounting of the plate choke, blocking condenser and plate by-pass condenser.

of wire covered with spaghetti and with I_2 connected in series to complete the ring. L_4 is then banded to L_5 with pieces of Scotch tape.

The input terminals of the amplifier should be connected across the output condenser of the oscillator unit, the stator terminal of the condenser connecting to the grid of the amplifier.

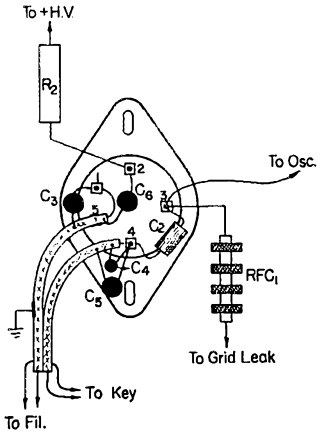


Fig. 2 — Picture diagram of connections to the 807 socket (bottom view).

Adjustment

The amplifier can be worked on almost any power supply delivering up to 750 volts, the power output obtainable being in proportion approximately to the plate voltage. The supply diagrammed in Fig. 3 represents an economical compromise. It delivers 700 volts under load. It

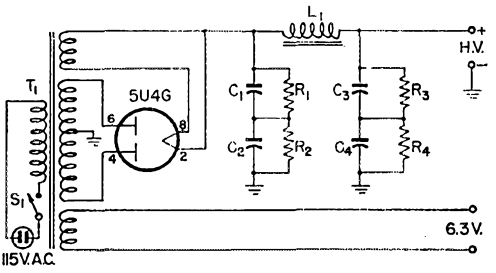


Fig. 3 — Circuit diagram of a suitable power supply for the Novice amplifier.

C_1, C_2, C_3, C_4 — 8-μfd. 450-volt tubular electrolytic.
R_1, R_2, R_3, R_4 — 47,000 ohms, 1 watt.
L_1 — 10-hy. 110-ma. filter choke.
S_1 — S.p.s.t. toggle switch.
T_1 — Power transformer: 600–0–600 volts r.m.s., 200 ma.; 5 volts, 2 amp.; 6.3 volts, 2.5 amp.

is preferable to operate the heater of the 807 from the oscillator power supply, so that the oscillator can be adjusted without plate voltage on the amplifier. It is also preferable to key the amplifier only, although both stages may be keyed simultaneously by connecting the keying leads in parallel. Be sure, in this case, that the grounded and ungrounded sides of one keying circuit are connected to similar sides of the other.

If amplifier keying is used, a toggle switch should be connected across the oscillator keying leads so that the oscillator may be turned off during receiving periods.

The output condenser of the oscillator should be turned to full capacitance and left there. (If a high-resistance voltmeter is available, it should be connected across the amplifier grid leak.) Turning on the oscillator power supply only (807 heater operating from this supply), and closing the oscillator and amplifier key circuits, the input condenser should be adjusted for the point of minimum brilliance of the oscillator tuning-indicator lamp. (At this adjustment, the biasing voltage should be 50 or 60 volts.)

When the amplifier power supply is turned on and the key closed, the indicator lamp in the high-voltage lead of the amplifier should light. Tuning the amplifier plate tank circuit to resonance will cause the light to dim or go out

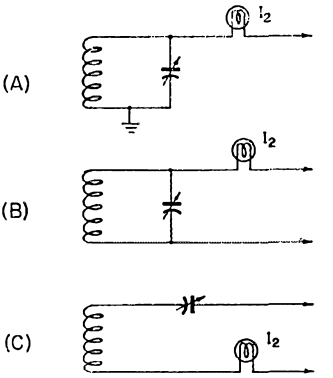


Fig. 4 — If a wire longer than 100 feet is to be used as an antenna, the antenna condenser should be connected in parallel with the coil, as shown at A. For two-wire feeder systems, the connections of either B or C should be used, depending on the dimensions of the antenna system.

entirely. The tank condenser should be set at the center of the range over which the lamp is out or dimmest. The key should not be held closed longer than it takes to tune to resonance because the screen heats dangerously when the tube is not loaded. Resonance should be found at about three-quarters maximum capacitance of C_9. A second resonance point may be found near minimum capacitance, but this point should be avoided in tuning up the transmitter. It is the second-harmonic resonance point.

Antenna Tuning

The antenna-tuning system is designed to work with random lengths of wire between about 25 and 100 feet, but other types of antennas may be used as described later. A water pipe or other good ground should be connected to the ground output terminal.

Leaving the plate tank condenser set at resonance, as described earlier, connect the antenna, close the key and tune the antenna condenser, C_{10}, through its range. At some point, the

(Continued on page 106)

R.F. Amplifiers for 420 Mc.

Easily Constructed R.F. Stages for Improving U.H.F. Reception

BY EDWARD P. TILTON,* W1HDQ

• Because of the difficulty in building satisfactory r.f. amplifiers, most work on 420 Mc. has been done with simple mixer-oscillator receivers or converters. Here are some r.f. stage ideas that should put the 420-Mc. experimenter several decibels farther along the road to low-noise reception. Their construction is possible with simple hand tools.

It has been possible to build workable r.f. stages for 420 Mc. and higher for some years, but it has been generally believed that only the expensive lighthouse and pencil tubes were suitable for this class of service. It was good news, therefore, when W2QED told the writer on a recent morning schedule that he and W2EH had built successful 420-Mc. r.f. stages using the 6J4.

The basis for their success was an r.f. amplifier design for u.h.f. TV reception described recently by Tyson and Weissman.[1] This amplifier was reported to have a gain in excess of 12 db. over the entire u.h.f. TV band, 470 to 890 Mc., and to give an improvement of 3 to 4 db. in noise figure when used ahead of a crystal mixer. The amplifier was shown with a Sylvania 5768 disk-seal triode, another of the expensive little bottles, but the tank circuit was of such dimensions that it seemed as if it should work OK in our 420-Mc. band with more-or-less conventional miniature tubes.

The Sylvania amplifier utilized a rectangular halfwave line made of flashing copper, with the inner conductor adjustable as to length. A sleeve of copper tubing at the opposite end of the line from the tube, into which the adjustable portion of the inner conductor telescoped to make a tuning capacitance, provided the necessary tuning range to cover the wide u.h.f. TV band. W2EH and W2QED used the same general construction, but mounted the 6J4 socket on the side of the line, instead of inside it, as was done with the disk-seal tube.

The two amplifiers pictured are experimental models built in the Headquarters lab to test the performance with various types of tubes. As only a small tuning range was needed, the tuning capacitance was provided by a pair of small copper tabs. One of these was soldered to the end of the inner conductor and the other mounted on a screw projecting through the top of the outer conductor, to provide a means of adjustment. With the lengths of line shown, tabs one-half inch in diameter will provide tuning across the 420-Mc. band.

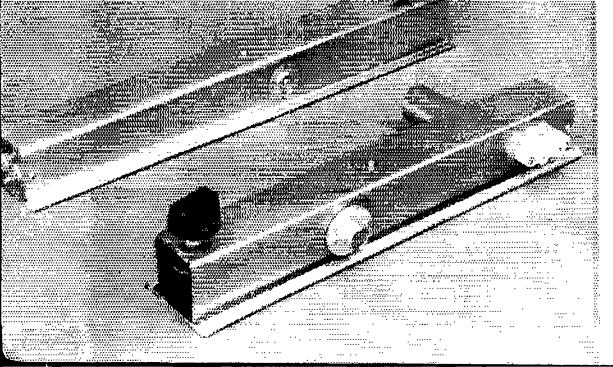
Three types of tubes were tried, the two units shown using the 6J4 (the shorter of the two lines) and the 5675 pencil tube. The recently-announced 6AF4 was also tried with the dimensions given for the 6J4. The 6J6 and 6AB4 might also be usable. As to the improvement in performance that resulted when these amplifiers were connected ahead of various 420-Mc. converters, there was little to choose from between the pencil tube and the 6J4. The indicated gain was higher, actually, with the 6J4, probably because the amplifier was slightly regenerative, but the net gain in signal-to-noise ratio was practically identical with the two amplifiers. No actual on-the-air tests were made with the 6AF4, though lab checks indicated that it should be nearly equal to the other tubes in performance. It was highly regenerative in the arrangement shown, and neutralization was needed to keep it from taking off on its own. The method of neutralization is described later.

Construction

Many of us shy away from the construction of equipment involving other than the familiar coil-and-condenser circuits, but actually the work involved in modified "plumbing" circuits is nothing to be afraid of. Particularly when

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

[1] Tyson and Weissman, "RF Amplifier for UHF Television Tuners." *Electronics*, October, 1951, page 106.



Two coaxial-line r.f. amplifiers for 420 Mc. The shorter one, in the foreground, uses a 6J4 triode; the other a 5675 "pencil tube" triode. Both employ plate lines tuned with small copper-tab capacitors at the open end of the line.

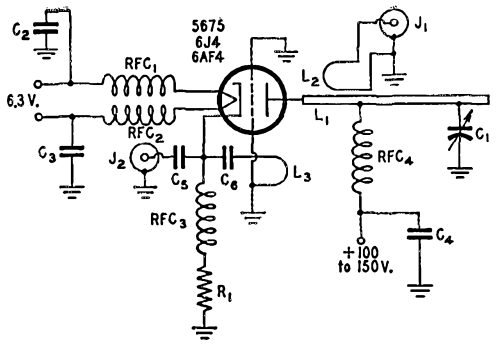


Fig. 1 — Schematic diagram of the 420-Mc. amplifiers. Connections for the 6AF4 are as follows: Pins 1, 7 — plate; 2, 6 — grid; 3, 4 — heater; 5 — cathode.

C_1 — Copper tab tuning capacitor; see text and photographs.

C_2, C_3, C_4 — Feed-through capacitors, 100 $\mu\mu$fd. or larger.

C_5 — 100-$\mu\mu$fd. ceramic.

C_6 — 2-$\mu\mu$fd. ceramic. Use only if neutralization is needed.

R_1 — 220 ohms.

L_1 — Inner conductor of plate line; 3/16- or 1/8-inch copper tubing or rod, 7½ inches long for 6J4 or 6F4.

L_2 — Coupling loop of insulated wire. Runs adjacent to L_1 for 1 inch.

L_3 — Use only if neutralization is needed. See text for details.

J_1, J_2 — Coaxial fitting, female. J_2 is shown as a crystal socket in the photographs.

RFC_1 — RFC_4 — 7 turns No. 22 enam., 3/16-inch diam., ½ inch long. A 1000-ohm ½-watt resistor can be substituted for RFC_4.

flashing copper is used the work becomes markedly easier than working on conventional chassis layouts. There are no exact dimensions involved in the units pictured here, and the metal work can be done in a few minutes with tin shears and a 75-watt soldering iron.

The tuned circuit is a plate line, electrically a half wavelength long, loaded by the tube's output capacitance at one end, and tuned with the copper-tab capacitor at the other. The greater length of the line for the pencil tube is the result of the very low output capacitance and lead inductance that are inherent in its design. The amplified output is brought out of the tank by means of a small coupling loop near the point of lowest r.f. voltage. Plate voltage is fed in through a feed-through by-pass and an r.f. choke or small decoupling resistor to the low r.f. voltage point.

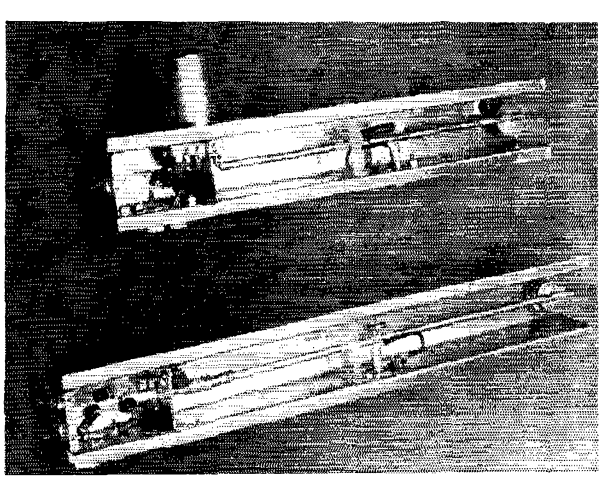
The input impedance of a grounded-grid amplifier is so low that a tuned input circuit is of little value. The antenna is, therefore, connected through a small coupling capacitor to the cathode of the tube. Cathode and heater are maintained above ground potential by means of r.f. chokes. If coaxial line is used to feed the antenna system it may be connected directly to J_2. If the line to the antenna is a balanced system, some form of bazooka (see Fig. 3) may be desirable. The antenna terminals shown in the photographs are for 300-ohm line, but they have since been replaced with coaxial fittings.

Either the 6J4 or 6AF4 requires a 7-pin miniature socket. This is mounted on the side of the line, with a shielding fin of copper across its center, isolating the input and output circuits. This fin should be cut to fit snugly inside the outer conductor, and then cut out to pass the ceramic portion of the socket. A prong should be left in the middle of the cut-out portion, as shown in Fig. 2, to fit down inside the shielding ring that is part of most miniature sockets. The extra grid terminals on the socket are soldered directly to this copper plate.

If a pencil tube is used, its grid ring is clamped between two small copper plates, with the plate end extending into the large portion of the line. Contact to the plate sleeve was made by wrapping a piece of Eimac contact finger stock around a short length of quarter-inch copper tubing, holding it in place temporarily with a wrapping of fine tinned wire and soldering. The main portion of the line is fitted into the sleeve of quarter-inch tubing and soldered. It will be noted upon careful examination of the photograph that a small capacitance tab is inserted in the 5675 line to load it at the tube end slightly. This was added because it was not possible to tune the line to the low end as originally made, without running up excessive capacitance at the open end. The addition of another half inch or so to the line length would make this small tab unnecessary.

Adjustment and Performance

If the tank circuit for the 6J4 is built to the specifications given in Fig. 2 there should be little more to putting the amplifier into service than applying the filament and plate voltages and feeding the output into the receiver or converter with which it is to be used. Resonance at the receiving frequency will be accompanied



Interior view of the r.f. amplifier units. A 2-inch space at the left end takes care of the heater and cathode circuits. When a miniature tube is used, as in the upper model, a shielding fin is fitted across the center of the tube socket. The pencil tube (lower unit) has its grid plane clamped between two copper plates. The inner conductor in each line is supported near its center with a polystyrene block.

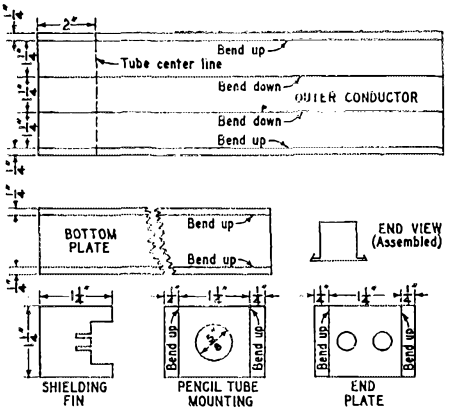


Fig. 2 — Flashing copper parts of the 420-Mc. tank circuits. The outer conductor (top sketch) is 10 inches long for the line using miniature tubes, or 12 inches for the pencil tube model. The middle drawing shows the bottom plate (*left*) and an end view of the assembled line. At the bottom left is the shielding fin used with the miniature tubes, and at the middle is one of the two plates needed for mounting the pencil tube. These plates should be tailored to fit the line assembly after it is bent up. They are soldered in place, two inches from the end of the trough. The right-hand plate is fastened in the end of the trough, the two holes being for the heater by-passes, C_2 and C_3.

by a slight rise in background noise as the copper-tab padder is adjusted. Unless the amplifier is excessively regenerative, this noise increase will probably not be more than about 2 decibels, and it will be fairly broad. If the amplifier is on the verge of self-oscillation there will be a noise peak of several S-units at resonance, and the tuning will be quite critical.

Operation of the pencil-tube amplifier was extremely stable, but there was appreciable regeneration with the 6J4. This is not necessarily harmful, except as it makes adjustment for peak signal more tricky. On lower frequencies we tend to look down our noses at r.f. amplifiers that show the unmistakable signs of regeneration, but checks on signal-to-noise ratio indicate that there is little to be gained by neutralization, at this stage of the 420-Mc. game. If the receiving set-up is low on over-all gain, the added hop afforded by the regeneration may actually be quite helpful. The 6J4 amplifier tended to oscillate with the antenna disconnected, but gave no trouble when loaded. This might not be true if the antenna in question was not fed with a reasonably flat line.

When the 6AF4 was used the amplifier oscillated violently until neutralized. This was done with a small loop inside the plate line, coupled back to the cathode through a small capacitance. The loop may be made of insulated stranded wire slipped under the shield between the two sections of the line assembly. The length of the portion in the plate section should be adjusted until regeneration (as indicated by actual oscillation, or a sharp noise peak at resonance) is at a minimum. Neutralization was added to the 6J4 amplifier, but except for some broadening of the tuning there was no apparent improvement in the operation, so it was removed.

The B-plus tap on the plate line should be made at the point of lowest r.f. voltage. This was about 4 inches out from the plate end for the 6J4, and about 4½ inches for the 5675. The optimum point can be located by making a temporary connection near the middle of the line and then touching the line with a screwdriver or lead pencil and noting the point at which this has the least effect on a received signal.

The position of the output coupling loop, L_3, affects both the gain and the bandwidth, the gain decreasing and the bandwidth increasing as the loop is moved away from the lowest r.f. voltage point. Adjustment of the coupling is not critical, however, over the small tuning range we are concerned with in 420-Mc. work.

The amplifiers were tested with two 420-Mc. converters of considerably different performance. One was the 6J6 job described in *QST*[2] some time ago, and currently in *The Radio Amateur's Handbook*. The other was a crystal mixer with crystal-controlled injection that is still in the experimental stage. Using the crystal-controlled signal

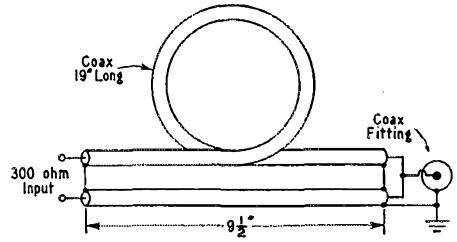


Fig. 3 — A bazooka for coupling into the 420-Mc. r.f. amplifier with 300-ohm transmission lines. Two pieces of any small coaxial line are needed, one of them a halfwave longer than the other. A 300-ohm balanced line may be connected to the left end. The inner conductors are tied together at the other end, feeding into the hot terminal of a coaxial fitting.

of W1PBB, some 40 miles away in Monroe, Conn., as the basis for comparison, these converters differ by about 3 db. in signal-to-noise ratio when used without the r.f. stage, the 6J6 being superior to the crystal mixer. When either r.f. amplifier is added, the margin of signal over noise is practically the same with either converter, showing that, even at 436 Mc., a good r.f. stage establishes the over-all noise figure of the receiving system. The net gain in signal-to-noise ratio is about 3 db. with the 6J6 mixer, and about 6 db. with the crystal-mixer job in its present form.

The gain of the combinations is adjustable at the i.f. amplifier, so that the same reference level can be used for all comparisons and only the improvement in signal-to-noise ratio observed. It is important to bear in mind that gain, as such, can be gotten anywhere along the line in a u.h.f. receiver. In the r.f. amplifier we need be concerned only with the noise figure; if the gain of the system is low we can make it up in the i.f. system, where gain comes easy, rather than at 420 Mc.

(*Continued on page 108*)

[2] Tilton, "Better Results on 420 Mc.," August, 1950, *QST*, page 11.

Circuit Variations for Surplus Dry-Disk Rectifiers

BY EVERT RODENHOUSE,* W7TQ

How often, in looking through a surplus store, have you come upon a dry-disk rectifier with a center terminal, a terminal halfway between center and each end, and the ends tied together, and said, "Too bad that's not a half-wave," or "Too bad that's not a center-tap job," or "Too bad it doesn't handle enough voltage for my purpose."

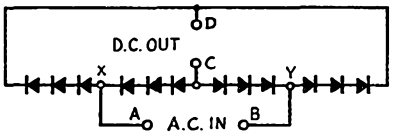


Fig. 1

Let's take a look at one of these jobs; a typical stack employing twelve units is shown diagrammatically in Fig. 1. If we use this assembly as the manufacturer intended, we connect a.c. to *A* and *B* and take d.c. out at *C* and *D*, and the stack is seen to be a bridge rectifier, with three units in

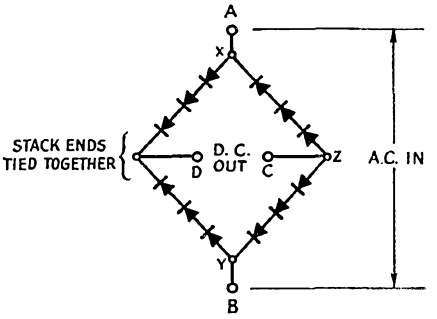


Fig. 2

series in each arm, as shown in Fig. 2. However, let's redraw Fig. 1 again, and unsolder the leads at *X* and *Y*. Observe from Fig. 3 that we now have two half-wave units in parallel, each half-wave unit being composed of six separate rectifier

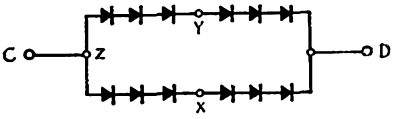


Fig. 3

pairs in series. Observe that we haven't done a thing to disturb the contact pressures on which the rectifier depends for its proper functioning.

In fact, we didn't even need to remove the leads at *X* and *Y*, but could have taped them over. We can use single units in any series combination we want, bridge rectification, center-tap, and so on. Four arrangements like that of Fig. 3 could be used as the four arms of a bridge rectifier with twice the voltage input capability, and twice the current output capability of a single original stack; or two could be used with a center-tapped transformer, in which case each half of the transformer secondary winding could have a voltage equal to that of the original rating on the single stack of Fig. 1. A very large number of variations is possible — just use your head.

Now just wait — we're not done yet. Let's clip the lead connecting opposite ends of the stack of

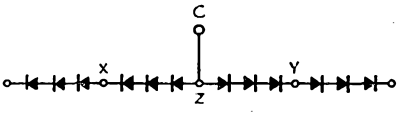


Fig. 4

Fig. 1, and unsolder the leads at *X* and *Y* as before. Behold, then, Fig. 4. This suggests finding a center-tapped transformer, for full-wave rectification, with the circuit according to Fig. 5.

From all this, we can conclude:

1) That any five-terminal rectifier stack, normally used as a bridge-type full-wave rectifier, can be used as a half-wave unit with the same voltage input and current output ratings as originally, by using the center as one terminal and the junction of the ends as the other.

2) That such half-wave units can be used in either center-tap or bridge-type full-wave cir-

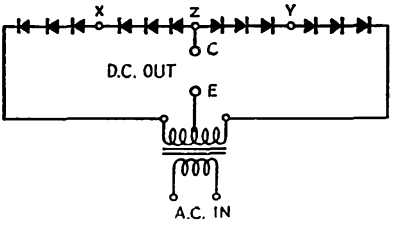


Fig. 5

cuits, in series or parallel to withstand the required voltage input or current output.

3) That by breaking the end-to-end junction and using the ends and center terminal as connecting points, the single unit can be used as a full-wave rectifier of the center-tap type, at original input voltage and current ratings.

* 1951 Third Avenue West, Seattle 99, Wash.

75-Meter Mobile, California Style

Some Tips on High-Power Operation

BY E. C. S. LEAVENWORTH,* W6ZV

• If you have a hankering for more power in your mobile rig, or if you simply like to read a good account of one ham's experiences, don't pass this by with just a glance. Before you're through, you will have a much better appreciation of the problems — and the solutions.

In our part of the land of the not-so-free, the possibility of atomic droppings has triggered a more or less somnolent itch to go mobile — not with 10 to 60 watts (when the conversations are more likely than not to be enjoyed by yourself alone) but with some power.

The Power Source

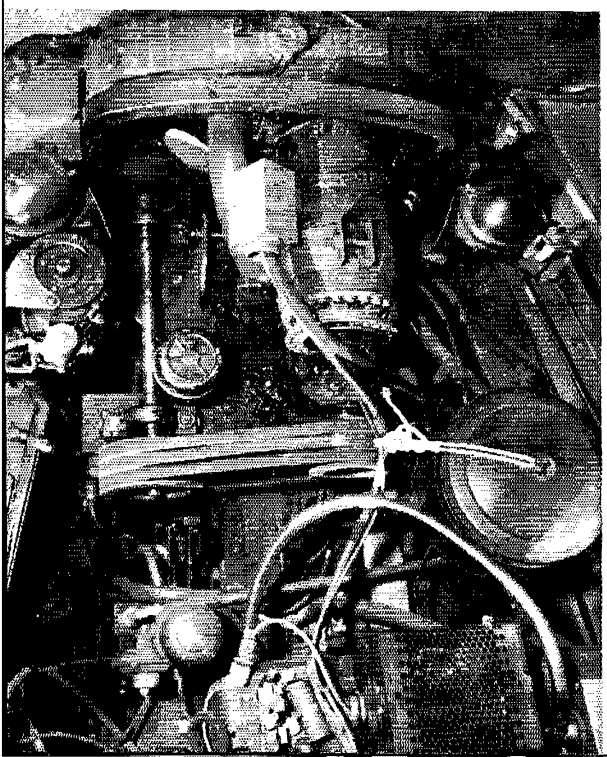
To a dyed-in-the-wool hamateur, an itch is almost certain to get plenty of scratching, and after a long series of cogitations by day and lovely dreams by night, a rig began to jell. An aircraft 28-volt 150-ampere generator was secured at the local surplus emporium. A clear idea of how to harness this lovely gadget to the automobile motor was not yet — nor soon, either. First had to come much sage but faulty advice from the local expert mechanics. The latter took for granted that reversing these generators was just the twist of a wrist, but after they had a mount all built they discovered that Uncle Samuel had so arranged the innards that it was easier to reverse the automobile. A few more weeks passed, while the mechanics retired to the easier work of turning out routine jobs of ±0.0001-inch tolerances.

Advice of all kinds floated in on every tide — most of it like that of Mortimer Snerd, who observed while sitting 1500 feet up on a balloon, that "It won't work."

To boil down a few weeks' cerebrations, we faced the generator backwards and installed a jackshaft with a pulley at one end that the fan belt ran over. A cog belt was used in place of the automotive belt, to handle the extra power. The jackshaft was mounted on adjustable pillar bearings, and the bearings were mounted on ¼-inch steel plates bolted to the engine head. All this and we were "in" — that is, we were in up to our knees. The next little matter that we were forced to include in our day-to-day calculations was the fact that aircraft generators of this type have a spline drive and a floating bearing that will take no side thrust. The machinist could and did make a bearing that the spline fitted onto, and a shaft extension to take a 3-groove pulley. The reason for the pulley is that the distance between the jackshaft and the generator is short, and cog belts of this size are nonexistent. Therefore, a 3-groove pulley with regular "A" belts did the job nicely. The generator and its shaft bearing were mounted on two angle-iron strips supported above the engine block by extensions of some engine bolts. Looking under the hood of the automobile gives a general picture as in Fig. 1.

Now that the mechanical details were solved, there remained only to hook up the juice. A surplus voltage regulator and a reverse-current relay were installed under the hood. The former is essential because if the voltage went up, the "floater" battery in the trunk compartment would literally explode. The reverse current relay is essential because the current from the same "floater" battery would burn out the generator when it wasn't running. Welding cable is used

* 233 A Street, San Diego, Calif.



A top view of the car engine showing the generator, jackshaft and pulley assembly. A carbon-pile voltage regulator is mounted in the perforated steel box, and the reverse-current relay is next to it. Part of a heavy-duty hash filter can be seen to the right of the regulator.

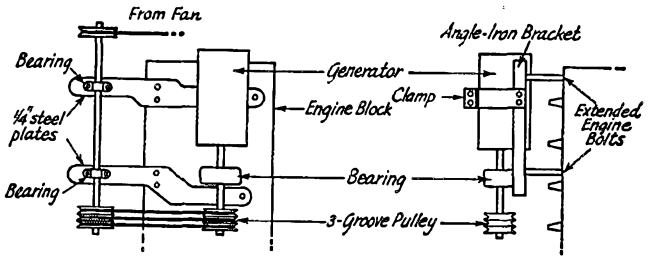


Fig. 1 — Mounting details of the 28-volt generator. For clarity, the angle-iron brackets are omitted in the top view, and the steel plates and jackshaft are omitted in the side view.

to pipe the 3 kw. available power to the trunk. This cable is built to kick around and take abuse, and with an extra wrapping of old inner tube where it "bends the corners round," it will stand up.

We are now in the empty trunk compartment. A 50-ampere 24-volt surplus aircraft battery takes care of the "floating" part of it. Being a careless old gink by inclination and preference, it occurred to me that even that small a battery, fully charged, might cause quite a bonfire if it got started at the wrong time. Accordingly, a browse about the electrical joints sent me home one day with a 100-250-ampere circuit breaker. I'd hate to tell you how many times that valuable piece of apparatus snapped out with a report you could hear a block away — and on at least one occasion it saved me a finger. It was the ring finger on my left hand and I didn't need it especially, but somehow I got my gold ring across the 24 volts. It singed the finger in good shape, but the circuit breaker went out and I was one finger to the good. About thirty years ago I blew the ring finger off my right hand and I haven't missed it a bit, but the things are so slow to heal that it's better to keep them.

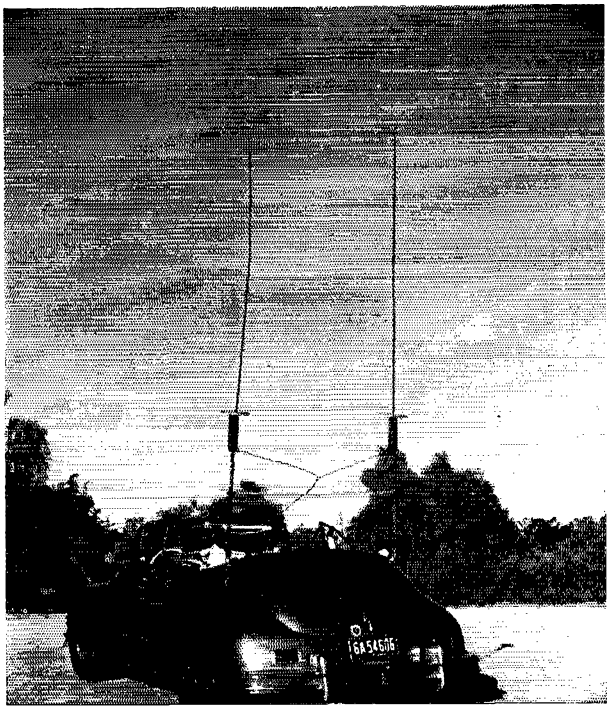
The Transmitter

One now surveys the trunk compartment with one eye squinted. This procedure permits you to figure the shape for the container for your screen-grid final amplifier. Also the kind of sockets. In my case the result of the squint was a single-ended shunt-fed 2-sockets-in-parallel job, using 4-250-A sockets. With these sockets and old 4-125-A bases, 813s, 715Bs or what have you can be mounted with a few wires soldered to the pins. Various filament voltages can be obtained with ease by mounting a couple of 200-watt 1-ohm resistors in series with the 24-volt supply. About 1½ ohms will give the 5 volts at 14 amperes for a 4-250-A. A couple of 813s will use the same adjustment with 10 volts. A 701-A Western Electric pulse tube will take about 2 ohms.

A clamp-tube modulator that will modulate a full kw. costs not over ten dollars and occupies a space that would rattle around in a cigar box. Two PE-75 motor generators with 28 volts in and 1000 volts out, hooked in series, do a nice job on the plates and cost about $6.00 each. Three in series give you a swell 3000 volts at 330 ma — for a while — but soon the third generator gets tired of the strain and blows. Another little 500-volt generator takes care of the clamp-tube modulator and an unconverted ARC-5 that sits under the dash by the driver's seat and is used as a VFO/driver. This can also be used as a b.f.o. when you get code happy.

Antennas

So far so good, and the wife is quite unaware of anything more unusual than the usual insanities. After some preliminary gruesome pictures of dropping bombs — no communications to call for help, and heavy emphasis on the civic emergency angle — most of us can wangle a



The high-power mobile antenna of W6ZV is a potent putter-outer and a real attention-getter.

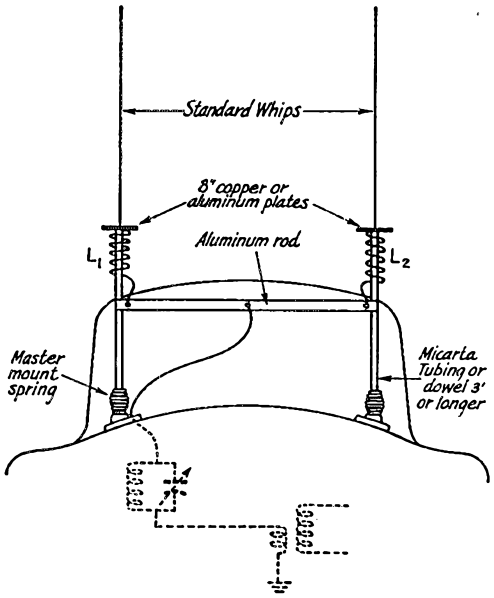


Fig. 2 — The dual-antenna system used by W6ZV. L_1 and L_2 are large B&W coils.

Master Mount on the body of the car. Of course, any good car body man can fill the holes afterward (I hope).

We will not go into the month or so of debugging that followed, except to say that a Master Mount will burn most prettily for about 30 seconds when you put 300 watts into it. Replacing the coil with a B&W bulk coil works fine, but blisters appear in the insulating material at the base of the antenna. Another hole through the base, with a polystyrene tube and a separate lead, solved that one. Of course, after one reaches the optimum tuning adjustment the bottom of the whip is cold, and the polystyrene lead-through is unnecessary.

About this time I got wind of Bill Bates, W6CF up Modesto way, who had built an almost identical rig. He was further along than I and had been on the air for some time with a mobile kw. He had had trouble with corona discharge on the tip of his whip when he used a kw., which made his voice fuzzy. He remedied that by putting a brass ball on the end of his whip. In my town a brass ball on the end of a whip meant either leaving the ball in the first low tree I went under or bring the tree along. It cramped my style either way.

A long period of antenna experiments followed. A No. 32 wire trailing behind. . . . A wire from the top of the whip to the front end. . . . A wire down to the side. Many others. Finally a twin-whip idea was installed, with two high-Q coils joined with a rod and fed in parallel. This seemed to be the answer. With it and 400 to 600 watts, there seemed little trouble in working normal DX — (Honolulu, East Coast, etc.). Also, it will not corona at a kilowatt. Mama may put up a bit of a furor, but if proper psychological preparations are made she will view it as a good idea, what with atomic bombs being so imminent. Also, the astonished strangers, who look at you as they did the first steamboat, are reassured when they find that it is an "emergency 1000-watt transmitter." The faint suspicion that you may have a man in white following you changes to admiration at your genius. Bill Bates and I have found it to be great fun, and recently W6NSP has come on the air with the same general rig. He is using 800 watts to a pair of 813s and gets lovely results. Since he travels a great deal, I am sure he would not trade his high-power mobile for all of whatever they have in China nowadays.

Fig. 2 shows the antenna in detail. To me it is the *pièce de résistance*.

Recently W6NSP and W6CF have developed a single-whip idea that gives excellent results

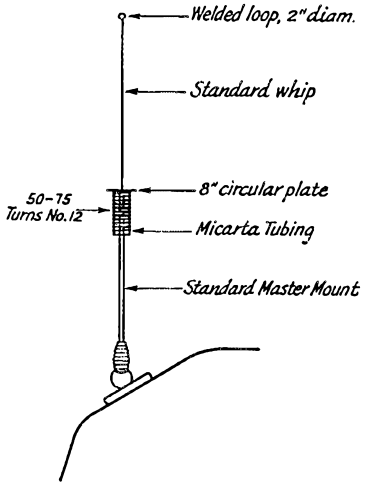


Fig. 3 — Antennas used at W6NSP and W6CF with their high-powered mobile rigs.

(certainly more than the 1 per cent efficiency). This one is for men with unreasonable wives or for men who dislike being queer, and is shown in Fig. 3. (Then, too, the two Bills above have a sneaking suspicion that my two whips aren't enough better to warrant the trouble.)

One will note the eight-inch tin pan over the coil. I am not sure of its technical integrity, but it raises the signal-strength report.

General

Variations of the general theme include the fact that some of the aircraft 28-volt generators (the PE-1) can be reversed electrically and can therefore be mounted without the jackshaft.

W6NSP and W6CF are using ART-13 generators. Two of these in series give 2200 volts. However, they are now scarce in these parts, and expensive ($35.00 to $40.00 each).

A word anent the final amplifier with its shunt-fed parallel tubes. Type 813s work fine and cause a minimum of headaches due to electrical

(*Continued on page 108*)

YL NEWS and VIEWS

CONDUCTED BY
ELEANOR WILSON,* W1QON

THE introduction of a new department in *QST* cannot fail to arouse interest and comment. And when the new department involves YL amateurs, it's virtually assured that a wide reading audience will be on hand — YLs, XYLs, OMs — just about everybody. With these assumptions in mind, our department is launched.

Numerically, YLs constitute but a small proportion of the whole amateur body. We, then, accept a challenge and a responsibility with the inauguration of our department; it's up to us to continue exemplifying the old adage that "it's the quality, not the quantity" that counts.

YL amateurs have proved and are constantly proving their worth. Their accomplishments are notable. Their numerous and outstanding contributions to the hobby speak for themselves.

A department for YLs can cover a lot of ground, and we hope to present material which heretofore was perhaps not quite in order with any other section of *QST*. What suggestions, pet theme, yes, even complaint, have you? Do write and let us know.

Novices and the YLRL

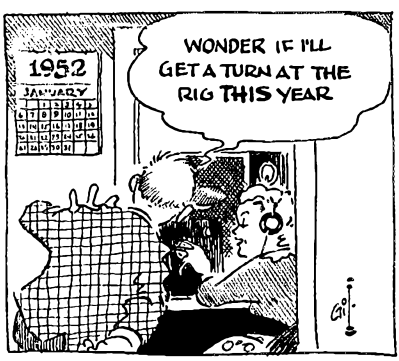
Article I of the Young Ladies Radio League constitution states: "All licensed amateur radio operators of the female sex shall be eligible for membership." Thus, a YL Novice Class operator is allowed membership for one year — the term of the Novice Class license. At the end of one year, if the Novice has not obtained another class of license, her membership is automatically terminated. Eligibility for YLRL membership applies to *all* classes — your license must be valid!

YL Novices are not eligible for office. To hold office it is necessary for a candidate to have been a YLRL member in good standing for at least one year prior to elections.

If your questions are still unanswered, send them along to YLRL Secy.-Treas. Peg Wells, W1BCU, 343 Fisher Street, Walpole, Mass.

Keeping Up with the Girls

W3LSX and W4UTO are devoting their operating time to forty c.w. . . . It's a new Natick, Mass., QTH for W1SCS. Ruthe is the capable alternate NC for New England's Deep Sea Drag Net . . . . W1FTJ is DXing on twenty and rag-chewing on seventy-five. . . . W2OLB has completed in rough draft a sequel to *Kay Everett Calls CQ*. Amelia's first book is fast making new friends for amateur radio. . . . Handling traffic keeps W9JTX busy. Louise and W9ILH, W9JUJ, and W3CUL exchange traffic regularly and really move volumes of it. W3CUL continues to be our BPL member par excellence. . . . W1BCU met WØCMV, W9JUJ, and ex-W9EFW at French Lick. . . . Newly-licensed W4TDK is standing her ground as St. Petersburg's only YL among that city's some eighty OMs. . . . Editing *Harmonics* doesn't prevent W1RTB from checking into the Deep Sea Drag Net and the Connecticut 'Phone Net regularly. . . . Ever searching for MM contacts, W8DQO has worked 139 to date. Marge holds the No. 1/MM Honorary Associate Certificate. . . . ON4MF prefers c.w. and can regularly be found on twenty, forty, and eighty. . . . An extensive trip across country gave W8ATB the opportunity to meet eighteen YLs. . . . The



Long Island Unit of YLRL currently boasts a membership of sixty-five. W2JZX deserves credit for inaugurating this unit, and W2UXM, WN2KEB, WN2KED, WN2BXT, and Marie Manthe and Ethel Whitty, who are awaiting calls, are particularly appreciative of Vi's efforts in their behalf. . . . W4TAV alternates between eighty and forty c.w. and ten 'phone, fixed and mobile. . . . Continuing to be one of the most active YL Clubs, the San Diego Club has a full calendar ahead. Dinners, outings, and parties augment regular business meetings. The neighboring and also very active YL Club of Los Angeles recently celebrated its fifth anniversary with twenty members in attendance. . . . W2IQP joins her husband and two sons as the fourth licensed member of the family. . . . Busily building modu-

(*Continued on page 114*)

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

At the recent ARRL Midwest Division Convention, Charles Miser, W9MDC, chairman of the Indiana Radio Club Council, presented a plaque to Peggy Coulter, W9JUJ, in recognition of her selection as the outstanding amateur in Indiana for 1951.

Peggy's record is an impressive one. A licensed amateur for one and one-half years, she is ORS, OBS, MARS, RM, active on four nets, NC of a two-meter net, secretary of the IRCC, was chairman of the 1951 Indiana Hamfest and chairman of the Indiana Worked All Counties Contest, and has made BPL eight times. Despite this heavy activity, Peggy finds ample time to handle the household chores attendant to the raising of two growing youngsters.

18th ARRL International DX Competition

'Phone: Feb. 1st–3rd and Feb. 15th–17th; C.W.: Feb. 29th, March 1st, 2nd and March 14th–16th

It's time again to ready your station for the ARRL International DX Competition, to be held in February and March of this year. This contest, the eighteenth of its kind, gives an opportunity for all Canadian and continental U. S. operators to add new countries to their DX totals, other stations to fill in for their WAS and WAVE awards, and everyone to match DX operating skill with other operators in his country or ARRL section. But, whether you have 9 or 9 hundred watts, whether you work 2 or 2 thousand stations, whether you have a wire out the window or a 7-element antenna, you can have a whale of a lot of fun in this annual event.

Explanation of DX Contest Exchanges

Exchanges	*RST Report of Station Worked*	*Three-Digit Number, Representing Power Input*
Sample (c.w.)	579	150
Sample ('phone)	57	500

As in the past, two week ends are devoted to c.w. operation and two to 'phone operation, giving everyone an opportunity to participate in four week ends of hot activity. Except for three minor changes, the rules are practically the same as those of last year. This year, in order to take advantage of any 28-Mc. openings, both 'phone periods are scheduled for February. The c.w. periods are in March. In each case periods are separated by "rest up" week ends. To enable stations whose 'phone operations are limited to 10 and 11 meters to compare their scores with similar stations, a special listing is made available. A new award category will recognize multiple-operator stations in those sections or countries from which three or more valid multiple-operator entries are received.

As usual, special certificate awards are offered to the top single-operator 'phone and c.w. scorer in each country and ARRL section. Multiple-operator scores are grouped with single-operator scores in club competition, and a handsome gavel is offered to the club with the highest aggregate score. Within a club, single-operator entries can compete for the "club-certificate" awards given to the highest c.w. and 'phone scorers.

If you're new to the DX Contest, it won't take you long to catch on. During the contest period, stations outside of the U. S. and Canada will call "CQ W/VE" or "CQ TEST" and will exchange numbers as shown in the sample elsewhere on these pages. If the input is 250 watts, your number is 250. If you run only 75 watts, use the number 075. Full kilowatts have a choice — they can use either 000 or 999. If your input is different on different bands, change the number to approximate the input figure, but don't bother about 0.1 per cent accuracy on any band — the usual approximation is adequate.

You can try a "CQ DX" or "CQ TEST" if you're a W or VE, but past experience shows that this pays off *very seldom*. On c.w., Ws and VEs have quotas but this doesn't apply to 'phone. Keep your log carefully, and send a copy of it, in the form shown, to ARRL. Free contest forms are available from ARRL Headquarters, West Hartford, Conn., upon request. Get your station working at top efficiency, make no social commitments for the important week ends, read the rules to acquaint yourself with the pattern, and then get set for DX galore in February and March.

Rules

1) *Eligibility:* Amateurs operating fixed amateur stations in any and all parts of the world are invited to participate.

2) *Object:* Amateurs in the continental U. S. and Canada will try to work as many amateur stations in other parts of the world as possible under the rules and during the contest periods.

3) *Conditions of Entry:* Each entrant agrees to be bound by the provisions of this announcement, the regulations of his licensing authority, and the decisions of the ARRL Award Committee.

4) *Entry Classifications:* Entry may be made in either or both the 'phone or c.w. sections: c.w. scores are independent of 'phone scores. Entries will be further classified as single- of multiple-operator stations. Single-operator stations are those at which one person performs all the operating func-

CONTEST TIMETABLE

'Phone Section:

Time	*Starts*		*Ends*	
GCT	Feb. 1st	2400	Feb. 3rd	2400
AST	Feb. 1st	8:00 P.M.	Feb. 3rd	8:00 P.M.
EST	Feb. 1st	7:00 P.M.	Feb. 3rd	7:00 P.M.
CST	Feb. 1st	6:00 P.M.	Feb. 3rd	6:00 P.M.
MST	Feb. 1st	5:00 P.M.	Feb. 3rd	5:00 P.M.
PST	Feb. 1st	4:00 P.M.	Feb. 3rd	4:00 P.M.
The second period of this contest starts at these same hours Feb. 15th.			The second period of the contest ends at these same hours Feb. 17th.	

C. W. Section:

GCT	Feb. 29th	2400	Mar. 2nd	2400
AST	Feb. 29th	8:00 P.M.	Mar. 2nd	8:00 P.M.
EST	Feb. 29th	7:00 P.M.	Mar. 2nd	7:00 P.M.
CST	Feb. 29th	6:00 P.M.	Mar. 2nd	6:00 P.M.
MST	Feb. 29th	5:00 P.M.	Mar. 2nd	5:00 P.M.
PST	Feb. 29th	4:00 P.M.	Mar. 2nd	4:00 P.M.
The second period of this contest starts at these same hours Mar. 14th.			The second period of this contest ends at these same hours Mar. 16th.	

LOG, 18th A.R.R.L. INTERNATIONAL DX COMPETITION

Sheet 1 *of* 1 *Call*..... *ARRL Section*.....*or Country*.....

Date & Time	*Station Worked*	*Country*	*Record of New Countries for Each Band*					*Serial Numbers*		*Points*
			3.5	*7*	*14*	*27*	*28*	*Sent*	*Received*	
Feb. 2										
0005 GCT	VP9E	Bermuda			1			56375	57080	3
Feb. 3										
1300	PAØGN	Netherlands					1	58375	47075	3
1306	G6CL	England					2	58375	46150	3
1345	PAØRA	Netherlands					2	56375	59080	3
2030	LU7AZ	Argentina					3	58375	57750	3
2310	VP9X	Bermuda			1			57500	56050	3
Feb. 16										
1020	ZL1MR	New Zealand			2			58500	58075	3
1035	VK2TI	Australia	1					47500	46100	3
1105	VK2RA	Australia	1					46500	45100	3
1421	PAØLQ	Netherlands					3	45375	57100	3
Feb. 17										
0925	TF3EA	Iceland			3			57500	57050	3
1245	G2MI	England					3		46125	2
1255	G3KP	England					3	56375	57100	3
1350	G2MI	England					3	57375		1
1430	G5BA	England					3	46375	55100	3
2320	KZ5AW	Canal Zone			4			58500	58500	3

Sample of report form that must be used by foreign c.w. and all 'phone participants.

tions. Multiple-operator stations are those obtaining assistance, such as from "spotting" or relief operators, or in keeping the station log and records. A special 'phone listing is available for those entrants whose work is exclusively in the 10- and/or 11-meter bands.

5) *Contest Periods:* There are four week ends, each 48 hours long: two for 'phone work and two for c.w. The 'phone section starts at 2400 GCT, Friday, February 1st and Friday, February 15th, ends 2400 GCT, Sunday, February 3rd and Sunday February 17th. C.W. section starts at 2400 GCT, Friday, February 29th and Friday, March 14th, ends 2400 GCT, Sunday, March 2nd and Sunday, March 16th.

6) *Valid Contacts:* In the 'phone section, all claimed credits must be made voice-to-voice. In the telegraph section, only c.w.-c.w. contacts count. Crossband contacts may not be counted.

7) *Exchanges:* Each participating operator will use three figures to represent the approximate transmitter power input. C.w. contestants will exchange six-figure numbers, each consisting of an RST report plus the three "power" numbers. (Examples are given in the sample log.) 'Phone contestants will exchange five-figure numbers, each consisting of a Readability-Strength report plus the three "power" numbers. If the input power varies considerably on different bands, the "power" number should be changed accordingly.

♦

Sample of report form that must be used by W/VE c.w. participants. When a station is worked for less than the maximum number of points allowed (as for example the contact with G2MI shown at right), the additional contact to make up the points not earned in the first contact should be entered at the bottom of the sheet. Canadian entrants should allow two blocks for each country, but may record no more than six contacts therein. A separate set of sheets should be used for each band.

♦

8) *Scoring:*

a) *Points:* 1 point is earned by a W (K) or VE/VO station upon receiving acknowledgment of a number sent, and 2 points upon acknowledging a number received. Two points are earned by any other station upon receiving acknowledgment of a number sent, and 1 point upon acknowledging a number received.

b) *Final Score:* W (K) and VE/VO stations multiply total

LOG, 18th INTERNATIONAL DX COMPETITION

Call..... *ARRL SECTION*.....

Band 28 .....*Mc.* *Sheet* 1 *of* 3.....

	Station Worked	*Date*	*Time (GCT)*	*Number Sent*	*Number Received*
Netherlands	PAØGN	3/1	1300	589450	479075
	PAØRA	3/1	1345	569450	579080
	PAØLQ	3/15	1421	459450	578100
England	G6CL	3/1	1306	589450	469150
	G2MI	3/15	1245		469125
	G3KP	3/15	1255	569450	579100
	G5BA	3/15	1430	469450	559100
Argentina	LU7AZ	3/1	2030	589450	579750
	G2MI	3/15	1350	579450	

points earned under Rule 8(a) by the number of countries worked on one band plus the number of countries worked on each other band. All other stations multiply total points earned under Rule 8(a) by the sum of the number of W (K) and VE/VO licensing areas worked on one band plus the number of W (K) and VE/VO licensing areas worked on each other band.

Countries will be those on the ARRL Countries List. There are 19 licensing areas: 10 in the United States, 9 in Canada (VO, VE1-VE8).

9) *Repeat Contacts:* The same station may be worked again for additional points if the contact is made on a different frequency band. The same station may be worked again on the same band if the complete exchange for a total of three points was not made during the original contact on that band.

10) *Quotas:* The maximum number of points per country per band which may be earned by W (K) stations *in the c.w. section* is 12, and contacts made on the same band with the same country after the quota is filled will not count. Thus complete exchanges with 4 stations in one country on one band fill the band quota for that country. The maximum number of points per country per band which may be earned by VE/VO stations *in the c.w. section* is 18, and contacts made on the same band with the same country after the quota is filled will not count. Exchanges with 6 stations in one country on one band are thus permitted Canadian participants. There is *no quota* for stations in the c.w. section *outside* of the U. S. and Canada. There is *no quota* for *any* station in the 'phone section.

11) *Reporting:* Contest work must be reported as shown in the sample form. Each entry must include the signed statement as shown in that example. Contest reports must be mailed no later than April 18, 1952, to be eligible for *QST* listing and awards. All DX Contest reports become the property of the American Radio Relay League. No contest reports can be returned.

12) *Awards:* To document the performance of participants in the Eighteenth ARRL International DX Competition, a full report will be carried in *QST*. In addition, special recognition will be made as follows:

a) A certificate will be awarded to the high scoring single-operator 'phone and to the high-scoring single-operator c.w. entrant in each country (as shown in the ARRL Countries List) and in each of the 72 U. S. and Canadian ARRL sections (see page 6 of this issue) from which valid entries are received. In addition, a certificate will be awarded to the high scoring multiple-operator station in each section or country from which three or more valid multiple-operator entries are received.

b) A suitable certificate will be awarded to the operator making the highest single-operator 'phone score in each ARRL-affiliated club, provided the club secretary submits a listing of a minimum of three 'phone entries by bona fide resident members of such club, and provided further that these scores are confirmed by receipt at ARRL headquarters of the individual contest logs from such members. The highest single-operator c.w. scorer in each club will be awarded a certificate under the same conditions.

c) ARRL will award a gavel to the affiliated club submitting the greatest aggregate 'phone and c.w. score by bona fide resident club members, whether single- or multiple-operator entries, provided such scores are confirmed by receipt at ARRL headquarters of the individual contest logs from such members.

13) *Judges:* All entries will be passed upon by the ARRL Award Committee, whose decisions will be final. The Committee will void or adjust entries as its interpretation of these rules may require.

14) *Disqualifications:* Off-frequency operation (as confirmed by a single FCC citation or advisory notice or two ARRL accredited official observer measurements) will disqualify. Low tone reports in logs will also be considered by the ARRL Award Committee as grounds for disqualification.

SUMMARY, 18th A.R.R.L. INTERNATIONAL DX COMPETITION

.....*Entry Call*..... *ARRL Section*.....*or Country*.....
(*C.W. or 'Phone*)

Name.....*Address*.....

Transmitter Tubes.....

Receiver.....*Antenna(s)*.....

(Logs from W, VE or VO show number of foreign countries worked. Logs from other countries show number of U.S.A. and Canadian call areas worked.)

Bands	*3.5 Mc.*	*7 Mc.*	*14 Mc.*	*27 Mc.*	*28 Mc.*	*Total*
No. Countries QSOed	1		4		3	*8
Number of Contacts						15

Number of Different Countries Worked..... *Number of Hours of Station Operation*.....

.....
Assisting Person(s): Name(s) or Call(s)

46 × *8* = *368*
(*Points*) (*Multiplier*) FINAL SCORE

Participation for Club Award in the.....
(*Name of Club*)

I certify, on my honor, that I have observed all competition rules as well as all regulations established for amateur radio in my country, and that my report is correct and true to the best of my belief. I agree to be bound by the decisions of the ARRL Award Committee.

.....
Operator's Signature

* Figure in this box is multiplier.

Sample of summary sheet that must accompany all reports.

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD/1

How:

Hey! How would you like it if, in place of a DX column this month, we ran the following announcement:

"Quite a few items of interest showed up for 'How's DX?' during the past few weeks but we figure you've probably heard the dope already. So we'll just skip it and run something else in the usual space."

[You want my honest opinion, Boss? — *Jeeves.*] (You never had an honest opinion, Jeeves. Go back and play with your electric train.)

Now that we've left ourselves wide open on that one we'll get to the point. Too often we run across DXers who take the view that any DX tidbits they themselves dig up already have been or soon will be volunteered by others. Frequent result: No item.

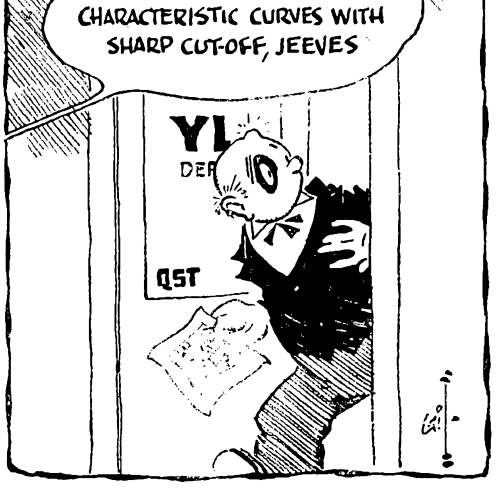
It's similar to an election. Many people don't vote because "What's one ballot? Winklespoof will get in anyway." So Winklespoof loses on recount, one vote shy.

Whether you DX seven days a week or on week ends only, whether you run an 807 or 304TLs, whether your achievements include DXCC or just RCC, remember the fate of poor Winklespoof when you encounter informative or entertaining squibs of potential interest to the DX gang. Bear in mind that *you* write this section; we merely assemble it.

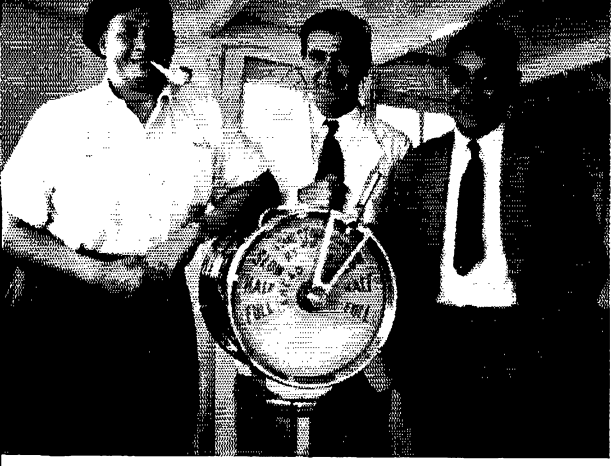
What:

It's possible to count the good openings on *twenty* without the aid of an abacus and instant-heating filaments to take advantage of them before they fold up are almost a necessity these days. Much good stuff is on the air, though, even if only intermittently workable. For instance, the mammoth tally at W5ASG was swelled through the addition of **FD8AA** (14,060), **3A2AG** (015), **OY3IGO** (051) and **FB8BB** (040). Bill still stalks FR7ZA and VQ8CB .–.–.– The Lazy-H of W9IHN brought home **ZEs 3JO** (080), 4JC (048), GC2FZC (037), **9S4AT** (032) and CN8FB. SM8TS/-MM and SL7BT gave Chuck a variety of Swedish entries .–.–.– GC3HFE (050), VQ4HJP (065), 4X4RE, EK1LU and CR7CD were checked in by WØAIH. Paul received recent QSLs from ET9X, FR7ZA, VK9GB, VQ2GW, KJ6AI, FG7XA, I1NU/Trieste, ZK1AB and FQ8AC to make it 123 confirmed countries .–.–.– Busy changing QTH, W9HUZ found only time to salt away **VP8s AO** (030), **AU** (002), **CR7s CI** (080), **CR** (080), **YI3ECU** (095), **TF3SG** (080), **OQ5ER** (075), **ZD2HAH** (072), **VK9XK** (078) and a CE7. Van also hooked one **CI1LM** (076) "on Formosa" .–.–.– WØDEA/KG6 and KH6PM worked one **TT1CW** (050) who pointed rightly on the beam. Fred also has **KM6AW/KS6** (070 t8), **YI3EFE** (005), ZS8MK, ZD6DU, HB1JJ/HE1, UL7KAA, FN8AD and **AC3PT** (105) freshly logged .–.–.– An old reliable 1-v-1 and 40 watts have accounted for a near-DXCC at W8OPG. Glen would like info on ZC4ZX for QSL purposes .–.–.– C.w. VP2s don't grow on trees anymore but W8YGR encountered **VP1NW/VP2** (090) on Grenada of the Windwards .–.–.– **VK5CN** (055), worked by W8SYC, won't give many fellows a new country but he's not exactly an ordinary VK. He represents Australia's Northern Territory and is located at Darwin. Clint watches the mailbox for tardy cards from VK9NR and VR5PL .–.–.– New jobs at W4CYY feature 8U1AD, LZ1KAB, CT2BO, YO2BF and VK9GK. "JB" clutches new QSLs from AC3SQ, EA9AP, VP8s AK and AO .–.–.– F3AT/FF, KM6AT, HR1DF, MD2s DW, JB, 4X4DK, YU1AG and ST2GL swapped reports with W4KE .–.–.– The following were worked, heard, heard worked or heard called by the constituency represented in W5KUC's West Gulf Division DX Club bulletin: (mornings) C3LM (070), **APs** 2N (076) 4A (068), EQ3FM (120), EA6CS (013), **FH8AB** (023), **HZ1AR** (019), **IS1FIC** (085), **MD5PM** (085), **SP6XA** (030), **TA3AA** (080), **SUs 1AD** (020) 1ES (077) 1HG (050 t8c) 2NK (050), **UG6AB** (044), VQ4BB (015), **VS7s AE** (045) **EA** (070) **IC** (105), **VU4DD** (094), **VU2s BC** (045) CS (067) EC (018) EJ (029) JE (020) GU (120) JG (050) NB (112), YI3BZL (030), YN1LB (018), **FF8JC** (044) and **ZS3E** (046); (evenings) **EAs 9AD** (005) **ØAD** (080), **FD8AB** (023), **FF8s AC** (005) AG (030), **FQ8s AG** (105) AK (005 t9c), HE9LAA (038), KR6AF (090), KW6AR (093), **TA3AF** (054), **VP2AF** (192) of the Leewards, **VQs 2AB** (026) 2GW (005) 4DO (018), **VS6CG** (082), **ZB2I** (058), **ZDs 1SD** (139) 4AB (060) 4ZM (061), ZK1BC (006), **ZE2JP** (038), **ZS3s K** (050–075) Q (105) and **ZS7C** (098). Those guys don't miss a thing!

On *twenty 'phone*, W4HA rarely finds the band wide open more than once per month. John had luck with **VK1s BS** (190) **WO** (105), both of Macquarie, **VP5BF** (142) of the Caicos, **VU2JU** (150), **ZD6RD** (185), **GC8MF** (381), **GD2-FRV** (112) and **ZS7C** (150) .–.–.– Erstwhile contributor Bud Rugel is now uniformed in Germany and reports the following signals heard there coming through: YO3s GH RF RI, VQ1CUR of Zanzibar, ZBs 1BZ 2A, TA3AA, 3V8s BB AS, 4X4SZ, SU1AS, TF5TP, IS1EHM, OK3IP and VS7PW. Upon obtaining his license, Bud will gun for this stuff as DL4RZ .–.–.– The W5KUC bulletin has ascertained the activity of these 'phones: **AC3PT** (352), **AP2N** (125), **CP5EQ** (150), **DU1AP** (150), **EA6AF** (145), **EQ3FM** (352), **FQ8AI** (400), **GC8LI** (150), **GD3ENK** (315), **FR7ZA** (140–390). KT1DD (150), MP4KAG (120) of Kuwait, **MI3BH**



* *New Mailing Address:* Effective immediately, please mail all reports of DX activity to DX Editor Newkirk at ARRL Headquarters, 38 La Salle Rd., West Hartford 7, Conn.



Three Hong Kong amateurs widely worked are (*l. to r.*) VS6s AM, BA, and AE. (*Photo by W2AIS*)

(190), **OQ5DZ** (135), **TFs 3MB** (320) 3SF (145) **5SV** (210), **UP5A** (150), **VP2AF** (125), **VQ5s AU** (156) **AV** (150) **CB** (125), **VSs 6AZ** (290) **7RF** (355), **VU2MA** (152), **XZ2SY** (310), **YK1FW** (250), **ZD1FB** (350) and **9S4AX** (127).

Forty is as spotty as twenty but it doesn't usually drop stone dead in the wee hours. **VQ4HJP** (7055), **KG6FAA** (026), **FA8DA** (008), **ZK1s AB** (017) **AZ** (085), **HK4DP** (043) and many ZSs came back to W9HUZ . . . . . The Caymans' **VP5BH** (003) answered WØAIH while W8YGR collected the more common **VP5BN** (085) and **VP6FM** (118) . . . . . W4KE volunteers HK5CR; **TI2FG** (130) and OK1DC popped up in the W1AW (Chas.) log . . . . . Thirty watts at W4BHG produced KS4AQ, VPs 6SD 9AK, HK5AY and sundry Europeans. Afternoon openings on 7 Mc. should be prevalent this season and long-path possibilities are intriguing.

W4BRB is getting very close to his 100th *3.5-Mc.* country and was assisted toward this objective by **OQ5BC** (3512) and **ZE3JP** (3510). Gene is anticipating 80-meter activity on the parts of **VP8AP** (3515) and **VQ2GW** (3521–3527) as well as VQ4HJP . . . . . Twenty watts and a quarter-wave antenna nailed Gs 2BFK and 8JR for W8FRD . . . . . W5KUC took a swipe at *75 'phone* to accumulate **KH6s IJ** (3805) **MG** (3805), **YV5AC** (3830), **ZL3FM** (3795), **ZL1s MQ** (3873) **WW** (3875) and **AAE** (3785).

You have to be long on patience to stick to *ten* this season but it can still pay off. On voice, W5QMI has been chatting with VQ4RF, VP7NM and EA8AX while W9KXK clobbered FO8AB for number 108 . . . . . W2AEB really rolled up his sleeves to the tune of EA8AW, VQ2s C PL HW JG, OQ5s GI VD, ZD4BG, CR7IV, 4X4AS, EL1ØA, VU2WR, CT3AV and ZD6HJ, making it 147 on the band . . . . . Irv's neighbor, W2KZE, nailed down HP1LB, HR1KS, HH1HB, HC1FS, HK1DW, YVs 3AU 5BZ, VQs 2JC 4RF, CN8EZ, CT1s BW NT QG, and **ZP4BB** (28,450). Since ZP3AW became inactive, **ZP4BB** has been extremely popular on 20 and 10 'phone . . . . . The West Gulf Division DX Club bulletin specifies **MI3RR** (260), **MP4KAG** (230), **PZ1D** (400) and **ZS7C** (415) on 'phone, with CR7AG, **FF8AG** (077) and **CR6BC** (070) on c.w.

Where:

Unlisted 9S4s will most probably receive your cards okay if sent to Box 310, Saarbrucken, Saar . . . . . Once a year we try to make it clear for the benefit of new readers that addresses listed in this section have not in all cases been verified. Indeed, a few may very well be the inventions of phoneys who dream up QTHs as easily as they pick their own call signs. We run them all as soon as they pop out of the mail bag or otherwise come to our attention, with the hope they'll expedite your QSLs. So, good luck on the following:

C3MY	Box 16, Taichung, Formosa
CR4AI	Jose Alves Bento, Sal Island, Cape Verde Islands
EAØAD	Jose Civit, Box 2, San Carlos, Fernando Poo Island, Spanish Guinea
FD8AB	Box 185, Lome, French Togoland, F. W. A.
FF8AG	Ivan Pastre, Base Aviation, Bamako, French Sudan, F. W. A.
FH8AB	Ferrau, Box 8, Wallis Island via New Caledonia
FQ8AK	P. O. Box 19, Brazzaville, French Equatorial Africa
HS1UN	United Nations, ECAFE, Bangkok, Thailand
JAØIJ	Box 135, APO 815, % PM, San Francisco, Calif.
KC6AA	Navy 3410, Truk Island
KX6ZA	Earl A. Nielsen, Majuro, Marshall Islands
MP4KAG *	Antonio Mattos, Box 54, Kuwait
OQ5ER	Box 1121, Elizabethville, Belgian Congo
OX3GG *	NBS Ionosphere Station, APO 858, % PM, New York, N. Y.
PZ1D *	A. E. Treurniet, P. O. Box 155, Paramaribo, Surinam
SU1GM	(QSL via RSGB)
SU1GO	(QSL via RSGB)
SV9RP	(QSL via W1CUY)
TT1CW	Box 36, Tannu Tuva, Asia
ex-VK9MR	VK3AMR, 580 Barkly St., Footscray, Victoria, Australia
ex-VR2BC	Graham Goodger, 76D Rongotai Terrace, Wellington E5, New Zealand
VR2CD *	Chas. H. Freeman, Nadi Airbase, Fiji Islands
VS6BN *	Eric C. Dunn, P. O. Box 541, Hong Kong, Asia
VS6CB *	Fred K. Parker (ex-G3FUR), P. O. Box 541, Hong Kong, Asia
ZS3E	Box 4, Orangemouth, S. W. Africa
ZS3J	Box 793, Windhoek, S. W. Africa
4W1AC	(QSL to W2YEJ)

W1s JLT TSZ, W2s AEB GT, W3AS, W4CYY, W5FXN, W6s ALQ AM, W8JIN, W9s CFT HUZ, WØDEA/KG6 and the West Gulf Div. DX Club bulletin made this listing

Unless you've cut your DX teeth since the war, you should have no difficulty recalling Mrs. Choyono Suzuki (nee Sugito), J2IX. In this East-meets-West picture the latter is represented by Maj. Frank O. Stevens, ex-J3AAD, an accomplished DXer in his own right. (*Photo courtesy JA2AAZ*)

possible. Asterisk denotes change of former mail address, call retained.

Tidbits:

KH6CI has now adopted the call KX6ZA and is regaling the boys on 20 c.w. Better send your cards to Earl via air mail because the surface route can take as long as four months for arrival . . . . OX3GG maintains skeds with K4USA thrice weekly and can be found between 14,000 and 14,060 kc. on c.w. and 14,150 to 14,180 or 14,310 to 14,380 kc. using voice. W4KAR (ex-W2MAR) operates the ionosphere station at OX3GG singlehandedly and is also hot after DXCC and WAS on the ham bands. The rig runs 100 watts on A3 and 150 watts on c.w. feeding a resonant Vee beam aimed at the U. S. east coast. Frank has been up there over eight months and writes, "To date I have not even heard a carrier on 28 Mc. and 7 Mc. is so chock full of foreign broadcast stations that operation is nil. . . . Thus far we have had no luck with Africa or South America. . . ." This Greenland sounding station is one of the outposts whose work helps produce the popular CRPL-D and CRPL-J propagation bulletins . . . . 4W1AC (W2YEJ) has this to say of his Yemen excursion: "I was happy to be able to give a few of the boys a new and rare country where ham radio operation is not normally allowed. Many more could have had the opportunity of contact with Yemen if operational ethics had been somewhat higher. . . . I am glad to say that the worst offenders were not U.S. amateurs." W1FH was 4W1AC's lead-off QSO . . . . VK3AMR had to leave his VK9MR diggings before he came abreast of the QSL backlog and requests patience. All VK9MR QSOs will be confirmed as soon as possible . . . . "Quite a bit of mail sent to me and by me went astray due to the poor service for mail in VR2," pens ZL2RP regarding his operation as VR2BC. "If any of the gang have not received their QSLs from VR2BC I will shoot along a replacement if contacted at the [ZL2RP] address." . . . . The Moorabbin & District Radio Club makes available a neat certificate award to overseas (non-VK-proper) stations making contacts with 12 member stations. Inquire by mail to VK3APC or VK3FO for further details. This note from VK3FO via W5AGB . . . . ZD2DCP fired up again in Nigeria after a leave in U.K. and W9HUZ could use some info on C9CB if anyone is in on the know . . . . " . . . In reference to the PX1AR expedition . . . all QSOs have been confirmed by QSL and after due time duplicate cards will be sent to anyone who did not receive the first card. This also applies to 3A2AC." So writes Capt. Al Hix, F7AR (W8PQQ) . . . . DL4IA had intentions of operating in Monaco during November, using 20, 40 and 80 'phone and c.w. The call sign was unknown and this note arrived late but it may explain the appearance of a new 3A2 entry in several logs around that period . . . . The prefix ZD2 has climbed to the top of the Dit Parade in the pirate department. ZD2s AH AI BM FB FI FK GH IM JE JJ JK KF KH KM KT KZ LB LO NV PJ SG and SS you may delete from your QSLs-expected-from list. The Director of Posts & Telegraphs of Nigeria has destroyed cards for these unlicensed stations, W2SN informs us . . . . JA2AAZ writes, "[Ex-J2IX] laughingly told ex-J3AAD of a period not so far back when she received from one to twenty proposals a day via means of ham radio. Although these proposals came from all over the world, the majority were from Americans who invariably described themselves as rich, good-looking and over six feet tall. Not to be a kill-joy, but just to keep the records straight, it must be noted that J2IX has been happily married for a number of years and has a beautiful home in Odawara, near Tokyo. In addition to ham radio, her hobbies include American cooking, music and the theater." For the edification of our strictly-postwar clientele, YL J2IX was one of Asia's outstanding DXers in the throbbing Thirties . . . . As told to W2KZE, ZE1JE was making plans to blast out CQs from Zanzibar during early December. She gave no info on the call sign but her VQ1 mailing address is % Barclay Spring, Durban, Zanzibar. She may remain there and stay on the air for some time. That island has been in need of a resident amateur for years . . . . A fast QSL is guaranteed by GC2FZC who runs 50 watts to a 1625 on 'phone and c.w. with a long-wire antenna. Walt told WØPQS he is in dire need of six more states for WAS . . . . More on Zanzibar from W3RAN. VQ4RF had planned a 10-day session on the isle using A1 and A3 on the low ends of all bands, 10 through 80 meters. A 100-rig and gear for the erection of beams was to be included in the packing. W5HBM and VQ3PBD were also in on the deal and the equipment was loaned by W6ESK. Nothing definite on the call at this writing . . . . W2BXS/KH6 is awaiting his KH6 label while working c.w. on 20 and 40. He recently signed W2BXS/KJ6 for a period long enough to raise some 200 W/VEs and contemplates more trips to rare Pacific spots in the future. These contacts will be QSLd upon arrival of printed stock. Jack's KH6 QTH is 630 15th St., Honolulu 18 . . . . W1ONV has it that occasional contributor SWL Phil Bates is now behind the key at WN3SOH. Another sharp-eared DX man in the making . . . . The questionable ethics of LZ1DX — swapping QSLs for radio gear — will no longer be a point of debate. We learn from WØYXO via W1RWS that our Post Office has discontinued accepting radio gear for shipment to Bulgaria (and probably other Curtain countries) . . . . W4NJH left the staff of JA3AC, one of Japan's outstanding DX traffic stations, and is now based at Eglin Field in Florida. Hill's own call over there was JA3AG and he hopes to get back into traffic work Stateside. We hope he takes another crack at DXing, too . . . . JA2JW advertised his kw. rig for swap or trade in the FEARL bulletin and he minimized soft soap: "Truly a monstrosity but a darn good rig for the c.w. man . . . very light weight, a mere 1200 lbs. . . . can be modulated if you have the time and money to build a modulator . . . guaranteed to put a sag in any normal floor; suggest using support for the floor." . . . . There is little chance that FH8AB of Wallis will go as a separate country, states W1RWS. A preliminary check shows that the place is directly administered by New Caledonia and is politically a part of the same . . . . Notes from the West Gulf Div. DX Club's bulletin: The VS4/VS5 operation planned by WØELA has hit a snag. . . . Though FI8RO is really located in Indo-China he has no legal permission to operate there and, furthermore, that country is one of those banned.

All members of a Presbyterian Mission located high in the Andes, OA5s B, A, and C (*l. to r.*) talk things over in the OA5A shack. A pair of 807s did commendable work during the Cuzco earthquake catastrophe of 1950 with OA5A at the mike and key. (*Photo courtesy W4TP*)

—•••—

W8BRA sent us a newspaper clipping which reads:

> An all-time record in demand for electric power in the Cleveland and northeast Ohio area served by the Cleveland and Electric Illuminating Co. was established yesterday when the peak load went over the 1,000,000-kilowatt mark, the company announced.
>
> The load transmitter in the C. E. I. dispatchers' office registered exactly 1,006,000 kilowatts in the afternoon, according to company spokesmen.

They blamed it on "industry's increased demand" but Dave considers CR8CC's presence on 20 meters that afternoon too great a coincidence.

Happenings of the Month

ELECTION RESULTS

Three new names appear on the roster of the ARRL Board of Directors as a result of the autumn elections. There are also three new vice-directors, while three director incumbents were returned to office.

In the Atlantic Division, where Director Walter Bradley Martin, W3QV, was not a candidate, **Alfred C. Heck, W3GEG,** won the directorship beginning January 1st in decisive balloting:

Daniel I. Farren, W3HA	375 votes
William T. Gerson, W3CUB	325 votes
Alfred C. Heck, W3GEG	718 votes
Luther M. Mkitarian, W2ASG	322 votes

W3GEG is chief of the engineering department of the Sharon Herald Broadcasting Company. He has been several times president of the Mercer County Radio Association, and once vice-chairman of the Pittsburgh Area Radio Club Council; he manages the Third Regional Traffic Net, is a member of the county Civil Defense staff, and is RM, ORS, OO. He comes by this flair for organization work naturally; his father was one of West Virginia's first amateurs and the League's district manager of West Virginia many years ago.

The new vice-director of the Atlantic Division is **Charles O. Badgett, W3LVF,** who received 957 votes to 769 for his opponent, Ernest J. Hlinsky, W3KWL. OM Badgett is a research chemist for the Eastern Regional Research Laboratory. He has been president of the York Road Radio Club, and is a member of several others. His primary interest is in propagation study.

In the Dakota Division, the incumbent, **Goodwin L. Dosland, WØTSN,** was reëlected director with 248 votes to 192 for his opponent, Drew M. Heath, WØHEO.

James W. Watkins, W4FLS, becomes the new director of the Delta Division on January 1st by receiving 295 votes to 246 for the incumbent, Victor Canfield, W5BSR. Jim is an electrical engineer with the Tennessee Valley Authority. He has been SCM of Tennessee, president of the Chattanooga Amateur Radio Club, and has considerable additional background on the workings of the Board by reason of a term as alternate (vice) director in 1948–1949. He is ORS and OPS.

In the Midwest Division, **William P. Schmidt, WØOZN,** got 418 votes to nose out Acting Director Alvin G. Keyes, WØKTQ, with 384, and Charles E. McNeel, WØEXP, with 169. WØOZN is a radio technician for the Wichita Police Department. He has been president of the Wichita Amateur Radio Club, was chairman of the Midwest Division Convention in 1948, and is an assistant director of the Division. He is OBS. For vice-director, **James E. McKim, WØMVG,** won handily, 435 votes to 284 for Arthur R. Gaeth, WØFQB, and 248 for Albert J. Ploog, WØSCA-WØBTL. The new vice-director is chief engineer of a Salina heating firm, is a former president of the Central Kansas Radio Club, and is OES with primary interest in the high frequencies.

Lamar Hill, W4BOL, retains the Southeastern directorship, 399 votes to 364 for his opponent, Richard H. Alford, W4BOC. The Division has a new vice-director, **Ernest W. Barr, W4GOR,** in the closest balloting of the election: 387 votes to 376 for William P. Sides, W4AUP, who has held the post for the last ten years. OM Barr is an electronics engineer for the Civil Aeronautics Administration, and has been president of the Norris (Tenn.) Amateur Radio Club.

Alex Reid, VE2BE, begins his twenty-second year as representative of Canadian members by winning the Canadian directorship, 493 votes to 344 for Arthur W. Morley, VE4AM.

7-MC. PROPOSALS

As outlined in December *QST*, the Federal Communications Commission has asked that by January 2, 1952, comment be filed by any interested parties on a series of questions relating to suballocation of the amateur 7-Mc. band. The ARRL Executive Committee considered this matter at its meeting November 20th. Because the Board of Directors now has the subject of 7-Mc. 'phone under consideration (by action in May assigning to its Planning Committee the task of making a study of the possibility) it was decided the League was not now in position to comment fully on the Commission's questions. FCC is therefore being asked to postpone until June the deadline for filing comment.

LEAGUE REQUESTS RETENTION OF ADVANCED CLASS LICENSE

Under present amateur rules, the new Amateur Extra Class license becomes available the first of 1952, and the Advanced Class (old Class A) license is due to be buried the end of 1952 (except that current holders may continue to renew). In recent weeks it has become even more apparent that, as generally envisioned by the FCC definition of the Extra Class written exam, the questions are going to cover a wide field of amateur radio and at a stiff technical level. Add to this indications that the Commission possibly may not publish example questions, in order to make the Extra Class ticket a top-level award, and it appears to make things pretty tough for the General or Conditional Class licensee who after 1952 will want the privilege of operation on 75- and 20-meter 'phone. Discussion of this angle with the FCC staff showed full realization that a problem will exist and indicated an interest in examining

any proposal that might remedy it. The League has therefore filed a petition for rule-making, the object being to retain the Advanced Class license as a permanent part of the amateur structure. The text follows:

FEDERAL COMMUNICATIONS COMMISSION

IN THE MATTER OF
PROPOSED AMENDMENT OF PART 12 OF
THE COMMISSION'S RULES GOVERNING
AMATEUR RADIO SERVICE

PETITION FOR RULE MAKING

Pursuant to §4(d) of the Administrative Procedure Act and §1.702 of the Commission's Rules and Regulations, the American Radio Relay League requests that §12.21 of the Commission's Rules and Regulations be amended by striking from the paragraph entitled "Advanced Class" the final two sentences reading, "New Advanced Class amateur operator licenses will not be issued after December 31, 1952. However, Advanced Class (or Class A) licenses may continue to be renewed as set forth in Section 12.27," so that the amended paragraph would read:

> *Advanced Class.* Any citizen of the United States who at any time prior to receipt of his application by the Commission, has held for a period of a year or more an amateur operator license issued by the Federal Communications Commission, excluding licenses of the Novice and Technician Classes.

and that, for uniformity, the footnote (2) to §12.20 be deleted.

In support, it is shown:

1. The new Amateur Extra Class license is to become available to amateur applicants on or about January 1, 1952. The Commission has recently indicated that the scope of the examination for that class license will be quite extensive — i.e., require a considerable knowledge on the part of the applicant as to advanced radio theory and technique in many phases of the art. Such an approach the League endorses, with the comment that if the Amateur Extra Class license is to be meaningful as a certificate of real ability in the field of radio, it must be truly a top-level license with correspondingly stringent requirements. The League further believes it possible that the Commission may not publicize actual or even example examination questions but rather only outline the scope of the examination in general terms; this, similarly, has the League's endorsement as a further desirable step in making the new top-grade class of amateur license meaningful.

2. With the Amateur Extra Class examination taking form and the general intention of the Commission as to its scope becoming evident, it is now possible for the first time to examine the potential effects on the amateur body, particularly as concerns the Advanced Class license, new issues of which will not be available after December 31, 1952. The Advanced Class license has for many years been the sole means of admission to the A-3 suballocations at 3.8 and 14.2 Mc. Its scope, as indicated in example questions published by the Commission, logically is confined principally to the field of radiotelephony. The requirements in the Advanced Class examination, therefore, have been adequately tied to the privileges appended to the license.

3. This desirable situation is not, however, similarly developing in the case of the Amateur Extra Class license, which at the end of 1952 will replace the Advanced Class license as the means of admission to the named A-3 suballocations. As the League now views the matter, the stringent requirements of the Amateur Extra Class license examination now contemplated by the Commission, though wholly desirable in themselves, will be entirely out of proportion to the knowledge which ought to be required of an amateur desiring only the privilege of operation in these voice subbands. The possible withholding of detailed examples of examination questions, again wholly desirable as a part of the top-level license concept, when applied to an examination conferring only modest additional privileges will work a hardship on amateur applicants for the additional privileges, perhaps so much so as to reduce considerably the present flow of amateurs of "standard" classes graduating to the higher grade license. At the same time, it is the firm belief of the League that there should be some modest but appropriate additional technical knowledge required of applicants for these special 'phone privileges.

4. Examination of all of the above leads us to an obvious conclusion, which the League now proposes: the retention of the Advanced Class license as a permanent part of the amateur licensing structure under Part 12 of the Commission's Rules and Regulations.

5. No hardship on the Commission and its staff in the matter of administration of a retained Advanced Class license is foreseen. The license is presently part of the structure, and all working tools such as examinations, forms, etc., are already in existence. The simultaneous existence of both the Amateur Extra Class and the Advanced Class license similarly does not appear to pose any problem, since under present regulations both licenses will be in existence during the year 1952.

6. If the proposal seems premature at this time, more than one year before the date on which the Advanced Class license examination is due to be withdrawn, the League points out that because of the one-year service requirement for eligibility for Advanced Class, and the interrelated two-year requirement for the Amateur Extra Class license contemplated to replace it, amateurs need considerable advance announcement of the Commission's intention if the Commission is disposed to concur with our present proposal. Further, action upon the League's proposal at this time is appropriate for the reason that if the proposal were adopted the Amateur Extra Class license could be accurately defined from the moment of its availability on January 1, 1952.

7. Should the Commission feel it desirable to upgrade the standards of entrance into the Advanced Class level by rewriting the examination for that class of license to make it more stringent from the standpoint of knowledge of modern radiotelephony techniques, without affirmatively proposing such action the League notes for the record that it has no objection.

Oral argument is not requested.

AMERICAN RADIO RELAY LEAGUE
PAUL M. SEGAL
General Counsel

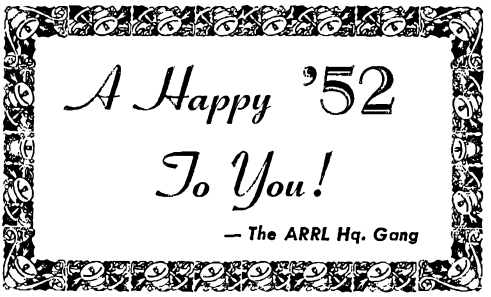
A. L. BUDLONG
Secretary

EXAMINATION SCHEDULE

The Federal Communications Commission will give amateur examinations during the first half of 1952 on the following schedule. Remember this list when you need to know when and where examinations will occur. Where exact dates or places are not shown below, information may be obtained, as the date approaches, from the Engineer-in-Charge of the district. *Even stated dates are tentative and should be verified from the Engineer as the date approaches.* No examinations are given on legal holidays. All examinations begin promptly at 9 A.M. except as noted.

Albuquerque, N. M.: April 4
Amarillo, Texas: April 1
Anchorage, Alaska, 52 Federal Bldg.: By appointment
Atlanta, Georgia, 411 Federal Annex: Tuesday & Friday at 8:30 A.M.
Bakersfield, Calif.: Sometime in February
Baltimore 2, Md., 508 Old Town Bank Bldg.: Monday through Friday. When code test required, between 8:30 A.M. and 9:30 A.M.
Bangor, Maine: Sometime in April
Beaumont, Tex., 329 P. O. Bldg.: Monday through Friday except Thursday only when code test required
Billings, Mont.: May 10
Birmingham, Ala.: March 6 and June 5
Boise, Idaho: Sometime in April
Boston, Mass., 1600 Customhouse: Monday through Friday 8:30 A.M. to 2:00 P.M.
Buffalo, N. Y., 328 P. O. Bldg.: Thursday
Butte, Mont.: May 8
Charleston, W. Va.: Sometime in March and June
Chicago, Ill., 1300 U. S. Courthouse: Friday
Cincinnati, Ohio: Sometime in February and May
Cleveland, Ohio: Sometime in March and June
Columbus, Ohio: Sometime in January and April
Corpus Christi, Tex.: March 5 and June 4

Cumberland, Md.: April 15
Dallas, Texas, 500 U. S. Terminal Annex Bldg.: Monday through Friday
Davenport, Iowa: Sometime in January and April
Denver, Colorado, 521 New Customhouse: 1st and 2nd Thursdays and by appointment
Des Moines, Iowa: January 10 and April 10
Detroit, Michigan, 1029 Federal Bldg.: Wednesday and Friday
El Paso, Texas: April 8
Ft. Wayne, Ind.: Sometime in February and May
Fresno, Calif.: March 19 and June 18
Grand Rapids, Mich.: Sometime in January and April
Hartford, Conn.: Sometime in March
Hilo, T. H.: April 7
Honolulu, T. H., 609 Stangenwald Bldg.: Monday, 8:30 A.M.
Houston, Texas, 324 U. S. Appraisers Stores Bldg.: Tuesday and Friday
Indianapolis, Ind.: Sometime in February and May
Jackson, Miss.: March 19 and June 11
Jacksonville, Fla.: April 12
Jamestown, N. D.: April 9
Juneau, Alaska, 6 Shattuck Bldg.: By appointment
Kansas City, Mo., 3200 Federal Office Bldg.: Friday, 8:30 A.M., also by appointment
Klamath Falls, Ore.: Sometime in May
Knoxville, Tenn.: March 20 and June 19
Lihue, Kauai, T. H.: April 22
Little Rock, Ark.: January 16 and April 16
Los Angeles, 539 Federal Bldg.: Wednesday, 9:00 A.M. and 1:00 P.M.
Louisville, Ky.: Sometime in May
Manchester, N. H.: Sometime in May
Marquette, Mich.: May 7
Memphis, Tenn.: January 11 and April 11
Miami, Fla., 312 Federal Bldg.: Thursday
Milwaukee, Wise.: Sometime in January and April
Mobile, Ala., 419 U. S. Courthouse and Customhouse: Wednesday and by appointment
Nashville, Tenn.: February 14 and May 8
New Orleans, La., 400 Audubon Bldg.: Monday through Friday, except Monday through Wednesday only at 8:30 A.M. when code test required
New York, 748 Federal Bldg., 641 Washington St.: Monday through Friday
Norfolk, Va., 402 Federal Bldg.: Monday through Friday except Friday only when code test required
Oklahoma City, Okla.: January 17–18 and April 17–18
Omaha, Nebr.: January 17 and April 17
Philadelphia, 1005 U. S. Customhouse: Monday through Friday
Phoenix, Ariz.: Sometime in January and April
Pittsburgh: Sometime in February and May
Portland, Maine: Sometime in April
Portland, Ore., 307 Fitzpatrick Bldg.: Friday, 8:30 A.M.
Rapid City, S. D.: Sometime in May
Roanoke, Va.: April 5
St. Louis, Mo.: February 7 and May 8
St. Paul, Minn., 208 Federal Courts Bldg.: Friday
Salt Lake City, Utah: March 15 and June 14
San Antonio, Tex.: February 7 and May 8
San Diego, 15-C U. S. Customhouse: By appointment
San Francisco, 323-A Customhouse: Monday and Friday 8:45 A.M. Also Advanced Class Monday through Friday
San Juan, P. R., 323 Federal Bldg.: Thursday, and Monday through Friday at 8:00 A.M. if no code test required
Savannah, Ga., 214 P. O. Bldg.: By appointment
Schenectady, N. Y.: March 12–13 and June 18–19
Seattle, 808 Federal Office Bldg.: Friday
Sioux Falls, S. D.: March 12 and June 11
Spokane, Wash.: May 6
Springfield, Mo.: June 11
Syracuse, N. Y.: Sometime in January and April
Tallahassee, Fla.: January 12
Tampa, Fla., 410 P. O. Bldg.: By appointment
Tucson, Ariz.: Sometime in April
Tulsa, Okla.: January 21–22 and April 21–22
Wailuku, T. H.: April 12
Wash., D. C., 415 22nd St., N. W.: Monday through Friday, 8:30 A.M. to 5:00 P.M.
Wichita, Kans.: March 6
Williamsport, Penna.: Sometime in March and June
Wilmington, N. C.: June 7
Winston-Salem, N. C.: February 2 and May 3



Strays

"While listening between 7 and 8 Mc. recently, Ed McAuslan, W2USX, heard a WN station's second harmonic of considerable strength. Thinking to do his good deed for the day, Ed put his rig in the 3.7-Mc. Novice band and called the neophyte. Contact was made and the Novice informed of his trouble.

"However, the WN was either rattled, had buck fever, or just didn't know any better, and gave Ed's call *last* when signing over.

"So-o-o, the logical event followed and the FCC QSL for second-harmonic radiation went to W2USX.

"In the same mail Ed received the Novice's card thanking him for the service. Perhaps if he reads this he may find out how truly great the service was!"

— *W2TPN*

—·—

Chester Franz, WØNFA, well-known St. Louis mobile operator, presented a new commercially-built 1000-watt transmitter to the Crusade for Freedom recently. The presentation was made at a luncheon given in honor of General Lucius Clay, national chairman of the Crusade, who accepted the gift on behalf of Radio Free Europe.

OUR COVER

Vern Chambers' latest mobile rig should really fill the needs of the gang active in the 10-meter civil defense nets. You'll find it completely described on page 16 of this *QST*.

A has a new s.s.b. rig operating on 3999 kc. and **B** says he takes out the band up to 3980 with his "splatter." **A** claims the fault lies in the receiver of **B** — that s.s.b. can't possibly show signals that far off frequency. **B** claims he hears the signals so they must be there. Who is right?

(Please turn to page 116 for the answer)

The World Above 50 Mc.

CONDUCTED BY E. P. TILTON,* W1HDQ

THOUGH few hams could be called scientists, and no great number of us are even scientifically inclined, it is often possible for even routine hamming to serve scientific ends. This is particularly true of propagation investigations, where observations are usually needed in large numbers and from many geographical areas. For more years than many hams have been around, the observations of discerning amateurs have been used in this way.

It all began with the ARRL-Bureau of Standards Fading Tests, the first example of Amateur Radio working with a Government agency for scientific purposes. This project was announced in *QST* for April and May, *1920*, and in more than 30 years since hams have collected data for scores of propagation studies on many frequencies. Our presence in almost every populated area makes our work a source of data that could be gathered in no other way except by great expenditure of time and money. Though such efforts have attracted less attention on the part of the general public than the more spectacular emergency communication feats, they have been, over the years, one of our most potent means of justification of our existence in the midst of intense competition with other users of the radio-frequency spectrum.

By just being on the air at all hours and by making use of new frequencies simply out of curiosity, we have turned up propagation peculiarities that might have gone unnoticed for years longer. The almost unsuspected value of the short waves for world-wide communication, the phenomenal low-power DX possibilities of the 28-Mc. region, the extended range of the frequencies above 30 Mc. associated with weather variations, the existence of sporadic-*E* skip on the v.h.f. bands, the scattering of v.h.f. waves by the aurora — these are a few of the propagation developments that resulted from research by amateurs themselves, from careful study of amateur observations, or from fortunate accidents resulting from casual use by amateurs of frequencies once thought to be of little commercial value.

The study of aurora borealis that has been going on at Cornell University since 1938 is typical of the sort of program that can be aided greatly by amateur observations. For years this work had little or no connection with radio propagation, but recently it has been found that probing the aurora with various radio frequencies offers an excellent way to learn more of its true nature. This project is a natural for v.h.f. hams, and for some time now a number of you have been contributing observations. Amateur records for the whole period from 1938 to the present have been studied, first by Dick Moore, W2SNY,

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

2-Meter Standings

	Call	States	Areas	Miles
W1HDQ		16	6	650
W1IZY		15	6	750
W1MNF		14	5	570
W1DJK		13	5	520
W1BCN		13	5	500
W1CTW		12	4	500
W1KLC		12	4	500
W2BAV		21	7	1175
W2NLY		18	6	750
W2PAU		16	6	740
W2AZL		16	6	—
W2DFV		13	5	350
W2CET		12	5	405
W2DPB		12	5	500
W2QED		12	5	365
W2FHJ		12	5	—
W2QNZ		12	5	—
W2BVU		12	4	260
W2ORI		8	6	570
W3NKM		19	7	660
W3RUE		18	7	760
W3QKI		16	7	820
W3KWL		15	7	560
W3LNA		14	7	720
W3GKP		14	6	650
W3OWW		13	6	600
W3KUX		12	5	575
W3PGV		12	5	—
W3LMC		11	4	400
W4MKJ		16	7	665
W4HHK		15	6	660
W4JDN		13	6	—
W4JFV		13	5	830
W4IKZ		13	5	650
W4JFU		13	5	720
W4LVA		13	5	400
W4OXC		13	7	500
W4CLY		12	5	720
W4JHC		12	5	720
W4OLK		12	5	720
W4FJ		12	5	700
W4LRR		5	2	900
W5JTI		14	5	670
W5QNL		10	5	1400
W5MWW		9	4	570
W5AJG		9	3	1260
W5ML		8	3	725
W5ERD		8	3	570
W5VX		7	4	—
W5VY		7	3	1200
W5CVW		7	2	560
W5ABN		7	2	450
W5SWV		7	2	—
W5FBT		6	2	500
W5FEK		6	2	500
W5IRP		6	2	410
W5ONS		5	2	950
W5FSC		5	2	500
W5JLY		4	2	650
W6ZL		2	2	1400
W6WSQ		2	2	1390
W6PJA		2	2	1390
W6ZEM/6		1	1	415
W6GGM		1	1	300
W6YYG		1	1	300
W8WJC		21	7	775
W8BFQ		21	7	775
W8WRN		19	7	670
W8WXV		18	8	1200
W8UKS		18	7	720
W8EP		17	7	—
W8WSE		16	7	830
W8RWW		16	7	500
W8BAX		15	6	655
W8FQK		13	7	—
W8CYE		12	6	—
W8CPA		12	-	650
W9FVJ		20	7	790
W9UCH		20	7	750
W9SUV		19	7	—
W9EQC		18	7	820
W9BOV		15	6	—
W9WOK		15	5	690
W9AFT		14	-	—
W9NFK		12	7	690
W9UIA		12	7	540
W9GTA		11	5	540
WØIHD		15	6	725
WØNFM		14	7	660
WØEMS		13	5	1080
WØZJB		12	7	1097
WØWGZ		11	5	760
WØHXY		8	3	—
WØJHS		7	3	—
VE3AIB		12	6	600
VE1QY		11	4	900
VE3BOW		8	5	520
VE3BQN		7	4	540
VE3TN		7	4	480
VE3RPB		6	4	525
VE3DER		6	4	450
VE3EAH		5	4	380

FIFTH V.H.F. "SS"	Jan. 12th and 13th *See rules on page 48*

whose propagation articles you have read in *QST*, and more recently by Ken Bowles, W2QKW-ZGP, and Rolf Dyce, W2TTU.

More observations are needed, and in better detail. To aid in the recording and reporting of the pertinent facts of each aurora occurrence, Ken has prepared convenient reporting forms, a supply of which will be sent to anyone wishing to help out in the aurora study. These reports are sent to ARRL for use in compiling this department, following which they are forwarded by us to Cornell. Send requests for forms, and the filled-in reports, to ARRL.

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

"How often is the 6-meter band open?" This question is often asked by those contemplating giving the band a try. W8NQD, Ashland, Ohio, gives a good answer. Tom's 1951 log shows 50-Mc. openings of the aurora or sporadic-*E* type for better than one day out of every five. Tropospheric extensions of the normal range were not included, so it can be seen that DX of one sort or another is far from being a rare occurrence for the fellow who is on the job regularly on 6.

Sporadic-*E* skip openings were not on a one-in-five basis during November, but there were some. W4FNR, Ft. Lauderdale, Fla., worked W5ONS, Victoria, W5AJG, Dallas, and W5FXN, Austin, Texas, between 8:09 and 9:10 P.M. on the 20th. Like many another opening, this one was signaled by the appearance of KPRC, Houston, on Channel 2.

Here's a late report on an expedition to Clingman's Peak, North Carolina, by W9ASM and WN9OGJ last summer. This is the highest accessible spot in the country east of the Mississippi, 6650 feet above sea level, so it provided quite a few "first" contacts with North Carolina for 2-meter operators at distances up to 575 miles. Contacts up to 300 miles were made easily on both 144 and 50 Mc., regardless of conditions. W9MAL, Peoria, Ill., was the best DX on 2, and W4OXC, Louisville, Ky., was the DX on 6. A similar expedition is planned for next summer, and if possible, advance notice will be given, in order to line up more DX schedules.

Stations worked on 2 included W4s OXC JDN LRR KRY DLX MKT ASQ KIP DOU MZQ, W8s WRN BFQ LPD ZUR AMR JIN WJC BAX, W9s SUV JMS EWO GLW and MAL. For the W8s and 9s this was the first North Carolina contact on 2, almost without exception.

What band to use for civil emergency communication? The answer is often dictated by available equipment, in which case the answer is likely to be 10 or 2. But if a group is going to start from scratch and build gear especially for the job at hand we feel that 50 Mc. merits serious consideration. There is more room there than on 10, and particularly under test conditions (while normal hamming is still going on) a group on 50 Mc. stands a much better chance of getting its work done without QRM than does a similar set-up on 28 Mc. Equipment can be built for 50 Mc. for about the same cost and with about the same complexity as for 28 Mc., and much more compactly and economically than for 144 Mc. The reliable round-the-clock range is at least as good on 6 as on 10, and definitely better than 2, all things being equal.

Thinking along these lines has led quite a few groups to embark on 6-meter building projects. One recent example is the gang in Rochester, Minn., who got their start on 75, but now plan to change to 6. WØCOS writes that local CD authorities, pleased that here was a group that was ready to go to work without waiting for funds, have now promised financial support. The Arlington, Mass., group project now has 12 transmitters especially designed for CD work in operation, and several "CD Special" receivers are well along. The gear was built by the hams themselves, and remains their property. This transmitter-receiver combination, designed for the job with CD needs dictating its characteristics, will be described soon in *QST*. Another area employing 50 Mc. is Schenectady, N. Y., where the band has been used for about a year with good results.

If you are using a v.h.f. band for your CD program, drop us a line and let us have the details of your set-up. It may be helpful to other groups just getting under way.

The World Above 420 Mc.

One of the simplest r.f. amplifiers for 420 we've seen yet is used by W1HDF, Elmwood, Conn. Patterned after the grounded-grid amplifier of W9RZP (October, 1951, *QST*, page 54) it uses a 12AT7 dual triode, with the antenna connected directly to the two cathodes, as shown in Fig. 1. The plate circuit requires some care in design. Carl made the plate inductance out of a strip of brass about ½ inch wide and 4 inches long, folded into U shape. This was substituted for the stator plates of a miniature split-stator variable, leaving the two rotor plates on each side of the condenser to provide the variable capacitance to ground. The sides of the U are about ½ inch apart.

This preamplifier is used ahead of a crystal mixer, providing an improvement of several decibels in signal over noise. It works best with balanced lines of either Twin-Lead or open wire. If a grounded antenna system is used, blocking capacitors similar to C_2 and C_3 should be inserted between the antenna input and the tube cathodes to prevent shorting out the bias resistors. The 6BQ7, 6BK7 and 2C51 are other tube possibilities.

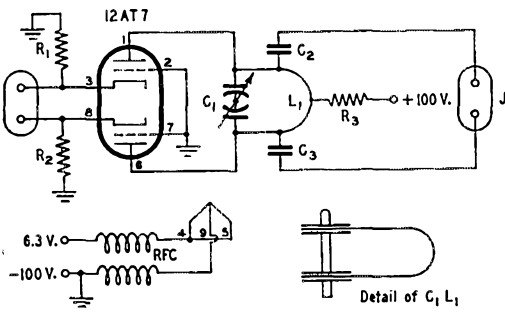


Fig. 1 — 420-Mc. r.f. amplifier used by W1HDF.

C_1 — Midget split-stator variable.
C_2, C_3 — 30-$\mu\mu$fd. ceramic.
R_1, R_2, R_3 — 100 ohms, ½ watt.
L_1 — Brass strip ½ inch wide and 4 inches long, bent into U shape and substituted for the stator plates of C_1. See detail and text.
J_1, J_2 — Crystal sockets for antenna and output terminals.
RFC — Bifilar wound, 8 turns No. 22 enamel or silk, 3/16-inch diameter.

From W6NNN, Cudahy, Calif., we learn that activity on 420 is on the upgrade in Southern California. Dick says that he has worked 32 different stations so far. Signals from San Diego, about 100 miles down the coast, are extremely strong, comparing favorably with 2-meter signals over the same path. Most of the rigs are modulated oscillators, but more crystal-controlled signals are appearing. Antennas are mostly 16-element or Twin-Five arrays, with vertical polarization. Some of the more consistently active stations are W6s NLZ CFC BYE IBS AFA WSQ HZ APN DSO APG IXA and WWP.

Fellows who have been working regularly on 420 through the fall noted a considerable drop in average signal strength once cold weather became the order of the day, but good openings came along now and then even so. On the morning of Nov. 16th, the 2-meter signal of W2QED was exceptionally strong on our 7 A.M. schedule, so we asked Ken to change over to 435 Mc. He came through at once, S5 to 6, as good as he has ever been except during phenomenal 2-meter openings. We stayed with it from 7:30 to nearly 9:30 A.M. before the 435-Mc. signal faded out, at which time the 2-meter signal was also getting down close to the noise level. This is the longest we have seen Ken's 435-Mc. signal stay readable in more than three months of regular schedules.

At last — a use for those "gold-plated specials" that have been a drug on the surplus market for so long. With a little work on a lathe (it can be done with a hack saw, too,

though not so easily or neatly) those coaxial tank circuits can be cut down to make beautiful tanks for crystal mixers or r.f. amplifiers for 420 Mc. About 5 to 6 inches is right for a crystal mixer line. The screw adjustment in the end makes a fine vernier tuning device. For mixer service the crystal should be tapped about one-third of the line up from the cold end. The antenna should be connected directly to the line about one to 1½ inches up from the cold end, if coax is used, or a 1-inch coupling loop at the cold end will serve for 300-ohm line. Coaxial input, with a bazooka, would be preferable if 300-ohm line is used for the antenna system.

Standings as of October 25th

WØZJB.....48	W4IUJ.....38	W8BFQ.....39
WØBJV.....48	W4BEN.....35	W8LPD.....37
WØCJS.....48		
W5AJG.....48	W5VY.....47	W9ZHB.....48
W9ZHL.....48	W5GNQ.....46	W9QUV.....48
W9OCA.....48	W5JTI.....44	W9HGE.....47
W6OB.....48	W5ONS.....44	W9PK.....47
WØINI.....48	W5ML.....44	W9VZP.....47
	W5JLY.....43	W9RQM.....47
W1HDQ.....47	W5JME.....43	W9ALU.....47
W1CLS.....46	W5VV.....42	W9QKM.....46
W1CGY.....46	W5FAL.....41	W9UIA.....45
W1LLL.....44	W5NHD.....41	W9UNS.....45
W1KHL.....44	W5FSC.....41	
W1HMS.....43	W5HLD.....40	WØQIN.....47
W1LSN.....42	W5HEZ.....38	WØDZM.....47
W1EIO.....41		WØNFM.....47
	W6WNN.....48	WØTKX.....47
W2RLV.....45	W6UXN.....47	WØKYF.....47
W2BYM.....44	W6TMI.....45	WØJOL.....44
W2IDZ.....43	W6IWS.....41	WØJHS.....43
W2AMJ.....42	W6OVK.....40	WØPKD.....43
W2MEU.....42		WØHVW.....42
W2FHJ.....41	W7HEA.....47	WØMVG.....41
W2GYV.....40	W7ERA.....47	WØIPI.....41
W2QVH.....38	W7BQX.....45	
	W7DYD.....45	VE3ANY.....42
W3OJU.....45	W7JRG.....44	VE3AET.....35
W3NKM 41	W7BOC.....42	VE1QZ.....32
W3MQU.....39	W7JPA.....42	VE1QY.....31
W3JVI.....38	W7FIV.....41	XE1GE.....19
W3RUE.....37	W7CAM.....40	CO2JF..... 7
	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.
W4FBH.....46		
W4EQM.....44	W8NSS.....46	
W4QN.....44	W8NQD.....45	
W4FWH.....42	W8UZ.....42	
W4CPZ.....42	W8YLS.....41	
W4FLW.....42	W8CMS.....41	
W4MS.....40	W8RFW.....41	
W4OXC.....40	W8LBH.....39	
W4FNR.....39		

OES Notes

Keeping regular v.h.f. skeds during the winter? Attempting to work someone near the edge of one's reliable working range can turn up some interesting facts. Almost always we are surprised to find how often it is possible to work a fellow who is perhaps 200 miles away on 50 or 144 Mc. Without a regular sked we might go for weeks without hearing him, but when we are both trying at the right time and with beams in the right direction we make it a high percentage of the time.

Such is the observation of W9LEE, Westboro, Wis., who has been able to work WØBBN, Grand Marais, Minn., on 144 Mc. almost every morning. W9JBF, at Wausau, Wis., is also in on this one, with practically 100 per cent success. The distance is around 200 miles. Less has been heard from the Twin Cities area, but uncertain operating schedules are believed to be responsible. W9FAN, Sheboygan, 280 miles from WØBBN, hears him when conditions are good.

W9FAN cites a good argument to use on your TV-buying neighbors: Talk them out of conical antennas if at all possible. Howard has no TVI in his own TV set, equipped with a Yagi array, but two neighbors with conicals have fundamental interference from his 2-meter signal. Both were curable with Twin-Lead stubs or series-tuned traps, but no corrective measures are needed on his own receiver with its more selective parasitic array.

W7JRG, Sheridan, Wyo., still works W7HNI at Gillette daily on 144 Mc. With the advent of colder weather the signals have dropped far below the summer levels, but they manage to hear each other regularly. If the going is especially rough they change to 3760 kc. Ken says that other v.h.f. men use the lower frequency for a rallying point; that he has run into quite a few of them there recently, including WØBJV and W5UW. Ken caught a nice 50-Mc. opening October 28th, working W9s GYX VZP ALU MFH, W5OCP and W8NQD in a 5-hour session that ended around 9:45 P.M. MST.

Any of the OES group working on frequencies higher than 420 Mc.? W6CFL, Los Angeles, is experimenting with a 2C40 cavity oscillator on 2400 Mc., but he has trouble getting it into the band. The length of his grid line is considerably shorter than in published dimensions and he'd like to know why.

Are you the kind of ham who would rather tinker than talk? If so, the OES appointment is right up your alley. Set up some years ago especially for the experimenter type of ham who is working on the frequencies from 50 Mc. up, the Official Experimental Station appointment is open to anyone who has a real and continuing interest in the experimental side of hamming. Details and application blanks are available from your Section Communications Manager (his address is on page 6 of every issue of *QST*) or from ARRL. OES appointees receive special bulletins and news of v.h.f. activities that are available through no other channels, and their reports are used regularly in making up each issue of *QST*. Maybe you'd like to join them.

Strays

The possibility that ceramic (crystalline) materials will replace vacuum tubes in some electronic circuits is indicated in a Signal Corps development report now available to the public.

Barium titanate is the subject material of this report and is best known for its piezo-electric properties. A study of the behavior of this material at high frequencies reveals it has a high dielectric constant which varies with applied a.c. Researchers investigating the properties of barium titanate also found it had an electrical "memory" characteristic useful in electronic computers.

For the 36-page report including graphs and tables, address the Library of Congress Photoduplication Service, Publication Board Project, Washington 25, D. C. Ask for PB-104-394, *Development and Application of Barium Titanate Ceramics as Non-Linear Circuit Elements*, $2.50 in microfilm or $5.00 in photostat form.

—•••—

The weekly program of amateur news and doings of world-wide interest broadcast by VOA now uses the following transmission schedule, subject to modification with changing propagation conditions:

Latin American Service— 9:30 P.M. EST Saturday on 6040, 6060, 9650, 11,890, 15,210 and 15,350 kc.

Far Eastern and Pacific Service— 7:45 A.M. EST and 9:45 A.M. EST Sunday on 6060, 6075, 6125, 6185, 6195, 9515, 11,890, and 15,245 kc.

European and Near Eastern Service— 2:15 P.M. EST Sunday on 6040, 6170, 9700, 11,775, 11,830 and 15,270 kc.

5th V.H.F. Sweepstakes, Jan. 12th-13th

ARRL Certificates to Leaders — Gavel for Winning Club

BY F. E. HANDY,* W1BDI

THE Fifth Annual V.H.F. Sweepstakes will start at 2:00 P.M. your local time, Saturday, January 12th, ending at midnight Sunday. 'Phone, m.c.w. or c.w. may be used, with results all contributing to one score. The aim of this contest is to work as many v.h.f. stations as possible in one week end. All points from such work will be multiplied by the number of *different* ARRL sections worked. "CQ Sweepstakes, this is W....., over" (on c.w. just "CQ SS de..... K") will identify stations desiring to make contest exchanges.

If an exchange of SS data is completed in both directions, *two* points may be claimed. To make it easy to record exchanges they should be sent in the order of information shown. Exchanged information is in the form of a message preamble, with the ARRL section [1] substituted for the city and state, and the RST report for "check." Any station you work is good for *one* point in the score if you get the other operator's acknowledgment of "message," whether he is in the contest for score or not.

Contest reporting forms for your convenience will be sent free on request. Neither advance entry nor form is *required*. Follow the log arrangement shown. All lists, small or otherwise, are welcomed by ARRL to help support claims and make complete results in *QST* possible. Report as soon as the test is over.

* Communications Manager, ARRL.

[1] See list of sections in the ARRL field organization, page 6. Awards include Puerto Rico, Hawaii, Alaska. In operating use section name abbreviations such as E. Mass., R. I., W. N. Y., Neb., N.Y.C.-L.I.

[2] In 'phone RST exchanges only two numerals need be used. Say *Readability . . . Strength. . . .* On c.w. full 3-number RST reports should be logged.

[3] Where only one point is made on a contact you can add a point by working this station again for exchange in the opposite direction later. Leave right or left report column blank so that other pairs of exchanges completed in one contact are side by side in your report.

Awards — Individual and Club

Certificate awards will go to V.H.F. Sweepstakes winners in *each* ARRL section and to leading operators of clubs where three or more submissions are received. A *club gavel* goes to the club with top aggregate score. Get set for a v.h.f. operating week end!

Rules

1) *Eligibility:* Amateur operators in any field-organization section [1] operating fixed, mobile or portable *under one call* on or above 50 Mc. are invited to take part.

2) *Object:* Amateurs in U. S. and Canadian sections of the ARRL field organization will attempt to contact as many other stations in as many sections as possible.

3) *Contest Periods:* The contest starts at 2:00 P.M. your local time Saturday, Jan. 12, 1952, and ends at midnight Sunday, Jan. 13, 1952.

4) *Exchanges:* Contest exchanges, including all data shown in the sample, must be transmitted and receipted for as a basis for each scored point.

5) *Scoring:* (a) Contacts count *one point* when the required exchange information has been received and acknowledged, a *second point* when exchange has been completed in both directions.

(b) Final score is obtained by multiplying totaled points by the number of *different* ARRL sections [1] worked (the number in which at least one SS point has been credited).

6) *Conditions for Valid Contact Credit:* (a) Repeat contacts in other bands confirmed by completed exchanges of *up to two points per band* may be counted for *each different station* worked. (Example: W1XXX works W3MQU on 50 and 144 Mc. for complete exchanges, 2 points each on each band. 2 + 2 gives 4 points but only *one* section multiplier.)

(b) Crossband work shall not count for any points or sections.

EXPLANATION OF V.H.F. SS CONTEST EXCHANGES

Send Like Standard Msg. Preamble	*NR*	*Call*	*CK*	*Place*	*Time*	*Date*
Exchanges	Contest numbers 1, 2, 3, etc., a new NR for each station worked	Send your own call	CK (Readability . . . Strength . . . or RST [2] of station worked)	Your ARRL *section* [1]	Send time of transmitting this NR	Send date of QSO
Purpose (example)	QSO NR tells how you are doing. (NR 1)	Identification (W1AW)	All exchange reports (589)	Section [1] vital contest data. (Conn.)	Time and date must fall in contest period. (6R55 P.M. Jan. 12)	

STATION W. . . . —SUMMARY OF V.H.F. SWEEPSTAKES EXCHANGES

Freq. Band (Mc.	*SENT (1 point)*				*Time . . . . ST*	*Date (Jan.)*	*RECEIVED (1 point)*				*Time*	*Date (Jan.)*	*Number of Each Different New Section as Worked*	*Points*
	NR	*Stn.*	*CK-RST*	*Section*			*NR*	*Stn.*	*CK-RST*	*Section*				
50	1	W1AW	57	Conn.	4:15 P.M.	12	3	W1QIX	47	Conn.	4:18 P.M.	12	1	
50	2		43		4:35 P.M.	12	7	W1HDQ	59	Conn.	4:40 P.M.	12	..	2
50	3		58		9:09 P.M.	12	6	W1EIO	359	Maine	9:11 P.M.	12	2	2
144	4		49		9:30 P.M.	12	32	W1CLS	58	E. Mass.	9:36 P.M.	12	3	2
144	5		57		9:50 P.M.	12	15	W1SF.	58	Conn.	9:46 P.M.	12	..	2
50	6		54		11:30 P.M.	12	11	W2OHE	48	N.Y.C.-L.I.	11:32 P.M.	12	4	2
144	7		58		11:35 P.M.	12	30	W1QIX	57	Conn.	11:35 P.M.	12	..	2
144	8		57		11:45 P.M.	12	21	W3MKL	59	Md.-Del.-D.C.	11:56 P.M.	12	5	2
144	..	....	...	...	.....	..	18	W4FNR[3]	59	E. Fla.	12:34 A.M.	13	6	1
144	9	W1AW	34		8:50 A.M.	13	27	W1NY	59	W. Mass.	8:47 A.M.	13	7	2
50	10		479		9:18 P.M.	13	12	W5AJG	379x	N. Tex.	8:20 P.M.	13	8	2
50	11		589		10:40 P.M.	13	20	VE1QY	569	Maritime	11:35 P.M.	13	9	2

No. Bands Used: 2 9 Sec., 23 Pts.

Number and names of operators having a share in above work .....

Claimed score: 23 points × 9 sections = 207.

I hereby state that score and points set forth in the above summary are correct and true.

Equipment: *Signature*.....

Address .....

Tube line-up.....

Number different stations worked.....

(c) Fixed-, portable- or mobile-station operation under one call, from one location only, is permitted.

7) *Awards:* Entries will be classified as single- or multioperator, a single-operator station being defined as one manned by an individual amateur who neither receives assistance nor gives assistance to any person in the contest period. Certificates will be granted based on the leading work in the single-operator classification in each ARRL section. Multioperator work will be grouped separately in the *QST* official report of results.

When three or more individual club members compete and submit logs naming the club with which they are identified, an ARRL certificate will be issued through such club to the leading individual in the local competition. When less than three individual logs are received there will be no club award or club mention.

A gavel with engraved sterling-silver band is offered the club whose secretary submits the greatest aggregate score, such claim successfully confirmed by *individual member reports* (resident club members *only*). Claims from federations, radio club councils, or other combinations of radio clubs, will not be accepted. Special memberships granted for contest purposes will not be recognized.

8) *Conditions of Entry:* Each entrant agrees to be bound by the provisions of this announcement, the regulations of his licensing authority, and the decisions of the Award Committee.

9) Reports from all entrants must be postmarked no later than January 28, 1952, to be considered for awards.

Strays

Younger aspirants to Novice and other class licenses may find convenient the arrangement used by Tom Nuxoll, a pupil of W4SMU. Young Tom finds he can kill two birds neatly with one stone by combining code practice and his spelling lessons.

—...—

VE3EAB, quoted in *CQ-TV*, organ of the British Amateur Television Club, remarks on something new — electronic embalming. A corpse is dehydrated by r.f. and sealed in a glass container. Guaranteed shelf life is 2,000,000 years!

Old Pete Brown, while still spry,
Learned to be a careful guy.
He has lived for many a year
And years from now he'll still be here.
But young Tom Smith always thought
It was the others who got distraught.
They laid Tom out under a tree —
Poor guy — he didn't Switch To Safety!

— *W1SSX*

A 144-Mc. Antenna Coupler

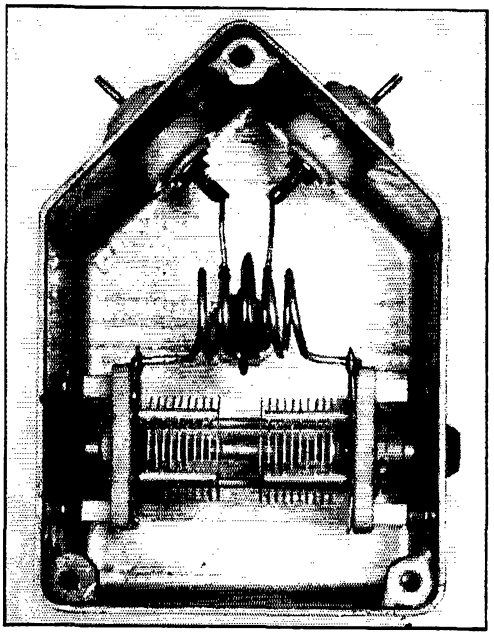
A Compact Lightweight Unit for Mounting Directly in the Antenna System

BY JOHN E. STERNER,* W8DUL

COAXIAL-LINE feed from the transmitter and the use of some form of antenna coupler are practically standard procedure for the ham bands below 30 Mc., TVI being the problem that it is in most sections of the country. For the v.h.f. bands, however, the tendency has been to employ open-wire or Twin-Lead feed to the antenna, and to use nothing more than a turn or two of wire or a hairpin loop for coupling the energy from the tank circuit. These methods had the virtue of simplicity, if nothing more, whereas the use of coaxial line makes it necessary to include some form of balanced-to-unbalanced coupling device at the antenna.

Coax has many advantages, however. It can be run anywhere (underground, strapped to a steel tower, inside a piece of pipe); it is far neater in appearance; it is impervious to weather effects — to name a few of the reasons why more and more ham antennas are being revamped for coaxial-line feed. Now, with u.h.f. TV just around the corner, we have a factor that may ultimately swing the balance in favor of coax in a high percentage of v.h.f. installations. The first steps in reducing u.h.f. harmonics should certainly be the installation of shielding and coaxial-line feed.

* 615 Mansfield, Ypsilanti, Mich.



Interior view of the 2-meter antenna coupler described by W8DUL.

The need for a bazooka, a halfwave section of coaxial line draped around an antenna system at the feed point, is one of the disadvantages of coax, and this is where the antenna coupler pictured herewith comes in. It may be seen from the picture and schematic that it is nothing new in principle; just the conventional antenna coupler to work from coax to open-wire line, adapted for 144-Mc. use and so designed mechanically that it may be mounted in the antenna system, if it is convenient to do so. It combines the functions of matching device and unbalanced-to-balanced coupler.

The tuned circuit, L_2C_1, is resonated at the transmitting frequency and matching is accomplished by setting the taps on L_2 at the proper point for the feed impedance to be accommodated. The specifications given under Fig. 1 and the mechanical arrangement shown in the photograph are proper for the feed point of the conventional 16-element array, or for working into a 300-ohm transmission line, in case it is desired to use the latter. Any load impedance can be handled by changing the tap positions — near to the center of L_2 for lower impedances; farther out for higher. Any coaxial line may be used, as it functions only as a non-resonant link from final to coupler.

If the coupler is used in the conventional way inside the shack, the box in which the coupler is mounted can be anything that will provide satisfactory shielding. The unit pictured is designed to be a part of the antenna system itself, so a lightweight aluminum box that can be waterproofed readily is required. Many suitable cases can be found; the one in question was purchased on the surplus market. It is known as Terminal Box NAF-1128-3, 4½ by 3 by 2½ inches in size. A rubber gasket can be cut to fit the cover, and the hole that passes the tuning condenser shaft

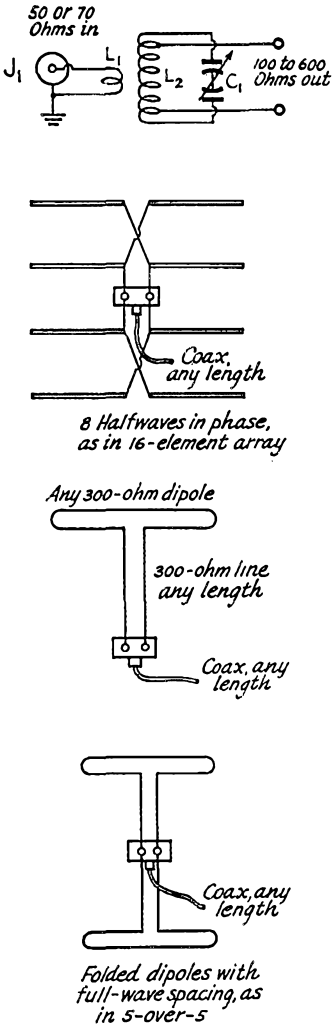


Fig. 1 — Schematic diagram and three possible uses for the 144-Mc. antenna coupling unit.

C_1 — 15-$\mu\mu$fd.-per-section split-stator variable, double spaced. May be made by sawing the stator bars of a Millen 21935 so as to leave 5 stator plates in each section.

L_1 — 1 turn No. 14 enamel, ⅜-inch diameter, around center of L_2.

L_2 — 5 turns No. 14 enamel, ½-inch diameter, turn spacing ⅝ inch. Taps at 1½ turns in from each end for feeding midpoint of 16-element array.

J_1 — Coaxial fitting.

can be made watertight by the use of a rubber grommet. Cracks around the mounting screws and the feed-through bushings can be sealed with lacquer.

To put the coupler into service it is merely necessary to adjust C_1 for resonance, changing the position of the coupling loop at the transmitter to set the loading at the proper value. If one wishes to make this adjustment from a position remote from the antenna it is a simple matter to fit the shaft of C_1 with a pulley and make the

(*Continued on page 110*)

On the Air with SINGLE SIDEBAND

SURELY this season will see some two-way s.s.b. trans-Atlantic contacts on 75. The roster in Europe is increasing all the while and, according to **G3FHL**, there are stations on in G, OZ, SM, LA, PA, HB and DL. Most of them are low-powered and work around 3700 to 3800 kc., which may very likely account for the lack of success so far, but they hear some of the W gang. They manage 3- and 4-country round tables on 3720 kc., but call from 3797 when they hear Ws on 3800+. Incidentally, Geoff has had some success with an 807 as a grounded-grid Class B linear. He ties the control and screen grids together and runs the tube at zero bias. It requires r.f. chokes in the heater circuit, of course, but it might have some possibilities.

It looks like these Seilers are going to be a real s.s.b. family. Yoe, **W2EB**, is well-known for his DX work on 20, and his brother Chuck, **W2POM**, already has a SSB Jr. exciter and a 300-watt amplifier. To round out the family angle, brother-in-law **W2AFQ** has built one **W1JEO** exciter and is now in the process of constructing a phasing rig. W2EB's ability to put a signal through to JA2AG when East Coast a.m. 'phones were just a slight carrier heterodyne over there was a big factor in the sale.

There seems to be plenty of interest in the s.s.b. rig that **W9OHM** is putting on the market, and don't be surprised to hear a lot of new stations on 75 during the next few months. The latest tally of W2SHN and W3KPP puts the figure at around 145, in 35 states.

◆

Ken Stiles, **W2MTJ**, of Summit, N. J., is nicely set up for his s.s.b. work. This shot of the operating position shows the rack that contains the modified W1JEO exciter, the VFO, a 10-Mc. oscillator for conversion to 14 Mc., the voice-control system and the power supplies. An 807 buffer drives the 833A final to about 250 watts on peaks.

Let's Go High Hat!

Practical Methods of Raising the Efficiency of Low-Frequency Mobile Antenna Systems

BY R. A. ROBERGE,* W6OZS, AND R. W. McCONNELL,* W6SCX

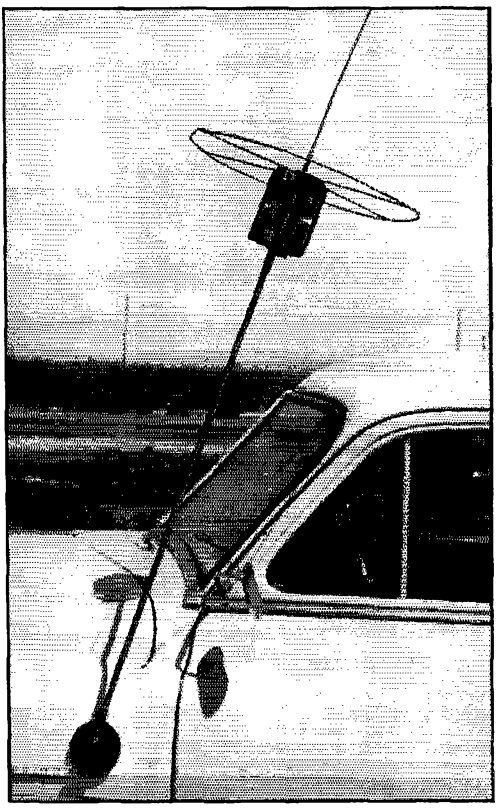
An 8-foot whip is a good mobile antenna for 10 meters but when "Homer Ham" QSYs to the low frequencies he suddenly becomes aware of many facts concerning low-frequency mobile antenna systems, none of them pleasant. Until 75-meter mobile operation was authorized very few services made use of short length low-frequency antennas, therefore hams had little opportunity to acquire practical knowledge regarding their use.

The writers, having had earlier experience with these antennas on aircraft, in the fishing fleet, on pleasure craft, naval ships and police emergency equipment, realized that a high-efficiency antenna must be used if good communications were to be had outside suburban areas. Drawing upon experience gained while designing equipment and antenna systems for these services, we tried many types of antennas for the amateur bands. Several antennas using large high-*Q* coils and capacity "hats" for loading showed measured gains of from 5 to 20 db. over ordinary types. While using these high-gain systems the authors found that operators of both fixed and mobile stations were amazed at the signal strengths obtained in comparison with small commercially built antennas. Many requests for design information have been received, and this article is an attempt to expand on several ideas already published and possibly suggest a few more.

Capacity Hats

Any really efficient low-frequency mobile antenna will be large, presenting constructional problems; in addition, the current will be high, requiring a very low-loss coil and coupling system to obtain maximum efficiency.

Since most of the loss in the antenna system is in the loading coil, it becomes important to reduce the amount of inductance needed. This can be done in various ways. The simplest is to add to the length of the whip; however, this cannot be carried very far for obvious reasons. Another system is to use an antenna of large diameter above the loading coil; this gives the antenna a higher capacity which lowers the inductance required proportionately. But the most successful and effective method we have found uses a device employed in broadcasting, the capacity hat or capacitive loading. The hat consists of a ring or spider of metal or wire located above the loading coil.



The "Master Mount" antenna modified as described in the text. The antenna is shown in an inclined position, but also has been used vertically, a small amount of retuning being necessary because of the change in capacitance with position with respect to the car body.

Several articles published in amateur journals have emphasized the desirability of high-*Q* coils for mobile use, but aside from the data in the *ARRL Antenna Book* and *QST* we have found no practical information on the use of capacity hats or the gain that can be achieved through their use.

The antenna system can be treated as a parallel-resonant circuit, keeping in mind that any capacity added above the coil will be across almost the entire circuit and therefore will lower the resonant frequency of the antenna considerably. A sizable amount of the loading coil can then be removed, providing a substantial increase in gain. The reader is urged to study the article and graphs in December, 1949, *QST*,[1] or *The Radio Amateur's Handbook*, 1951 edition, page 460, which show that a large amount of the load-

* Range Instrumentation Dept., % Island Facilities, U. S. Naval Air Missile Test Center, Pt. Mugu, Calif.

[1] Oberlies, "Installing a Practical 75-Meter Mobile Antenna," *QST*, December, 1949.

ing coil can be eliminated merely by enlarging the whip diameter to add capacity to the antenna. Because the hat has a greater capacity effect than a large-diameter whip it will permit even more inductance to be removed.

No dimensions need be recommended because the amateur should build the largest hat practical for his particular installation and tune it as described later. Increasing the size of the hat, mounting it higher on the antenna, and covering it with lightweight metal screen all increase the capacitance and raise the gain. The only limitations are mechanical and the ingenuity of the reader. (This provides an excellent opportunity to determine who is boss of the family car, you or the XYL.)

Those who are skeptical about the gains achieved through the use of high-Q coils and capacity hats need only to try them or compare the signals from stations using these devices against those with ordinary mobile antennas to be convinced. Antennas equipped with capacity hats have won in almost every contest staged at local hamfests and in addition, Japan, Hawaii and many coast-to-coast contacts were had on 75-meter 'phone.

High-Q Coils

Good low-loss coils present problems of weight and high wind resistance. Coils of large dimensions cannot readily be mounted high on the antenna, but we have found the efficiency is greater when a large high-Q coil is located low on the antenna in preference to a small one mounted near the top.

Most hams not having access to a Q-meter must rely on good engineering practices to obtain coils with a substantially high Q. The important points to remember are:

1) Make the coil as physically large as possible, preferably with a large diameter.

2) Wind with largest size wire possible, spacing turns the wire diameter or greater.

3) Use the minimum of insulating material or metal in the field of the inductance and where necessary use low-loss types (poly, Mycalex, etc.).

4) Mount as high and clear as is mechanically practicable.

5) A metal shield, unless it is quite large, will lower the coil Q and reduce the antenna gain. When weather necessitates, a protective cover of plastic or phenolic should be used.

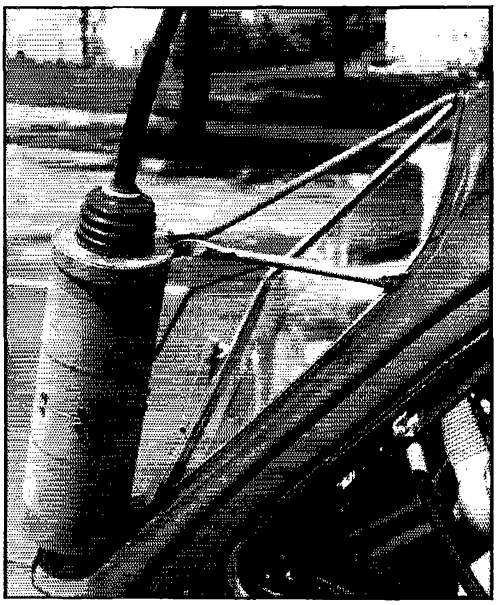
B & W manufactures "Hi Q" air-wound coils 2½ inches in diameter in bulk length; also, coils up to 5 inches in diameter can be obtained by removing the jack bars from the 1-kw. size transmitting coils. These coils are superior to those the amateur can ordinarily build at home and have been used in several antennas.

Questions have arisen concerning the value of mounting very large loading coils in the trunk of an automobile, leaving only the whip visible from the outside. The efficiency of this system is limited by the capacity existing between the whip mounting insulator and the car's body, in addition to that from the coil to the metal body. A shunt capacity of only 30 $\mu\mu$fd. from the high side of the coil to ground (a nominal amount) cuts the coupling efficiency in half even when very high-Q inductors are used. The authors conducted experiments using a coil two feet in length with a diameter of one foot and wound with ½-inch aluminum tubing. This inductance gave excellent gain when mounted outside the car body, but on installing it in the trunk the gain was no greater than that obtained with smaller coils.

Feed Considerations

It is extremely important in mobile installations to keep to a minimum the losses in the line used to connect the transmitter and antenna. The impedance of most low-frequency antenna systems is so low that any available coax cannot possibly match the antenna feed point unless special matching networks are used.[2] This complicates multi-band operation and changing frequency within a band. The high standing-wave ratio resulting from feeding an unmatched antenna with coax causes the power dissipated in the line to be high, with an accompanying loss of efficiency.

Installations having the transmitter located very close to the antenna base should use a short length of insulated wire to connect the rig to the antenna and a short heavy ground strap between



Base-loading coil for frequency adjustment, and method of mechanical bracing to the car. The coil, a surplus roller-type variable inductance, is inside a weatherproof cover made from phenolic tubing. It can be adjusted from the front seat of the car by means of a flexible shaft. The antenna in this installation extends ten feet above the coil and is topped by a capacity hat two feet in diameter.

[2] For an example of such a matching system see Swafford, "Improved Coax Feed for Low-Frequency Mobile Antennas," *QST*, December, 1951. — *Ed.*

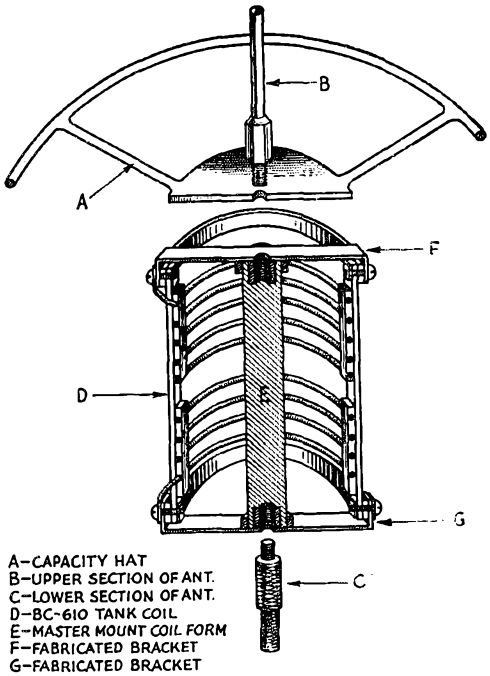


Fig. 1 — Mechanical details of the capacity hat and BC-610 coil as modified to fit the "Master Mount" antenna.

the automobile body and transmitter chassis. This method of mounting has minimum losses but in many cases cannot be used. When the transmitter is placed under the dash and the antenna is on the cowl a short length of RG-11/U can be used. This layout is highly desirable because the rig can be adjusted from the front seat and the power cables, control wires and receiver antenna lead will be much shorter.

Mobile installations having the transmitter located forward and the antenna to the rear allow it to be adjusted easily, but unless precautions are taken a long coax run will cause considerable loss. Losses can be reduced by using large-diameter cable, RG-8/U or RG-11/U, but a better method is to build your own feed line. Coax cable having very low loss can be made by the amateur. First determine as accurately as possible the length of transmission line needed. From aircraft salvage or radio surplus stores obtain 1½- or 2-inch "breeze" shielding. Using a circle cutter make spacers of poly or Plexiglas slightly smaller than the inside diameter of the "breeze" shielding. Drill holes in the center of each spacer to pass a No. 10 or No. 12 wire (plastic-insulated house wiring is excellent). This serves as the inner conductor of the coax. String the spacers on the wire about 6 inches apart and tape either side of the spacer to prevent sliding. Pull the wire and spacers through the tubing and cap each end with suitable connectors, pulling the inner wire taut. Tape the entire assembly and, if it will be exposed to weather, seal with a preparation such as shellac or Glyptal.

A Modified "Master Mount" Antenna

The amateur desiring to raise the efficiency of his mobile antenna by using high-*Q* coils, capacity hats, and large whips need be limited only by mechanical considerations and workshop facilities.

Because many hams have neither the equipment nor the time for building elaborate antenna systems, the authors originated a modified version of the popular "Master Mount" antenna having a gain in excess of 10 db. over the original and which can be changed back to the standard type within a few minutes. The construction is rugged, requires only hand tools to build, and has given no trouble in over two years of constant use. This antenna has been duplicated entirely or in part by a number of hams in the Los Angeles area and the San Francisco Bay region with exceptionally good results.

The wire is removed from a Master Mount coil form and the high-*Q* coil is mounted around this form. A surplus BC-610 air-wound coil, 2.0 to 3.5 Mc., is used. The jack strip and swinging link assembly are removed. The two coil sections are series connected and mounting strips of aluminum are bolted across the ends of the BC-610 coil form. These provide electrical continuity and hold the coil in place. Holes ⅜ inches in diameter are drilled in the center of each strip to pass the threaded ends of the two whip sections.

A capacity hat 18 inches or more in diameter, made of aluminum clothesline wire and containing six spokes, is mounted above the coil. These spokes are welded to an aluminum disk 3½ inches in diameter. The disk has a ⅜-inch hole through which the threaded end of the top whip section passes and secures the hat in place.

Three refinements were later added to many of these antennas:

1) The swinging link was left in place, connected in series with the coil halves, and used to vary the antenna resonance point.

2) A small collar and setscrews were mounted on the center disk of the hat, allowing it to be moved up the whip for added gain and frequency change.

3) The top whip section was replaced by one 7 or 8 feet in length, resulting in higher gain.

Models of this capacity hat have been fabricated by local hams without welding equipment.

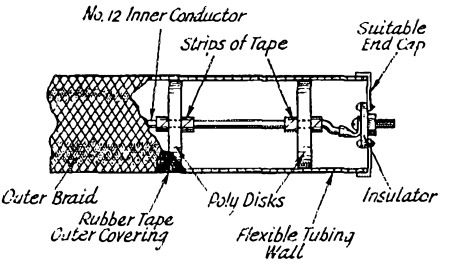
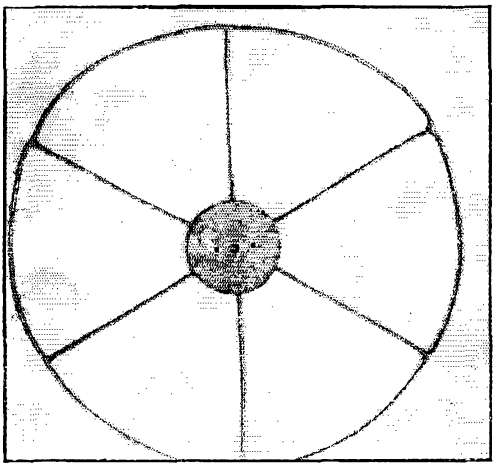


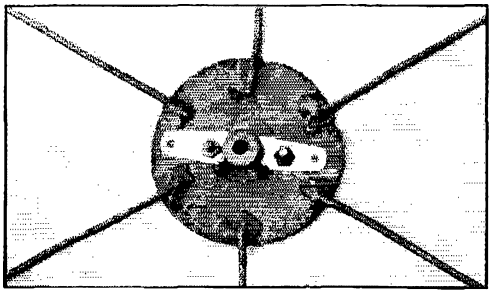
Fig. 2 — Construction details of low-loss coaxial cable using "breeze" tubing as the outer conductor.

Small aluminum tubing or wire can be bolted or twisted together to form a neat unit. This type of construction requires no special tools, is light, and allows the hat to mount by a simple U bolt or similar device.

The new spray-type plastics now available on the market are ideal for protection of metal parts, etc., on the antenna loading coils and capacity hats.

The authors have found that for best results an insulating collar should be installed on the





The capacity hat (*top*) and close-up of the mounting arrangement at the center (*bottom*). The hat diameter is 18 inches and the center mounting disk is 3½ inches in diameter. The collar and setscrews shown in the lower photograph permit moving the hat along the top whip section to any desired position.

bottom mast section so a brace of aluminum or stainless steel tubing can be used to hold the mast in place. The top whip section will take the shock and large antennas can be mounted safely. Braces for large or heavy antennas should always be located below the loading coil because of the high voltage at the top of the coil. When this is not practical large insulators should be employed.

An extra Master Mount coil can be purchased for use when operating in the city. The high-*Q* coil and hat can be stowed in the automobile trunk to be used when desirable, since the antenna can be converted to its original form, in only three or four minutes.

Models of this antenna have been used on 20 meters with consistently superior results because the hat allows the loading coil to be practically eliminated — in some cases entirely — thus raising the efficiency.

Tuning

A combination of extremely sharp resonance in the antenna system and attempts to work without the proper instruments has resulted in many low-frequency mobile antenna systems operating at only partial efficiency. Before tuning up a new or modified antenna the car should be moved to spot clear of trees, large metal objects or wiring because these have considerable effect on the resonant frequency. When the transmitter is located in the trunk the rig must be adjusted with the trunk lid as nearly closed as possible to avoid detuning the antenna. The measurements must be made with the antenna in place and using the same feed line that will be connected to the transmitter. A grid-dip meter or low-powered VFO should be coupled by a 2- or 3-turn link to the transmitter end of the feed line.

An accurately calibrated communications receiver, mobile converter or frequency meter should be employed for frequency checking. Alternatively, the grid-dip meter can be tuned to zero beat with the transmitter while listening on the automobile converter. The dial setting should be noted and frequent checks made during the remainder of the tuning operations.

The loading coil must be trimmed by small amounts as the resonant frequency of the antenna approaches the desired operating frequency. When coils of large physical size are used the final turn will often be only a partial one and may have to be respaced from the preceding one to tune the system accurately. (A variable series inductance used with the antenna system will eliminate this difficulty.)

After the grid-dip meter indicates that the antenna is properly resonated, the feed line should be connected to the transmitter and power applied. Loading in a high-*Q* antenna will drop off rapidly 10 or 15 kilocycles either side of the resonant frequency, and if crystals are available at such intervals a test should be made to double check the measurements of the grid-dip meter. The transmitter should be tuned with the minimum coupling that gives usable readings. This will provide a sharper loading indication and eliminate errors that result from overcoupling.

A simple field-strength meter is desirable to indicate maximum power output as the tuning of the antenna is being completed.

QSY

The extremely small frequency range of loaded short antenna systems severely limits their effectiveness for mobile or marine communications. Ability to QSY over an entire amateur band when using a short antenna and low power will improve communications by several thousand per cent. The best system is to use a variable inductor (such as the large surplus roller coils or variometers used in some military transmitters) mounted

(*Continued on page 110*)

The Rothman Modulation System

ONE of the exhibits that created considerable interest at the National ARRL Convention at Seattle last summer was a demonstration of the "Rothman Modulation System." No technical details were given at the time, and the speculation ran high as to just what it is and how it works. Marmax Electronics,[1] who demonstrated the system and who are marketing it, was kind enough to furnish us with a sample modulator, speech amplifier and full circuit details, and the gear was tested at ARRL on a rig using a pair of 807s in the final. The original idea for the system was conceived by Max Rothman, W5PJI, and it has been worked into its present form by Marshall Sanguinet, W5SK, and Jack Glass, W5SSS.

A nice feature of the modulator is that it can be used with any tetrode amplifier, regardless of the power. Essentially it is a version of clamp-tube modulation, as an inspection of Fig. 1 will show. One half of a 6AS7G twin triode is used as a "shunt tube" in the same way that a clamp tube is used in ordinary clamp-tube modulation. However, instead of deriving its plate voltage from the regular d.c. plate supply, the shunt tube gets its plate power from r.f. from the plate tank rectified in the other half of the 6AS7G. This rectifier also serves, of course, as the plate coupling resistor for the shunt or clamp tube. Fig. 1 shows the r.f. picked up by a link, L_1, and this is

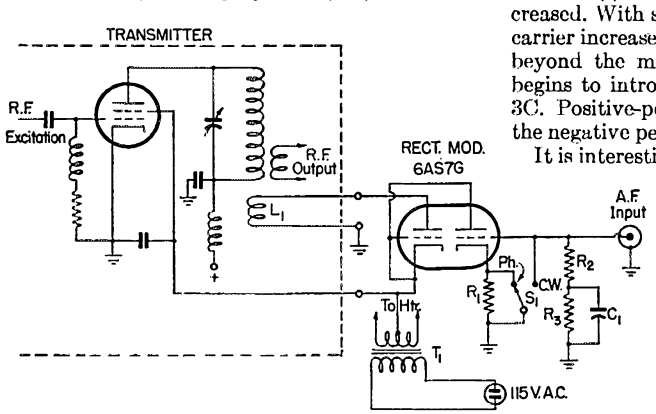


Fig. 1 — Circuit diagram of the Rothman modulation system that can be applied to any tetrode amplifier.
C_1 — 0.5 μfd., 100 volts.
R_1 — 1000 ohms, 10 watts.
R_2 — 10,000 ohms, ½ watt.
R_3 — 3 megohms, ½ watt.
L_1 — R.f. pick-up loop. See text.
S_1 — S.p.d.t. switch.
T_1 — 6.3-volt 2.5-amp. filament transformer.

the method recommended by Marmax for use with high power. In the case of the two 807s used in the test, a 4-turn loop didn't give enough pick-up at 3.9 Mc., and we used the alternative method for picking off the r.f., as shown in Fig. 2. The method of pick-up is, of course, only incidental to the operation of the system — the important thing is to develop enough rectified r.f. for the screen of the modulated tube or tubes.

This modulation system is a very simple form of controlled-carrier modulation, as can be seen from the photos in Fig. 3. With no audio signal, there is no bias on the modulator tube, and the screen voltage is held down to a very low level by the low resistance of the modulator tube. With little screen voltage, the r.f. output is low and so the screen source voltage is low, further working to keep the screen voltage (and hence the output) down. The first few cycles of audio signal drive the modulator grid positive, and the rectified grid current charges C_1 to a value determined by the amplitude of the audio signal. This bias will disappear completely only after the audio signal has been removed for a second or more, because it can only leak off through the 3-megohm resistor, R_3. Thus the first few cycles of any audio signal will develop an operating bias on the modulator tube and also increase the screen voltage by increasing the resistance of the modulator tube. The carrier output increases with increased screen voltage, and the screen source voltage becomes higher, so the system lifts itself by its own bootstraps to some extent. Fig. 3B shows the envelope when a low-amplitude audio signal is applied — modulation is apparent, and the carrier level has increased. With still more audio signal applied, the carrier increases still more. Running the audio up beyond the maximum undistorted signal point begins to introduce the condition shown in Fig. 3C. Positive-peak clipping is present, although the negative peaks are still relatively undistorted.

It is interesting to watch the signal grow on the 'scope as the audio is increased. With no signal, you have the resting carrier of Fig. 3A. As the audio is applied, the modulated wave seems to ride upward on this resting-carrier base. This is apparent from a study of Figs. 3B and 3C — in each case the instantaneous amplitude during negative peaks is the same as the resting carrier itself. This is not to be interpreted as being a "new" form of modulation, since the actual carrier level has, of course, increased (as indicated in the caption under the photographs), but it is interesting to watch.

Of interest in any controlled-carrier system is the rapidity of build-up of the carrier. While there is no standard way to measure it, we were able to approximate it by quickly applying an audio tone and counting the number of cycles before complete build-up. In our tests this ran around 3 or 4 cycles of a 500-cycle tone, so the carrier build-up appears to take about 6 or 8 milliseconds, which is fairly fast rise time for a controlled-carrier system. The hold-in time de-

[1] 716 New York Ave., Alamogordo, N. Mex.

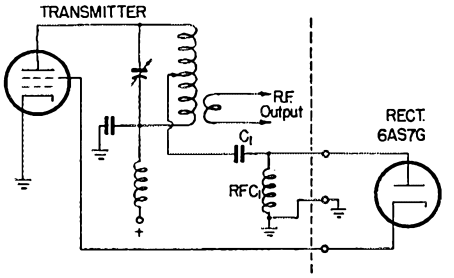


Fig. 2 — When a coupling loop does not give enough pick-up for the screen-voltage source, the lead can be tapped directly on the tank coil.
C_1 — 0.0005 μfd. Voltage rating in excess of plate voltage.
RFC_1 — 2.5-mh. r.f. choke.

pends, of course, upon the time constant, R_3C_1 of Fig. 1, and could probably be varied over considerable range.

As in any clamp-tube modulation system where no tricks are used to swing the modulated screen negative, this system as it stands is not capable of completely modulating the carrier. This is apparent from Fig. 3C, where the modulation percentage is approximately 75 per cent. However, the very fact that the transmitter cannot be cut off completely prevents any possibility of sharp clipping on negative peaks and is possibly an advantage from this standpoint.

The speech amplifier used with the 6AS7G modulator-rectifier was a 6SJ7-6AG7 resistance-coupled affair, and any amplifier of equivalent size should be adequate.

Adjustment

As in any screen-modulated system, adjustment consists primarily of properly loading the amplifier for linear modulation and adjusting the excitation for proper tube operation. The business of finding the proper pick-up for the r.f. take-off in the Rothman system is a simple matter, since it consists only of tightening the take-off coupling until proper screen voltage can be developed under full modulation. We checked this with a 20,000-ohm-per-volt meter from screen to ground, and it will run a little more than half the d.c. screen voltage for c.w. operation. We found the screen voltmeter very helpful during the tune-up process, because it showed us immediately that our first guess on r.f. pick-up for the screen was far too low. With sine-wave modulation and the d.c. screen voltage at something more than half the c.w. value, the antenna coupling should be tightened to where the plate current is between 50 and 75 per cent of the c.w. rating. These figures are of necessity only approximate, because they will vary with the tube types and their capabilities, and the best way to tune the rig (as in the case of any 'phone transmitter) is with an oscilloscope.

The Rothman unit is easy to apply to any screen-grid rig, and it provides clamp-tube protection for the amplifier during c.w. operation. If you have a hankering for a simple controlled-carrier modulation system, give it a try.

— *B. G.*

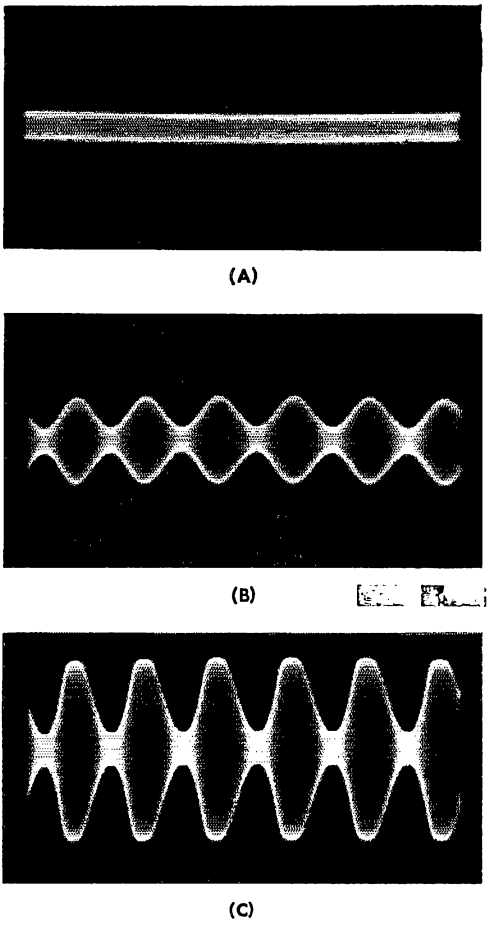


Fig. 3 — Photographs of the oscilloscope patterns obtained with a pair of 807s modulated by the Rothman system. Plate voltage = 1200 in all cases.
(A) Unmodulated carrier. E_{sg} = 20, I_p = 50 ma.
(B) Audio introduced. E_{sg} = 90, I_p = 85 ma., carrier = 1.8 of (A).
(C) Positive peaks clipping. E_{sg} = 190, I_p = 160, carrier = 3.9 of (A).

Hints and Kinks For the Experimenter

MODIFYING TUNING RANGE OF THE BC-348

It is a fairly simple task to modify the tuning range of the BC-348 to add the 10-meter band, and to obtain full bandspread of the 20- and 40-meter bands. Bandswitch Positions 6, 5, and 4, respectively, are used.

Only in Band 6 is it necessary to change the coils in any way. On all other bands the changes involved are in the size of the padding and trimming condensers shown in Fig. 1, which represents the basic tuning circuit used. Two and one-half turns are removed from each coil in Band 6, and the remaining turns are spaced evenly along the length of the coil form. The job can be done without removing the form, by unsoldering the bottom lead of the coil and taking off the required number of turns. In addition, 4 turns are removed from the coupling coil between the oscillator grid and the converter cathode circuit. Without this change, the oscillator is loaded too heavily and will not function properly. Again, the coil form need not be removed.

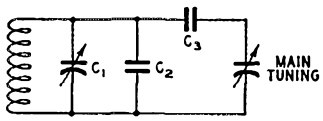


Fig. 1 — Basic tuning circuit used in the BC-348. By modifications described in the text, full bandspread of the 20- and 40-meter bands is obtained, and by also changing the coils of Band 6, 10-meter coverage is gained.

Changes in the values of capacity needed are shown in the accompanying tabulation. The resulting tuning ranges obtained are as follows: Band 6 — 27,987 to 30,052 kc.; Band 5 — 13,395 kc. to 14,405 kc.; Band 4 — 6963 kc. to 7347 kc. These frequencies were checked with a BC-221 frequency meter. Greater tuning range can be obtained by increasing the value of C_3. A signal generator and an output meter were used while values were adjusted until the ones were found that gave uniform sensitivity over the entire range. — *Jack G. Hines, W5GAB*

	C_1	C_3	C_2
10 M., Band 6, Osc.	25 μμfd.*	None	30 μμfd.
10 M., Band 6, Other Stages	25 μμfd.*	None	20 μμfd.
20 M., Band 5, Osc.	No Change	No Change	20 μμfd.
20 M., Band 5, Other Stages	No Change	No Change	20 μμfd.
40 M., Band 4, Osc.	50 μμfd.*	395 μμfd.	140 μμfd.
40 M., Band 4, Other Stages	50 μμfd.*	200 μμfd.	65 μμfd.

* Exchange the 25-μμfd. Band 4 padder with the 50-μμfd. Band 6 padder.

LETTERING ON ALUMINUM

Although many amateurs are unaware of it, labeling of a permanent nature may be done with a fountain pen on unpainted aluminum panels and chassis. First wipe the surface clean with alcohol, thinner, or cleaning fluid. When dry, moisten the surface slightly with a detergent solution (saliva will do). In most cases the surface will now take the lettering, but some experimentation may be needed to determine if you are on the right track.

Allow the ink to dry thoroughly, and then apply a thin coat of clear nail polish to complete the job. — *Neil Johnson, W2OLU*

ANOTHER "MONITONE" IDEA

After using the "Monitone" [1] described in a recent *QST* for a time, I wanted to do something to reduce the gain of the receiver while the key was closed. The scheme shown in Fig. 2 does the trick nicely. The negative bias developed across R_9 in the Monitone is applied to the grid of the first r.f. stage in the receiver. No changes are made in the Monitone circuit.

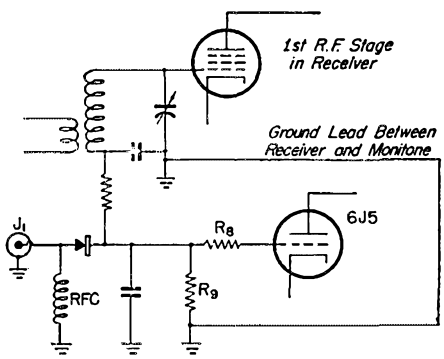


Fig. 2 — A simple way to reduce receiver gain during key-down periods. The grid resistor of the first r.f. stage is lifted and connected to a point in the Monitone. No changes need be made in the values of any of the resistors in either the Monitone or the receiver.

In operation, when the key is closed the normal tone is heard in the headphones, but the receiver gain drops sharply, preventing the S-meter from being driven off scale by the transmitted signal. This makes for better break-in, because the receiver takes less time to recover. — *W. Fraser, GM3BL*

(*Continued on page 100*)

[1] Chambers, "The Monitone — Model 1951B," *QST*, May, 1951.

Correspondence From Members-

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

AMATEUR COÖPERATION

FCC
Washington, D. C.

Editor, *QST:*

The Commission, through the medium of a public notice dated April 25, 1951, informed radio amateurs of proposed large-scale military maneuvers to be staged in North and South Carolina during the period of August 6 to September 7, 1951, requiring that the frequency band 3700–3900 kc. be made available temporarily for military use. Amateurs in specified areas were requested to refrain, voluntarily, from operation in this band — entirely in some areas and in others only during night hours.

It gives me great pleasure to advise that I have received a letter from Major General George I. Back, USA, Chief Signal Officer, Department of the Army, expressing appreciation for the manner in which the radio amateurs of the United States coöperated in making those frequencies available to the military during the Army-Air Force Maneuver Southern Pine. General Back's letter reads in part as follows:

"I wish to express my appreciation for the splendid cooperation of Radio Amateurs in connection with the recent Army-Air Force Maneuver Southern Pine.

"The arrangement made by the Commission for voluntary coöperation by Radio Amateurs in making the frequency band 3.7–3.9 Mc. available for military operations proved to be completely satisfactory. Extensive use of frequencies within this band was made by units participating in the maneuver and no instance of interference from U. S. Radio Amateurs was reported.

"In expressing my thanks for the assistance of the Commission and its staff in connection with Southern Pine, I would like to request that you express the appreciation of the Military Services to the Radio Amateur populace for the service they performed."

Again, through the pages of your magazine, the Commission wishes to commend the licensed radio amateurs who once more justified the faith it places in them. Perhaps deserving of special mention are those newcomers to the ranks of licensed amateurs, the Novice licensees who obtained their first licenses after July 1st and, though already limited to operation in three narrow frequency bands, voluntarily refrained from operating in the desirable 3700–3750 kc. band until after September 7th, as requested.

— *Wayne Coy, Chairman*

ANOTHER ANTENNA CASE

Apter & Nahum, Attorneys
49 Pearl Street
Hartford, Conn.

Editor, *QST:*

We represent Samuel Moses, W1ASD, who constructed and installed a wooden tower in the rear of his yard to support a rotor together with 20- and 10-meter beams. After it was substantially completed, Mr. Moses was ordered to remove the same by the Building Supervisor of the Town of West Hartford for the reason that he had not obtained a building permit. He made application for a building permit which was denied because the tower was not considered to be an accessory use and therefore was not permissible under the zoning ordinances of the Town of West Hartford.

At this time, Mr. Moses engaged our firm to represent him and after conferences with the Building Supervisor, and then with the ARRL staff, we decided to appeal from the Building Supervisor's ruling to the Zoning Board of Appeals. The assistance and encouragement given to us by the League in pursuing our claim that this use was an accessory one to Mr. Moses' residence was tremendous and valuable and we feel that the information made available to us could not have been obtained elsewhere except with a great deal of difficulty and at great expense. We were acquainted with the League's activities in dealing with the very same problem with reference to zoning matters. We found that the League was very interested in having it generally held that an antenna tower is an accessory use to residential property. We learned that the League through its Counsel, Paul M. Segal, had litigated this proposition in the Wright and Lord cases to a successful conclusion. We were provided with information on records and briefs in these cases.

At a hearing before the Zoning Board of Appeals, the holdings of the New Jersey and Pennsylvania Courts in the Wright and Lord cases were given a great deal of consideration by the Board with the result that the Board overruled the decision of the Building Supervisor and in so doing held that the antenna tower was an accessory use.

After this decision, the Building Supervisor nevertheless refused to issue the necessary permit because he felt that further permission of the Zoning Board of Appeals was necessary because of a provision of the ordinances which in effect provides that an accessory use on any lot of less than 20,000 square feet in area required such approval. Mr. Moses' lot was not of this size and although we disagreed with the interpretation by the Building Supervisor, we nevertheless again made application for a variance. The Board finally approved the application so that our client is now able to use and maintain the tower, and needless to say he is quite happy with his present situation. The prospect of removing it especially after the improvement he noted with its use over his prior antenna system was very discouraging and made him very unhappy. We are indebted to Peter DeBruyn, W1LKF, and George Grammer, W1DF, for taking their personal time to appear at both hearings, held in the evening, to testify in W1ASD's behalf.

We are writing so that your membership and readers will know of our experience with the League and with the gentlemen who so ably assisted Mr. Moses in his cause. It was a stimulating experience to observe the zeal and cooperation exhibited. The League as a service organization has a great deal to offer to its members and amateurs generally. We feel that it exceeded by far the assistance which a member could reasonably expect from any service organization and again wish to express our many thanks and gratitude for a wonderful job. Well done!

— *Morris Apter*

AND ANOTHER

3104 West 17th Avenue
Spokane, Wash.

Editor, *QST:*

I want to pass on to you a thought about municipality law which may have to do with a restriction to construct an antenna mast. I have come to the firm conclusion that if I ever face such an issue, I will provide snaps on the line to fly an American flag, and my plea to a court would be that I have constructed or erected a pole on which I might fly the National Emblem on appropriate occasions. And then I may wish to fly a United Nations flag just 135' away on my property. If it is coincidental that a wire strung between the two will serve as a flat-top, I may enjoy a secondary benefit from the masts.

I seriously doubt if any court would be willing to deny me that right.

— *B. F. Thomas, WN7PRF*

RE S.S.B.

265 McClellan St.
New York 56, N. Y.

Editor, *QST:*

I see that they are still complaining about s.s.b. To end these complaints would you please reprint ". . . The Other Foot" which appeared in the April '49 issue. I have

(*Continued on page 118*)

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
JOHN E. CANN, W1RWS, Asst. Comm. Mgr., C.W.
GEORGE HART, W1NJM, Natl. Emerg. Coördinator

J. A. MOSKEY, W1JMY, Deputy Comm. Mgr.
L. G. McCOY, W1ICP, Asst. Comm. Mgr., 'Phone
LILLIAN M. SALTER, Administrative Aide

NPA Backs Our Public Service Activities. National Production Authority Order M-85 (see text page 36, December *QST*) is designed to keep U. S. amateur stations operative with equipment against possible needs, also to encourage expansion in the number of those amateur stations participating in defense and security activities such as organized amateur work. The prospective Radio Amateur Civil Emergency Service (RACES), as well as the ARRL-sponsored Amateur Radio Emergency Corps (AREC), National Traffic System (NTS) and National Emergency Net (NEN) warrant more purchase provisions, when equipment gets tight, than just ordinary hamming. *Midwest Clixs* (WØKXL) on publication of the announcement commented as follows:

Ragchewing and DXing are interesting and part of the fun of amateur radio, though what can beat a good net in operating enjoyment. However, as always the interest and support of government agencies centers on our organized net operating, and things that increase operator ability and communications efficiency. . . . It would seem that we should give special emphasis and encouragement to our nets where possible. This is not putting the traffic and emergency nets in an exalted position but is just down-to-earth common sense, even as individuals keeping up their code proficiency . . . like army 3-day passes that may be morale builders, but with transportation priorities going for supplies and replacements for the combat troops. . . . *Clixs* is not against ragchewing or DXing. They're fine, like the 3-day passes, but organized operating activities are so very important and surely deserving of your extra consideration, or are you interested in operating only above 420 Mc.

It is incumbent on all of us amateurs to continue to live up to the confidence expressed in us as a group by favorable government arrangements. Our message-handling service, section networks, NTS, and organized Amateur Radio Emergency Corps (since 1933) are all on an *entirely voluntary* basis and have placed us in a favorable light. These and the other recognized groups should be regarded, we think, by all amateurs, as opportunities for participation to help us individually prove our FCC license holding in the continuing public interest, convenience and necessity. You and I must see by participation in *organized amateur radio* that our *daily radio activities uphold amateur radio.*

Novice-to-Old Timer QSO Periods; On Novice Procedures. This column in November *QST* suggested 7:30–8:30 P.M. *daily* for a fruitful period when all Novices might look *just outside* the 3700–3750 kc. frequencies for some calls from non-Novices. This idea seems to have proved successful as tried out by old timers subscribing to our private pleasure in working some of our *new* members of the fraternity. WN6PBC would now like to add 9–11 A.M. each Sunday as an ideal time for more Novice-OT contacts with this time likely to give solid local contacts, less nighttime fading and reduced QRM levels.

Other wisdom from WN6PBC: "I urge all Novices to monitor their sending (to help improve the spacing). Most I have contacted copy well enough, but their keying, especially spacing, is horrible. Simplest method, if a superhet is used for receiving, is to connect a 1-tube oscillator to beat with the receiver b.f.o., cathode keyed with the same key used for the transmitter. The improved sending with this aid will attract even more old timers, I feel sure. . . . On the daily 7:30–8:30 P.M. period, *excellent!* May I in addition suggest Sunday A.M. 9 to 11." *On Novice Sending.* From G. A. Winter (Wis.): "Please ask that we new Novice operators *not* clutter up our small frequency with long CQ transmissions. Let us send our calls like W1AW sends its QST de W1AW, slow and easy to read, with plenty of space between each word or call. A run together call (W1AWW1AWW1AW) is very hard to work out . . . a lot send theirs all in one with no separation. Counted one poor fellow who sent 20 CQ calls before he gave his station call. Three should be a great plenty, even for a Novice."

QSL Percentages. W9SYK went through his card file the other day. His following information is based on the return of QSLs from 1000 contacts made in 2 years. "Doc" QSLs 100%, except for contacts of unknown QTH! QSL returns from U. S. licensing areas ran: W7 72%, W3 70%, W1 67%, W4 63%, W2 62%, W6/WØ 60%, W9 57%, W5 52%, and W8 42%. His foreign QSL returns were Africa 66%, Europe 64%, North America 61%, and Asia-S.A.-Oceania 50%. Your results may be much better or worse than the above depending on such factors as the QSL design itself and your appeal, or lack of specific request for written confirmation. For new hams who are as anxious as possible to have a confirmation on every contact we again print the slogan exemplifying the best ham spirit: *The QSL is the final courtesy of a QSO.*

Our Activities and Winter Calendar. The ARRL Activities Calendar appearing in *QST* each month announces for some months in advance *just* when special spot activities are coming up. This is so that even the far-away amateur who gets his *QST* by dog sled can count on participation in all the operating highlights. Detailed rules for activities here in W/VE-land normally appear the same month with the activity, the DX contest a month in advance since this is world-wide in scope.

We start the year with plenty doing in all bands! This issue in addition to having the details on the Novice Round-up and coming ARRL DX Competition, has details on the January 12th–13th V.H.F. Sweepstakes . . . one of the v.h.f. highlights we shouldn't miss. There are qualifying runs for Code Proficiency certifica-

tions January 5th and 17th, separate CD QSO Parties for key groups of appointees, c.w. and 'phone, for the last two week ends of January. Then during February more qualifying runs, February 5th a Frequency Measuring Test and of course the DX fray coming up. It ought to be a very wonderful year of operating enjoyment and progress. These are all opportunities to test our radio prowess and improve our skills along the line of our natural interest.

— *F. E. H.*

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH.....243	W6VFR.....237	W3CPV.....231
W8HGW.....241	WØYXO.....237	W2BXA.....230
W3BES.....238	W6ENV.....235	W3KT.....229
	G2PL.....232	

RADIOTELEPHONE

W1FH.....210	XE1AC.....204	W2BXA.....186
PY2CK.....206	LU6AJ.....202	W1JCX 185
VQ4ERR.....206	W8HGW.....197	W3LTU.....184
	W9RBI 187	

From October 15 to November 15, 1951, DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued to the amateurs listed below.

NEW MEMBERS

W3LTU.....186	W2QXB.....105	ZS6J.....101
W8HUD.....151	TF3SF.....104	W6TXL.....101
G3FNN.....145	GW3DOF...104	W4FNS.....101
VE7VC.....124	W8ZJM.....104	W2CBS.....100
W1QV.....112	W2BYP.....103	W2BBK.....100
4X4CR.....112	VQ4HK.....103	W1TS.....100
HP1LA.....111	W3TVB.....102	W6UQQ.....100
SM2OS 111	ZS2FH. 102	SM3ACP.....100
F9RS.....106	W9GMZ.....102	W3LVF.....100
W7BDW.....105	CE5AW.....102	SP1JF.....100
ZS6QF.....105	EA1BC.....102	W1RAN.....100

RADIOTELEPHONE

W8HUD.....139	I1GZ.....104	VE4RO.....100
WØJYW.....107	G5LN.....103	W4NYN 100
W3AER.....106	GI6TK.....102	ON4YI.....100
	G3BID.....102	

ENDORSEMENTS

W3GAU.....221	W4JDR.....154	VE1HG.....138
W6MX.....220	W4NNH.....152	W3JYS.....134
W9KOK.....220	W5JUF.....152	ON4GC.....133
W2AGW.....217	W7AC.....151	W1KWD.....133
PY2CK.....212	W5FFW.....150	W6NIG.....133
PY1GJ.....210	W8GLK.....150	W2LV.....132
W5FNA.....210	W6ATO.....150	VE2BV.....132
W1ENE.....210	CP5EK.....150	DL1QT.....130
G4CP.....202	W2GFW.....150	W8LAV.....130
ON4QF.....200	W9GRV.....150	G3DOG.....130
ZL1BY.....191	W6DE.....150	W6WJX.....130
W7GUV.....190	W2PJM.....143	VE5QZ.....125
W3BXE.....190	W2WC.....142	W6QDE.....122
W5GEL.....190	W3ALB.....141	W4IZR.....120
W5KUC.....187	W5KUJ.....140	WØDGH.....117
W2DKF.....180	W3MLW.....140	WØTKX.....113
I1KN.....180	HP1BR.....140	ZL1QW.....111
G5RV.....169	W2GTL.....140	G2HKU.....110
W3ALX.....160	ON4NC.....140	

RADIOTELEPHONE

W2APU.....181	W3KT.....143	WØVSK.....130
W1MCW.....170	W5ASG.....142	ON4PJ.....123
ZS6BW.....170	G5RV.....141	G4ZU.. 120
ZS6Q.....160	HC2OT.....135	W3DKT.....120
CX2CO.....157	CM9AA.....134	W5KUC.....113
W6MBD.....150	CE1AH.....133	W7EKA.....112
	I1BIC.. ...131	

DXCC NOTES

Recent word from the FCC gives U. S. amateurs the green light for working amateurs in Netherlands, New Guinea. FCC's Public Notice of December 21, 1950, prohibits our working stations in Indonesia, and it was thought that Netherlands, New Guinea, was included in this rather general term. We are pleased that such is not the case. Prefixes in use in New Guinea are PK6 and PK7. However, some PK6 stations are operating from Celebes and Molucca, still on the blacklist, so be careful to determine the whereabouts of any PK6 before you call.

OCTOBER CD QSO PARTIES

Listed below are the highest claimed scores for the October C.W. and 'Phone CD QSO Parties. The figures following each call indicate the claimed scores, number of contacts and number of ARRL sections worked. Complete results will appear in the January CD Bulletin.

C. W.

W4KFC	120,060–407–58	W3BIP	56,610–215–51
W1EOB	114,000–393–57	W1AQE	54,285–231–47
W6YHM	105,924–223–52	W6ATO	54,243–123–49
W6GEB	101,548–209–53	W4AKC	54,000–225–48
W4IA	98,280–357–54	W1BBN	53,410–211–49
W3FQB	89,040–329–53	WØPHR	52,780–203–52
W1JYH	83,875–301–55	W9CMC	50,750–199–50
W4BZE	80,300–287–55	W8TZO	50,290–207–47
W2NIY	66,750–261–50	W2LPT	49,760–173–56
W6LDR	65,745–159–45	W5AQE	49,140–183–52
W7PUM	60,912–144–47	W2MHE	48,420–206–47
W2ZVW	61,750–240–50	W7MLL	47,234–111–46
W3HHK	58,500–229–50	VE3WY	47,000–193–47
W8NOH	57,240–207–54	W3MOT	46,765–193–47
W9NH	57,240–210–53	W1ODW	45,450–202–45
W8DAE	57,000–221–50	W1NXX	45,310–190–46

'PHONE

W2MHE	5625– 45–25	W1CRW	3200– 32–20
W4FV	5368– 43–22	W3KEW	3200– 27–20
W2ZVW	5000– 43–20	W8PBX	3000– 30–20
W3EAN	4500– 40–20	W9RZS	2340– 26–18
W1AQE	4410– 42–21	WØBQJ	2175– 24–15
W2ILI	4305– 41–21	W1JNC	2060– 32–17
W3HA	3895– 36–19		

CODE-PROFICIENCY AWARDS

Have you received an ARRL Code Proficiency Certificate yet? Twice each month special transmissions are made to enable you to qualify for the award. The next qualifying run from W1AW/WØTQD will be made on January 17th at 2130 EST. Identical texts will be sent simultaneously by automatic transmitters. Frequencies of transmission from W1AW will be 1887, 3555, 7120, 14,100, 28,060, 52,000 and 146,000 kc. WØTQD will transmit on 3534 kc. The next qualifying run *from WGOWP* only will be transmitted on January 5th at 2100 PST on 3590 and 7248 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 five 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 below. These make it possible to check your copy. To get sending practice hook up your own key and buzzer and attempt to send in step with W1AW

Date	Subject of Practice Text from November *QST*
Jan. 1st:	*A DeLuxe Mobile Transmitter* . . ., p. 11
Jan. 3rd:	*The Novice Conversion of a "Command Transmitter*, p. 22
Jan. 7th:	*High-Level Clipping and Filtering* . . ., p. 18
Jan. 9th:	*Highlights of the Sixth ARRL National Convention*, p. 26
Jan. 15th:	*One Db. per Cyclel*, p. 29
Jan. 18th:	*Every Mil I Have Is Yours* . . ., p. 32
Jan. 21st:	*A V.H.F. Receiver for the Novice or Technician*, p. 33
Jan. 23rd:	*Two-Band Antennas* . . ., p. 38
Jan. 29th:	*Technical Topics*, p. 41
Jan. 31st:	*Water in the Dust Bowl*, p. 46

It begins to look as though we beat last year's performance in the Simulated Emergency Test, at least from the standpoint of amateurs participating. Reports received so far are slightly under last year's total number of reports, but total participation is up somewhat. In spite of the fact that the report forms carried a date deadline, we have not and will not throw out any reports received. The write-up is tentatively scheduled for March *QST*, so there will be just time for you to send your report when you read this. Obviously you should have done so long ago, to give us time to collate the statistics; if you have not, you still have this one more chance.

—•••—

Since there do not seem to be any widespread real emergencies to report this month, we are going to devote the column to some of the activities in which the AREC gang have been participating in order to keep up interest and keep their organizations in top running shape. Some of you groups who have found interest deteriorating because of lack of activity might find a study of possibilities along the following lines will result in some brainstorms enabling you to work up similar activities among your own groups.

—•••—

But first, an emergency item from Canada: On September 28th, the Canadian Red Cross asked VE2ABP to assist in establishing communication during the search for a lost trapper. The boys admit they were caught off their guard; just the same, VE2ABU/2 was in operation the same day, and a 2500-watt generator was also helping supply the Red Cross Canteen in the bush with electricity. VE2ABU/2 was on the air from the evening of September 28th until late afternoon September 30th, the victim's body being found at 11:15 that day. VE2ABP and VE2AO relayed Red Cross messages to the Montreal office. Operators at VE2ABU/2 were VE2s ABU, ABR and ACT. VE2AKX and VE2AAN also helped out at VE2ABP.

—•••—

In July, six members of the Phil-Mont Mobile Radio Club of Eastern Penna. assisted in providing communications and spotters at a model airplane meet at the U. S. Naval Air Development Center in Johnsville, Pa. W3QIS acted as Area Control with an HT-9 transmitter, with mobile units following free-flight aircraft caught in thermals or strong winds. When the planes came to earth, grid coördinates from Navy maps were passed to Area Control where W3RDP dispatched a chase car to the spot. Navy communications gear and frequencies were also used, the amateur net frequency being 29,483.2 kc.

The Phil-Mont Mobile Radio Club of 35 members provides on an average of one such service of this kind each month. All members are registered with the AREC.

—•••—

Last September, members of the North Platte, Nebraska, AREC organization conducted a mock emergency test under the surveillance of the County Sheriff and Civil Defense Director. EC WØCBH directed the exercise and operated the control station while ten mobile units cruised and reported at intervals from various strategic points throughout the county. Although severe QRM was experienced, WØCBH pointed out to the official spectators that in the event of war casual amateur communication would be silenced. The plan is to move the control station to the telephone company building, which has emergency power, if required; this can be done in 30 minutes. Two complete portable units are also available.

Some of the New Jersey amateur radio and civil defense "brass" got together recently at Trenton and were cornered for this photo. From left to right: W2NKD, N.N.J. SCM; W2UCV, S.N.J. SCM; W2VQR, N.N.J. SEC and chairman of the Amateur Radio Division of N. J. Civil Defense; W2QOK, director of communications, City of Trenton; and W2ZI, amateur radio civil defense coördinator for Trenton. The occasion? A statewide meeting of ECs and civil defense aides called by W2VQR. Over 35 amateurs attended, representing all but two N. J. counties.

NATIONAL CALLING AND EMERGENCY FREQUENCIES

C.W.	*'PHONE*
7100 kc. (day)	3875 kc.
3550 kc. (night)	14,225 kc.
14,050 kc.	29,640 kc.
28,100 kc.	

During periods of communications emergency these channels will be monitored by stations of the National Emergency Net for personal-inquiry traffic. At other times, these frequencies can be used as general calling frequencies to expedite general traffic movement between amateur stations. Emergency traffic has precedence. After contact has been made the frequency should be *vacated immediately* to accommodate other callers.

The following are the National Calling and Emergency Frequencies for Canada: *c.w.* — 3535, 7050, 14,060; *'phone* — 3815, 14,160 kc., 28,250 kc.

On September 23rd the Racine Megacycle Club Emergency Corps again assisted the Racine Motorcycle Club in the 100-mile cross-country Turkey Run. Our job was to set up communications at the eleven check points over the course. As the 47 riders who participated arrived at each check point the time of arrival of each rider would be relayed via the mobile or portable unit set up to the control station at the finish line. The unit at the finish line maintained a master chart of all riders participating and as they passed the various check points we were able to keep a running score as they progressed or dropped out of the run. Thus, the officials were able to see at a glance how the run was going and it was only a matter of minutes after the run was over to determine the winner.

This has been a good way for the gang to keep up on their procedure and equipment. We get a big kick out of it and you might pass the dope on to the rest of the gang. If they want some real fun and also a good emergency drill, consider something like this. Fifteen members of the Racine Megacycle Club and AREC took part.

— *W9SZL, EC Racine, Wisconsin*

—•••—

On September 21st W6CHP and seven mobile units of the San Francisco Area Emergency Net participated in the annual "Parade of Lights" of Berkeley's Sixth Annual Football Festival Parade. W6CHP was Net Control at the reviewing stand while one mobile unit led the parade and other units were gathered in and around the parade to effect thorough coördination of all the parade's movements. The gang was rewarded by a letter of appreciation from the parade's chairman.

♦

SEPTEMBER FMT RESULTS

The second 1951 ARRL Frequency Measuring Test, open to both ARRL Official Observers and other amateurs, brought entries from 121 participants who made 455 measurements; 51 entries were received from Observers and 70 from non-OO participants. Each entrant has received an individual report comparing the accuracy of his measurements with those made during the test by a professional frequency-measuring laboratory.

Leading entrant in the OO category was George K. Hickin, W2OUT, whose measurements coincided exactly with those of the laboratory. Heading the non-OO entrants was Lloyd W. Root, W8HB, leader in many previous FMTs. The standings of other leaders in the test are given below. Since the official readings can only be accredited to 0.4 parts per million, the decimal is shown only to permit establishment of listing order. In accordance with the announced rules, no entry consisting of a single measurement was considered eligible in the competition.

Observers	*Parts/ Million*	*Non-Observers*	*Parts/ Million*
W2OUT	0.0	W8HB	0.1
WØOTR	0.1	W4HER	0.4
W8PEN	0.3	W7AXJ	0.5
W1MUN	0.5	W6CIX	2.9
W9PFK	0.6	W6GB	3.4
W9CSU	1.1	W5BDX	4.2
W8JRG	4.4	W1MGN	5.6
KH6BA	6.9	W7LGS	7.7
WØTKX	8.8	W9LZP	8.5
W7IWU	9.0	W4FWZ	9.1
VE6HM	11.9	W6ORD/4	10.5
W3EQK	12.5	W2EB	11.5
W8GZ	12.6	W4JUI	11.5
W1BHW	13.2	W6HFK	15.4
W1BFT	13.7	W1RRA	16.1

The following ratings are based on a single measurement: OOs — W7JPN 0.6, W8EQ/A8EQ 5.5.

FREQUENCY-MEASURING TEST, FEBRUARY 5TH

All amateurs are invited to try their hand at frequency measuring. W1AW will transmit signals for the purpose of frequency measurement starting at 9:30 P.M. EST (6:30 P.M. PST), Tuesday, February 5th. The signals will consist of dashes interspersed with station identification. These will follow a general message sent to help listeners to locate the signals before the measurement transmission starts. The approximate frequencies used will be 3602, 7206 and 14,045 kc. About 4½ minutes will be allowed for measuring each frequency, with long dashes for measurement starting about 9:36 P.M. It is suggested that frequencies be measured *in the order listed*. Transmissions will be found within 5 or 10 kc. of the suggested frequencies.

At 12:30 A.M. EST, February 6th (9:30 P.M. PST, February 7th), W1AW will transmit a second series of signals for the Frequency-Measuring Test. Approximate frequencies used will be 3574, 7181 and 14,099 kc.

Individual reports on results will be sent to all amateurs who take part and submit results. Copies of this report are sent SCMs also, so eligibility for OO appointments is known. When the average accuracy reported shows error of less than 71.43 parts per million, or falls between limits of 71.43 and 357.15 parts per million, the participants will become eligible for appointment by SCMs as Class I or Class II official observers, respectively.

This ARRL Frequency-Measuring Test will be used to aid qualification of ARRL members as Class I and Class II observers. Present observers *not* demonstrating the requisite average accuracy will be reclassified appropriately until they demonstrate the above-stated minimum required accuracy for these classes of appointment. Class I and Class II OOs must participate in at least two Frequency-Measuring Tests each year to hold such appointments. SCMs (see address, page 6) are open for initial applications for Class III and IV observer posts, good receiving equipment for 'phone and c.w. bands being the main requirement. *All* observers must make use of the coöperative notice (mail) forms provided by ARRL, reporting activity monthly through SCMs, to warrant continued holding of official observer appointment.

Any amateur may submit frequency measurements on one or all frequencies listed above. No entry consisting of a single measurement will be considered eligible for the *QST* listing of the *top results* in this FMT; at least *two* readings and preferably more should be submitted to warrant *QST* mention. Order of listing will be based on the over-all *average* accuracy, as compared with readings submitted by an independent professional frequency-measuring organization.

W1AW OPERATING SCHEDULE

(All Times Given are Eastern Standard Time)

Operating-Visiting hours:

Monday through Friday: 1500–0300 (following day)
Saturday: 1900–0230 (Sunday)
Sunday: 1500–2230

Exceptions: W1AW will be closed from 0300 January 1st to 1500 January 2nd in observance of the New Year's Day holiday. On February 5th, W1AW will transmit a Frequency-Measuring Test instead of the regular code practice. On January 17th and February 15th W1AW will transmit a Code Proficiency Qualifying Run instead of the regular code practice.

General Operation: Refer to page 75, October, 1951, *QST* (see also page 73, December, 1951 *QST*) for a chart showing W1AW general operation. This schedule is still in effect and is not reproduced herewith for space considerations. Mimeographed complete master schedules of all W1AW operation in EST, CST, MST, PST or GCT are available upon request.

On Saturdays and Sundays during which official ARRL activities are being conducted, W1AW will forego general-contact schedules in favor of participation in the activity concerned.

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

Frequencies:

C.W. — 1885, 3555, 7130, 14,100, 52,000, 146,000 kc.
'Phone — 1885, 3950, 14,280, 52,000, 146,000 kc.

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. Next certificate qualifying run from W1AW and WØTQD is scheduled for January 17th; from W6OWP, January 5th.

A.R.R.L. ACTIVITIES CALENDAR

Jan. 5th: CP Qualifying Run — W6OWP
Jan. 12th-13th: V.H.F. Sweepstakes
Jan. 12th-27th: Novice Round-up
Jan. 17th: CP Qualifying Run — W1AW, WØTQD
Jan. 19th-20th: CD QSO Party (c.w.)
Jan. 26th-27th: CD QSO Party ('phone)
Feb. 1st-3rd: DX Competition ('phone)
Feb. 3rd: CP Qualifying Run — W6OWP
Feb. 5th: Frequency Measuring Test
Feb. 15th-17th: DX Competition ('phone)
Feb. 15th: CP Qualifying Run — W1AW, WØTQD
Feb. 29th, Mar. 1st-2nd: DX Competition (c.w.)
Mar. 7th: CP Qualifying Run — W6OWP
Mar. 14th-16th: DX Competition (c.w.)
Mar. 17th: CP Qualifying Run — W1AW, WØTQD
Apr. 5th: CP Qualifying Run — W6OWP
Apr. 12th-13th: CD QSO Party (c.w.)
Apr. 15th: CP Qualifying Run — W1AW, WØTQD
Apr. 19th-20th: CD QSO Party ('phone)
May 4th: CP Qualifying Run — W6OWP
May 14th: CP Qualifying Run — W1AW, WØTQD

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for October traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W3CUL	227	2192	1756	397	4572
KG6FAA	1181	1588	1081	504	4354
W6KYV	167	1227	361	855	2610
KR6AF	367	840	717	121	2045
W4PL	20	981	652	191	1744
W6CE	8	775	773	1	1557
K4WAR	338	567	500	67	1472
K6WAE	13	729	708	7	1457
K7FAG	317	487	57	430	1291
W9JUJ	37	626	526	19	1208
W7CZY	4	535	524	7	1070
W6BAM	41	385	212	177	815
W7IOQ	47	308	409	41	805
W9EGQ	9	381	370	17	777
W4CQX	21	358	264	104	747
W6GYH	3	363	288	60	714
W6GEB	21	342	217	123	703
W3UF	35	310	325	30	700
W6ELQ	5	312	317	10	644
WØSCA	5	311	280	13	609
W3NRE	8	297	275	22	602
W2BNC	13	293	279	14	599
W9TT	28	268	202	74	572
W9DGA	446	68	16	29	559
W5PTV	50	257	220	4	531
W5RIQ	31	251	197	42	521
W4PJU	6	250	227	23	506
W1SJO	38	234	160	73	505
W8FYO	11	250	211	32	504

The following made the BPL for 100 or more *originations-plus-deliveries:*

W6QIW.....205	W9USN.....133	WØZJO....122
W9NZZ.....158	W9DGA/9...130	W1NJM...112
	W1AW.....126	

The BPL is open to *all* stations with a monthly traffic total of 500 or more or 100 or more *originations-plus-deliveries.*

TRAFFIC TOPICS

Quite a long list of supplementary net registrations, compiled at a time when registrations are still pouring in at the rate of 10 or more a day, will be found in this issue of *QST*. This list in itself is what the editors call a "space-eater," and still those nets whose registrations were not received here until after November 16th will not be listed. The cross-indexed net directory will have been available since about mid-December, and anyone desiring a copy who has not already received one has but to ask us for it.

Run your eye down the alphabetical listing of nets, and then let us ask you a timid question: Are some of you fellows trying to pull our official leg? The names given to some of the nets which have been registered with us make us wonder. Maybe it would be a good idea to shorten some of the long ones and dignify some of the facetious ones so as not to give a distorted picture to non-amateurs we try to impress, from time to time, with the size, magnitude, extensiveness and *seriousness* of our traffic and emergency effort.

Anyway, here's the list as of right now (November 16th). More will be added in our continuing card file as information comes in, and about the first of December the cross-indexed net directory will be compiled and distributed. Additional supplementary lists will appear in March and May *QST*.

—•••—

National Traffic System. Recently this office sent nine personal letters to the SCMs of all ARRL Sections in the Mountain Time Zone, with copies to RMs, PAMs and Net Managers, requesting that action be taken to implement the National Traffic System in their section. The responses to these requests have been few but varied, usually coming from the section route manager, to whom the matter presumably had been referred by the SCM. The upshot of the whole effort is that there is still no NTS organization, generally speaking, in the Mountain Time Zone. In addition, some of the comments received indicate a disturbing lack of understanding among some outstanding traffic men of the purposes and objectives of NTS.

The Mountain Time Zone, which originally boasted its own area net under WØIC, and two regional nets, the Eleventh and Twelfth, last year had to be absorbed into the Pacific Area, since the amount of activity in the Mountain States did not warrant a separate area organization. Those sections in the Eleventh Region were made a part of the Seventh Region. The Twelfth Regional Net became a part of the Pacific Area organization but retained its regional status.

If this is OK with the Mountain Time Zone traffickers, it's OK with us. Sad to say, however, the Twelfth Regional Net has not yet been able to stand on its own feet, and we wonder about the advisability of making it a part of the Sixth Region as we made the Eleventh part of the Seventh. This would result in some pretty extensive regional organizations, but if it's what you want, it's what we want. Can we have some additional expressions of opinion on the subject?

Net	*Sessions*	*Traffic*	*High*	*Low*	*Av.*	*Most Consistent*
CAN	23	564	63	7	24	TEN
1RN	46	123	22	0	7	——
2RN	33	188	14	0	6	JN, NYS
4RN	46	331	31	0	7	S.C.
RN5	46	226	21	0	5	Okla.
RN6	48	889	63	0	19	Los A., San Diego
RN7	52	144	24	0	2	Idaho
8RN	46	161	16	0	4	Mich., Ohio
9RN	28	767	85	3	27	Ind.
TEN	50	601	—	—	—	——
TRN	46	100	18	0	4	——
QIN (Ind.)	51	1080	91	1	21	——
TLCN (Iowa)	23	240	20	2	10	——

A gratifying number of reports was received for October activities, only one regional net failing to submit one. Two section nets also reported. Let's hope that this surge of activity will continue and increase throughout the season.

First Regional Net (3605 kc.): 1RN certificates have been issued to W1AQ and W1MNG. Activity is good, but figures incomplete because too often NCS do not report to the net manager.

Second Regional Net (3690 kc.): 2RN opened its 2130 session in mid-November. An informal *early* session at 1830 will also be continued throughout the holiday season.

Fourth Regional Net (3615 kc.): 4RN certificates have been issued to K4FBD, W4OGG, K4WAR, W4RKK and W4PZT. 4RN is having considerable difficulty with QRM, both amateur and non-amateur, but activity during October was good.

Fifth Regional Net (3645 kc.): All sections except Western Florida participated in RN5 during October. Certificates have been issued to W4EJZ and W5QHI. Manager W5MRK is breaking in some new members for the NCS job. Traffic is slow.

Sixth Regional Net (3642 kc.): QRM from south of the border may necessitate a change in frequency soon. Informal sessions are conducted on Saturday and Sunday by W6GYH. Traffic for October was high.

Seventh Regional Net (3575 kc.): Participation is mainly from Idaho, Washington, Oregon and Montana, with limited participation from British Columbia and Wyoming and none at all from Saskatchewan, Alberta or Alaska. W7NH reports that conditions have been bad due to skip and QRN.

Eighth Regional Net (3530 kc.): A bulletin to 8RN members from Manager W8SCW congratulates the gang on their fine showing for the first four months of operation this season. More participation is needed from West Virginia. W8SCW says "Let's make 8RN the top regional net in the country!"

Ninth Regional Net (3565 kc.): 9RN certificates have been issued to W9s JBQ, KCN, LZI and W4MGT. A special session was conducted October 14th during the SET and 83 messages were handled. Several stations outside 9RN territory QNI regularly.

Tenth Regional Net (3545 kc.): The new frequency is working out fine. WØSCA says he is "proud as —— of the FB gang that see fit to QNI TEN." The net operated both Saturday and Sunday of the SET and can be activated immediately for any emergency. Traffic is handled informally on the net frequency Saturdays and Sundays.

Thirteenth Regional Net (3675 kc.): VE3BUR reports an encouraging increase of interest in the Canadian Regional

Net. All provinces are now represented on TRN practically every night, and traffic is on the increase.

Eastern Area Net (3670 kc.): W2CLL's resignation as Manager was effective as soon as a replacement was available. The new manager is W8SCW. Meanwhile, EAN is running like a well-oiled clock with practically all regions in 100% attendance. Traffic has been comparatively light.

Central Area Net (3670 kc.): Attendance has been good and traffic has been moving, although W9CBE reports some difficulty in moving traffic to PAN.

SUPPLEMENT TO NET DIRECTORY

The following list of nets will supplement and correct the listing on page 64 of November *QST*. An asterisk (*) indicates correction from previous listing. Nets meeting less than once per week are not listed. This includes all information received to November 15, 1951.

Name of Net	*Freq.*	*Time*	*Days*
Alberta 'Phone Net	3765	1930 MST	Mon., Wed., Fri.
Allegan County (Mich.) Emerg. Net (ACEN)	28,600	2000 EST	Tues.
American Legion Amateur Radio Net	3975	1900 PST	Daily
Atlanta C.W. Net	7273.3	2100 EST	Sun.
Atlanta Ten 'Phone Net	29,600	2230 EST	Sun.
Atlantic Net	1895	1930 EST	Mon., Wed., Fri.
Bell Gardens Amateur Radio Assn. Net	28,700 29,620	0400 PST	Sun.
Blue Ridge Emerg. Net (Texas)	1880	0830 CST	Sun.
Boston Mobile Radio Net	29,680	2000 EST	Daily
British Columbia AREC Nets	3755	1800 PST	Daily
Calgary Radio Emerg. Net (CREN)	28,258 3740	1930 MST	Tues.
Calif. Civil Defense Net (CCDN)	3501	1900 PST	Mon.
Canal Zone Traffic Watch	28,900	1215 EST 1700 EST	Mon.–Fri.
Cape Cod Emerg. Net	147,150	1900 EST	Mon.
Centinella Valley Net	29,200	1930 PST	Tues.
Central Area Net (CAN)	3670	2030 CST	Mon.–Fri.
CAA 'Phone Net	3960	0800 CST	Sat.
Coastal Emergency Radio Net (CERN)	146,800	1400 CST	Tues.
Colorado Emerg. 'Phone Net	3890	1830 MST 1600 MST	Sun. Tues., Thu.
Colo. Slow-Speed Emerg. Net	3560	1930 MST	Mon.–Fri.
Conn.-Nutmeg Net (CN)	3640	1900 EST 2200 EST	Mon.–Fri.
Conn. 'Phone Net (CPN)	3880	1800 EST	Mon.–Fri.
Conn. Training Net (CTN)	3640	1900 EST	Sat.
Crawfish Net (CFN)	7175	0900 CST	Sun.
Davidson County Emerg. Net	29,600	1900 CST	Sun., Wed.
Deep Sea Dragnet	3960	1145 EST	Mon.–Fri.
Dog House Net	3860	1800 EST	Mon.
Early Bird Transcontinental Net	3845	0545 EST	Mon., Wed., Fri.
Eastern Pa. Emerg. Net	3610	2000 EST	Mon.
Eastern Pa. Net (EPA)	3610	1830 EST	Mon.–Fri.
Eastern Shuttle Net (ESN)	7120	1030 EST	Daily
Eastern Sierra Net	3805	1930 PST	Mon.
Eastern Traffic Net (VE1)	3715	2000 AST	Mon., Wed., Fri.
Eighth Regional Net (8RN)	3530	1945 EST 2130 EST	Mon.–Fri.
El Capitan Net (ECN) (Calif.)	3725	1930 PST	Mon.–Fri.
Everett Emerg. Net (Mass.)	29,560	1900 EST	Fri.
FARM Net	3935	1900 MST	Mon.–Fri.
Fish Net (Mass.)	3975	1100 EST	Sun.
Five O'clock Net (B.C.)	3850	1700 PST	Mon.–Sat.
Fla. 'Phone Traffic Net*	3945	0700 EST	Mon.–Sat.
Fourth Regional Net (4RN)	3615	1945 EST 2130 EST	Mon.–Fri.
Framingham Radio Club Emerg. Net (Mass.)	28,700	2045 EST	Wed.
Georgia Cracker Emergency Net	3995	0820 EST 1900 EST	Sun. Tues., Thu.
Golden State Emerg. Net (Calif.)	3965	1900 PST	Mon., Wed.
Great Lakes Emerg. Net	1880	1930 EST	Tues., Thu., Sat.
Greater Kans. City 2-Meter Net	146,800	2000 CST	Wed.
Green Bay Emerg. Net (Wis.)	3950	0730 CST	Sun.
Hair Net (Fla.)	29,560	2030 EST	Wed.
Hit & Bounce Net (HB)*	7150 7215	0600 CST 2400 CST	Daily Daily
Illinois C.W. Net (ILN)	3515	1845 CST	Mon.–Fri.
Illinois Emerg. Net (IEN)	3940	1830 CST 0900 CST	Tues., Thu. Sun.
Indiana C.W. Net (QIN)	3656	1000 CST 1830 CST 2200 CST	Mon.–Fri. Mon.–Sat. Mon.–Sat.
Indiana 'Phone Net (IFN)	3910	1830 CST 0900 CST	Mon.–Fri. Sun.
Inland Empire Emerg. Net	1995	2000 PST	Sun., Wed.
Inter-Island Net (IIN) (T.H.)	3950	2100 HST	Tues., Thu., Sat.
Iowa Great Lakes Amateur Radio Club Net	29,000	1930 CST	Mon., Wed., Fri.
Iowa 75-Meter 'Phone Net*	3970	1230 CST	Mon.–Sat.
Iroquois County AREC Net (Ill.)	3920	1200 CST	Mon.–Sat.
Jayhawk AREC 75-Meter Net	3810	0700 CST	Sun.
Jayhawk AREC 80-Meter Net	3716	1600 CST	Sun.
Jersey Net (JN)	3700	1900 EST	Mon.–Sat.
Johnson-Wyandotte AREC Net	29,600	2000 CST	Tues.
Kansas City, Mo., AREC Net	29,152	2030 CST	Wed.
Kansas C.W. Net (QKS)	3610	1845 CST	Mon., Wed., Fri.
Kansas Slow-Speed Net (QKS-SS)	3610	1845 CST	Tues., Thu.
Lake Erie Network	3905 29,050	1315 EST	Sun.
Lancaster (Pa.) Emergency Net	146,000	2000 EST	Mon.
Livingston Amateur Radio Club Emerg. Net (N.J.)	146,300	2030 EST	Mon.–Fri.
Malden Emerg. Net (Mass.)	29,450	1900 EST	Mon.
Manitoba 'Phone Net	3760	0100 CST	Daily
Maritime Traffic Net (MTN)	3715	1900 EST	Mon., Wed., Fri.
Mass. CD Region 3 Net	29,560	1900 EST	Thu.
M. I. T. Net (Mass.)	3660 14,213	2000 EST	Mon.–Sat.
McKean County Net (Pa.)	3525	0900 EST	Sun.
Memphis Ten-Meter Emerg. Net	28,600	1900 CST	Mon.
Memphis Ten-Meter Mobile Emerg. Net	29,627	1930 CST	Mon.
Mesabi Net (Minn.)	1895	1900 CST	Mon., Fri.
Michiana Amateur Radio Club Net	29,620	1900 CST	Mon., Wed., Fri.
Michigan C.W. Nets (QMN)	3663	1700 EST 1800 EST 1900 EST 2200 EST	Mon.–Fri.
Michigan Hot Air Net	3930	1230 EST	Mon.–Sat.
Middlesex AREC Net	147,120	0730 EST	Fri.
Minn. State C.W. Net (MSN)	3795	1900 CST	Daily
Minn. State 'Phone Net	3960	1205 CST 1800 CST 0900 CST	Mon.–Sat. Mon.–Sat. Sun.

Mission Trail Net (MTN)*	3704 3854	1900 PST	Daily
M.K. Ten-Meter Emerg. Net	28,964	2100 CST	Wed.
Mt. Baldy Area AREC Net (Calif.)	28,826	1930 PST	Tues.
Nebraska C.W. Net (NEB)	3520	1900 CST	Mon.–Fri.
Nebraska Slow Speed C.W. Net (NSS)	3745	2100 CST	Mon., Wed., Fri.
New Bedford Emerg. Net (Mass.)	3750 3843 29,500 148,000	0830 EST 1830 EST	Sun. Mon., Tues.
New England 75-Meter 'Phone Net	3870	0900 EST	Sun.
New Hampshire Traffic Net (NHN)	3685	1900 EST	Mon.–Fri.
New Mexico C.W. Net	3705	1900 MST	Mon.–Fri.
New Mexico 'Phone Net	3838	0100 MST 1430 MST	Tues., Thu. Sun.
N.Y.C.-L.I. Section Net (NLI)	3630	1930 EST	Mon.–Fri.
N.Y.C.-L.I. Training Net (NLT)	3710	1900 EST	Mon.–Fri.
N.Y. State Civil Defense Amateur Radio Service Net	3509.5 3970	0945 EST 1930 EST 0900 EST	Sun. Mon.–Sat. Sun.
N.Y. State Slow-Speed Net (NYSS)*	3625	2000 EST	Mon.–Fri.
Newport Emerg. Net (R.I.)	28,900	1000 EST	Sun.
No Name Net (NNN)	145,860	2000 CST	Mon.
North Texas Net (NTX)	3760	1900 CST	Mon., Wed., Fri.
North Jersey Mobile Radio Club Net	29,532	1700 EST	Mon.–Fri.
N.E. States Civil Defense Amateur Radio Alliance Net	3504.5 3995	1145 EST	Sun.
Northern Net (B.C.)	3780	1930 PST	Daily
Northwest Missouri Net	29,000	2000 CST	Thu.
Northwest Tex. Emerg. Net (NWTEN)	3950	0800 CST	Sun.
Ohio Buckeye Net (BN)	3580	1900 EST	Mon.–Sat.
Ohio Emerg. Net (OEC)	3725 3860	2030 EST 1830 EST	Mon. Thu.
Okla. 'Phone Emerg. Net	3860	0800 CST	Sun.
Ontario Forty-Meter Net (QON)	7267	1930 EST	Daily
Oregon Emerg. Net	3840	1900 PST 2000 PST 2100 PST	Daily
Ore. Section RACES Net	3993	2000 PST	Mon.
Ore. Slow-Speed Net (OSN)	3585	1930 PST	Mon.–Sat.
Oswego County Emerg. Net (N.Y.)	3965	1130 EST	Sun.
Ottawa 6-Meter Emerg. Net	50,400	1500 EST	Tues.
Ottawa Valley Net	3785	1930 EST	Tues., Thu.
Penn Harris Net (Pa.)	145,400	2100 EST	Mon.
Pine Tree Net (PTN) (Me.)	3596	1900 EST	Mon.–Fri.
Post Exchange Traffic Net (PXN)	14,255	1100 CST	Mon.–Fri.
Quebec Emerg. Net (QEN)	7275	1100 EST	Sun.
Quebec Net (PQN)	3570	1900 EST 2200 EST	Mon., Wed., Fri.
Queen City Emerg. Net (Ohio)	29,600	2000 EST	Mon.
Quinebaug Valley Emerg. Net (Mass.)	3680	2030 EST	Mon.
RACES Net (Ore.)	3507	2000 PST	Mon.
Rensselaer County (N.Y.) Emerg. Net	144,650	1930 EST	Thu.
Rip Van Winkle Net	1887	1930 EST	Daily
River Forecast Net (RFN) (Ind.)	3656	0800 CST	Sun.
Royal Order Pro Am Net (Ia.)	3520	1500 CST	Sun.
San Joaquin Valley Net (SJVN)	3525	1900 PST	Mon.–Fri.
Saskatchewan 'Phone Net	3780	1930 MST	Daily
Second Regional Net (2RN)	3690	1945 EST	Mon.–Fri.
Show Me Net (Mo.)*	7272	1600 CST	Sun.
Sonoma County (Calif.) Amateur Radio Emerg. Net	29,600 145,350	2000 PST	Tues.
So. Carolina Amateur Net	3930	1930 EST	Mon.–Fri.
So. Dakota C.W. Net (SD)	3720	1900 CST	Mon., Wed., Fri.
So. Dakota Fone Net	3900	1900 CST 0930 CST	Tues., Thu. Sun.
South Texas Traffic Net (STX)	3835	1700 CST	Daily
Southern Calif. Net (SCN)*	3650	2030 PST	Mon.–Fri.
State of Penna. CD Net	3915	0900 EST	Sun.
Suburban Emerg. Net (Mass.)	28,700	2000 EST	Mon., Wed.
Summit County (O.) Emerg. Net	29,560	1915 EST	Tues.
Swing-Shift Net (SSN)	7208	1230 EST 1830 EST	Mon.–Sat. Mon.–Fri.
Tar Heel Net (N.C.)	3865	1930 EST	Mon.–Fri.
Tenth Regional Net (TEN)	3545	1949 CST 2130 CST	Mon.–Fri.
Topeka AREC Net (Kans.)	29,500	2100 CST	Sun.
Toronto Amateur 6-Meter Emerg. Net	51,000	2030 EST	Tues.
Transcontinental 'Phone Net (TCPN) (W1 Area) Area 2 8th & 3rd Call Areas	3970	1830 EST 1900 EST 2000 EST	Daily Daily Daily
Trumbull Emerg. Net (O.)	28,575	1830 EST	Tues.
Trunk Line Atlantic-Pacific (TLAP) (Southern Div.) (Eastern Div.) (Western Div.)	3630	 2030 EST 2130 EST 2200 CST	Mon.–Fri.
Trunk Line I (TLI)	3690	2100 MST	Mon.–Fri.
Tucson Emerg. Net (Ariz.)	29,000	2000 MST	Tues., Thu.
Turlock (Calif.) Emerg. Net	145,350	1900 PST	Mon.
Twin City Net (TCN) (Minn.)	29,200	2100 CST	Tues.
Two-Meter Daylite Net	146,800	0100 PST	Thu.
Vermont 'Phone Net	3860	0830 EST 1800 EST	Sun. Wed., Fri.
Virginia C.W. Net (VN)	3680	1900 EST	Mon.–Fri.
Virginia Fone Net (VFN)	3835	1930 EST	Mon.–Fri.
Va. Slow-Speed C.W. (VSN)	3680	1830 EST	Mon.–Fri.
Wash. Section Net (WSN)	3695	1900 PST	Mon.–Fri.
Waterloo Emerg. Net (Ia.)	3810 29,600	1300 CST	Sun.
West Park Radio Ops Emerg. Net (Ohio)	29,520	1805 EST	Mon.
West Va. Traffic Net (WVN)	3770	1900 EST	Mon.–Fri.
West Va. 'Phone Net	3890	1900 EST	Mon.–Fri.
Western Mass. Net (WMN)*	3725	1900 EST	Mon., Tues. Thu., Fri.
Westlake Net (Ohio)	3950	1000 EST	Sun.
Whittier (Calif.) Emerg. Net	3925 29,520 145,280	1930 PST	Thu.
Wis. Slow-Speed C.W. Net	3625	1830 CST	Mon.–Fri.
York (Pa.) Emerg. 10-Meter Net	29,655	1000 EST	Sun.

• 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, Jerry Mathis, W3BES — At the invitation of the Delaware-Lehigh ARC, Phil Rand, of TVI fame, gave a talk on his favorite subject in Bethlehem. New officers of the West Philadelphia Radio Assn. are HSG, pres.; WN3SAE, vice-pres.; FWI secy.-treas.; IRS, corr. secy. The Club holds code classes on Mondays and Fridays at 8:30 P.M. in Room 206, Lamberton Public School, 77th & Brookhaven Road, Philadelphia 31, Pa. PKV, of the North East Radio Club, operated in the N.E. Division c.d. control center and MKA/3 held the net control position in the South Philadelphia sector. The Philmont Mobile Club deployed in the South Philadelphia Area for the c.d. tests. All operation was on 28 Mc. FBF's first harmonic has received the call WN3RYT. The E. Pa. Net is on 3610 kc. at 1830 EST. The NCS is rotated as follows: Monday ADE, Tuesday AXA, Wednesday OML, Thursday AXA, and Friday BIP. On Oct. 27th at 2 P.M. the Northeast Section of Philadelphia had an "incident" involving units of police, fire, auxiliary services, bulldozers, water trucks, boy scouts, and nurses. RIZ/m represented ham radio and was in constant QSO with the N.E. control center, DYL/3. For a time the QSO was monitored on a p.a. system. Much favorable publicity was gained. The reporting was quite robust this month. I trust that you will support the incoming SCM even better. It has been a pleasure to serve you these many years. Traffic: (Oct.) W3CUL 4572, BIP 301, AQN 100, PSH 35, OML 32, SDK 22, PST 13, QEW 13, FBF 5. (Sept.) W3NHI 304, EAN 24, CAU 4.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, James W. John, W3OMN — On Oct. 16th the Chesapeake Amateur Radio Club heard Charles A. Elbert, W3LO, speak on "Determining Transmission Line Termination" and on November 6th E. L. Crosby, jr., of Bendix Radio, discussed "Printed Circuits." On Oct. 13th Capt. Peterson, Chief of MARS, addressed the Washington Radio Club. An auction was held at the Club's Oct. 27th meeting. The Rock Creek Amateur Radio Association, on Oct. 26th, heard G. F. Montgomery, W3FQB, speak on "Automatic Keyers." Net Control Stations for Potomac Rappahannock Valley Net during October were JQN, PYW, and FPQ. The Corps of Engineers, U. S. Army, Washington District, has requested the privilege of making the PVRN its first line of emergency communications during any flood emergency. Emergency Coördinator FPQ and the members of the net are to be congratulated on the systematic growth as well as the continued activity of the net. QZB/1 and QZC are holding regular skeds. NNX is the owner of a new 75A-2. EQK is rock-bound at 14,222 kc. since his VFO went west. PKC has a new secondary standard. JLX has a new transmitter after doing some "horse trading." WN3SPL is an active new call in Delaware. K3WAG has been reactivated. CVE completed p.p. 807 final running 140 watts. The following appointments were made during October: EC for Montgomery Co., Md., to NPQ; OO to LUL; OBS to CVE; ORS to NOE. Traffic: W3UF 700, QZC 177, AKB 139, ECP 125, CVE 88, NNX 46, MCD 37, EQK 20, COK 8, IL 6, JZY 5, K3WAG 4, W3FQB 1.

SOUTHERN NEW JERSEY — SCM, Lloyd L. Gainey, W2UCV — We regret to report the resignation of ORS as SEC for this section. Charlie will remain an active member of the AREC but his time is much too limited to continue his fine work as SEC. OSV, after a swell organizing job, has resigned as EC of Gloucester County and VX has been appointed in his stead. EWN gave an excellent illustrated lecture on the electron microscope at the October meeting of the South Jersey Radio Association. PFQ, the club president, reported SJRA membership has reached a new high of 113. 1BDM gave a very interesting talk on TVI at the November meeting of the Delaware-Lehigh Amateur Radio Club. VMX now is QRT from his home QTH and is on the bands as "Chas" of W1AW. ZI operated as Net Control Station on 3.8 Mc. for the state-wide civil defense drill held Oct. 13th. ASG, BDI, and PAU handled traffic for South Jersey in this drill. The S.N.J. Emergency Mobile Net handled communications for the Medford Halloween Parade. BDI, DGN, EGP, OQN, and PAU all operated mobile on 144 Mc. and did a very commendable job. The 10-meter section of the S.N.J. Emergency Mobile Net provided communications for the Haddonfield Civil Defense Council on Oct. 19th. SPV was Net Control from the Haddonfield Police Station, with ASG, ZFA, WVN, NBJ, UCV, and GQO operating mobile. Traffic: K2BG 136, W2ZVW 92, RG 71, ZI 37, ASG 17.

WESTERN PENNSYLVANIA — SCM, Ernest J. Hlinsky, W3KWL — Up Erie way, QPP did a nice job in his local paper editorial. QPJ, the XYL of AAX, swings a mean bug on 7-Mc. c.w. KJM is a new one for Erie. TFX received his transfer for the CAA. OIH and QPC are going mobile. KVB is reported giving up c.w. for n.f.m. PIY will handle Erie traffic. NXK, the EC, will try to get the ball rolling again. QWL got his Class B ticket, took his Advanced Class exam, and got Class A all in one day. Down Pittsburgh way, the Amateur Transmitters Assn. elected the following: RFX, pres.; QPQ secy.; UL, treas.; and UUG, OB, AVY, and KWA, directors. The Steel City Amateur Radio Club's new officers are NKM, pres.; NWD, vice-pres.; LOR, rec. secy.; RIK, treas.; and Jack Engel, corr. secy. New club member is TZW. QTG has a new 8JK beam. NWD, MPK, JSS, and RXT did a nice job of roofing the club shack. DNO now is up at Emporium. LBE is heard on 28 Mc. OUA is teaching NRI radio course. AEV's new 20-meter beam is doing FB. NDH established a new DX record by working MPK from the top of the club-house hill to the entrance. RIK almost lost his marbles by trying to lift a high-voltage power supply. BOZ says he had a lot of fun with his 75-meter mobile. LRE finally is finishing his new home. TOJ was appointed by the local c.d. to take up the job of organizing amateurs for c.d. work. UHN says he joined the MARS, and that his new 10-meter beam is working swell. KUN, at Emporium, does a nice job on the WPA traffic net. Those making either nightly QNI or several reports per night are LOD, GEG, NUG, NRE, MIZ, VNL, LEV, KUN, UHN, KNQ, JSH, LMM, AAX, and KWL. Incidentally, WPA now has one of the best XYL operators in the country, JSH, the XYL of KWA. KOF is finishing up a little 20-meter rig ending up with a 2E26 final for use as mobile and emergency work. ODU took part in the recent CD Party. AER is doing a little modifying on the rig, replacing exciter unit 807 to 2E26. LNA has a new 2-meter crystal-controlled converter. He also is new Mercer County Radio Assn. president. KQA is the Mercer County EC. QHS can be heard on 144 Mc., especially when the band is dead. Recent cancellations of official appointments because of inactivity or resignation are LSS, KQD, and QCN. Please have your certificates endorsed on time. The members of the Upper Ohio Valley Emergency Net and coöperating Weather Bureau observers invite you to participate in their net drills on 3965 and 3590 kc. on Sundays. MPO and NUG are Net Control Stations. Incidentally, the appointment as Section Emergency Coördinator still is open. What has become of YA at State College? Traffic: W3NRE 602, NUG 58, AAX 36, KUN 29, KWL 23, JSH 19, AER 16, MIZ 7, UHN 6, VNL 4, LEV 3, KNQ 2.

CENTRAL DIVISION

ILLINOIS — Acting SCM, H. F. Lund, W9KQL — SEC: QLZ. PAM: UQT. RM: BUK. Section nets: IEN, 3940 kc.; ILN, 3515 kc. With this report yours truly begins a fill-in for EVJ, who has resigned because of the press of business. I hope I can do the job as you fellows want it done. CTZ is back on the active list. In Springfield new General Class licensees are NXJ and PIT; new Novice Class licensees are PPM, PRN, and PRU. Our sympathies are extended to AEX on the death of his father. CKW has new two-letter call: VC. IEN members at the Central Division Convention: BJE, DEX, HQE, IAW, JEM, and UQT. This is a short report this month. Please send activity reports and news on the first of each month. Traffic: W9CSW 142, BUK 124, UQT 76, KQL 71, SXL 24, HKA 6, IAY 5.

INDIANA — SCM, Clifford C. McGuyer, W9DGA — I would like to thank the ARRL members of Indiana for giving me the opportunity to be their SCM for the next two years. DOK schedules JUJ on 144 Mc. BKJ has licked the noise in his mobile. New ORS are NZW and CVN. TG has new antenna masts. Officers for '52 for TARS in Evansville are HRH, pres.; BBN, vice-pres.; KVE secy.; and JFJ, treas. New OBS are BKJ and NZW. ZVF moved to Pennsylvania. New RM and QIN Net Manager is JUJ. TT has qualified for OO Class I. HUV made DXCC. LZI and JBQ received 9RN certificates. NJS, WN9PKS, and WN9PKU are identical triplets from Kentland. RCB has resigned as RM. INU is back home after attending Signal School at Ft.

Monmouth. BSZ has 75-meter mobile. NRD is new in Rensselaer. BYY, GFA, YME, and EZS attended the French Lick Convention from South Bend. New OO is CVN. TT reports the River Forecast Net has 47 members with JBQ, KJF, and ZCD as NCS. Thirty-six Indiana amateurs were initiated into the ROWH at French Lick. NJS has 44 states. LKX moved to Terre Haute. VE3WY visited JTX and RCB. BKJ has heard the world on 29-Mc. mobile. KVE and MOH are on 7 Mc. LWL and MJU are on 29-Mc. mobile. BBC is recuperating from a second auto injury. MZE joined the Air Force. DARA has theory and code class with 30 enrolled. ECQ handles overseas traffic on PXN net. JTX is president of the YLRL. QLW reports Evansville has 42 AREC members. AZJ, KVE, EHU, and LXW gave an amateur radio demonstration to the Boy Scouts. JTX is a member of TLAP. QLW is rebuilding. Total QIN net traffic for October was 1080. DHJ works 144 Mc. INU and DLI are rebuilding. EUJ installs TV sets. New in Gary are PJW, OCH, W8TAA, and WN9s PSK, PSM, and OJR. MDC is back on 1FN after State Legislature meetings. UIA has nine rotary beams. JTU, AZJ, and AIN have heavy duty generators for their mobiles. Traffic: W9JUJ 1208, EGQ 777, TT 572, DGA 559, NZW 458, LKX 253, NZZ 245, JTX 232, TG 194, LZI 153, USN 149, JBQ 132, DGA/9 130, MOH 79, DHJ 59, BKJ 49, NZC 40, BBN 33, DOK 33, QLW 29, HTT 25, LWL 25, CVN 15, RCB 15, UMS 11, BDP 10.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — SEC: UFX. PAM: ESJ. RMs: CBE and IQW. 'Phone net (BEN) 3950 kc. 6 P.M. daily. C.w. net (WIN) 3625 kc.; regular at 7 P.M. daily, slow-speed at 6:30 P.M. In attendance at the Central Division Convention at French Lick, Ind., BVU, KXK, GPI, VQD, EKU, RQM, ONY, and UIT. NLE ERW, and FXA took part in the CD Party. RUF, reports 35 E.C. stations participating in the SET at Milwaukee. The Mancorad Club elected as new officers, HPC, chief op.; VAU, 2nd op.; ZKB, operations mgr.; KQB, keeper of the log. DR is acting NCS for Monday nights on WIN. WIN slow-speed net got off to a good start Nov. 1st under the guidance of SFL and IHW. Appointments: New — LEE as OES; LSK as ORS. Renewals — CBE as RM and ORS. PFK, CSU, and IHW took part in the Sept. Frequency Measuring Test. PFK leads the section with an average error of .00006 per cent. The DCARC held its 2nd annual party on Oct. 28th, with FZC as M.C. The FLARC conducted a successful mobile communications test with the Madison Gas & Electric Co. and the Police Dept. on Halloween. UFX urges more mobile units and local nets for c.d. use. The state-wide c.d. and mobile frequency is 29,620 kc. Indiana also is using the same frequency on a state-wide basis for all local nets. If you need a copy of net "Q" signals, write IQW. CBE reports 524 messages were handled on CAN in October. KZZ is chasing TVI. WEN, former Wisconsin OO, is on from DL4-Land. KXK added TF3, VK9, and CR7 for 3 new countries. RQM put up a 40-meter ground-plane vertical to help the DX total up to 144 countries. LEE worked TQ, FAN, LUQ, JBF, EYN, and WØs BBN, HXY, SV, OAC, QHC, and DPM on 144 Mc. Nov. 1st. Other 144-Mc. activity: DSP is back with an 829B rig and a crystal converter. NYS is on with a 4-over-4 beam and crystal converter. JBF made 42 contacts in October. FAN skeds LEE nightly at 2000 CST. Information available at the time of writing indicates that the Wisconsin call-letter auto license plates will be ready for issuance Feb. 1st. Traffic: W9CBE 224, ESJ 207, IQW 180, IXA 137, MQV 105, ANM 56, DR 41, NUW 24, FXA 21, RQM 21, OVO 16, ZGL 7, MUM 2, NLE 1.

DAKOTA DIVISION

NORTH DAKOTA — SCM, Lawrence C. Strandenaes, WØJWY — From Fargo, GSR reports that the new officers of the RRRA are VKP, pres.; WBY, vice-pres.; and GSR, secy-treas. FPW, in Bottineau, has regular nightly skeds on 14 Mc. with former GEH of Willow City, now 7OOW. FPW is sporting a full wave on 3.5 Mc., plus a dual 10–20 beam on a 60-foot windmill tower. Speaking about antennas, OEL has a 90-foot rain-spout vertical on 160 meters that really covers the countryside. He reports that the Goose River Net meets every Sunday morning at 9:00. The next report from this section will come from your new SCM. Many thanks to all of you who helped so much these past two years, by your fine spirit of coöperation and unity in the interest of our wonderful hobby, ham radio, to make my term as SCM less difficult. Traffic: WØLHB 6, FPW 5.

SOUTH DAKOTA — SCM, J. W. Sikorski, WØRRN — First reported WNs in South Dakota are FCH, FBX, and EYB, Mitchell. EYB also received Technician Class license. CQI, Rapid City, has new RME-45A, and is operating a 2- and 10-watt rig while building a 100-watter. Ex-ØHDO's new QTH is 4195 Gardner Road, Salem, Ore. OXC has his kw. fired up again. UVL reports the 'phone net averages 24 stations per session. RM OLB has at least 12 stations reporting into the c.w. net every night, and BTK is promoting activity on the 160-meter net. 6LIB, ex-ØlYZ, is back in Aberdeen awaiting a new Ø call. IEI reports the OM (ZUS) has a new 75 Zepp up, and condensers hanging all over the house, trying to get it to load. YMB is AEC of Mobridge. GCP now is SEC for Eastern South Dakota. Please make EC reports to him. KH6AFB and his XYL, KH6AFN, met with the SFARC several nights and showed movies of Hawaii. Traffic: WØCXM 147, UVL 147, OLB 52, PHR 48, EHO 27, GCP 6, FJS 3.

MINNESOTA — SCM, Charles M. Bove. WØMXC — Asst. SCM, Jean Walter, ØKYE. SEC: BOL. RM: RPT. DXZ now is OO. The South Minnie Radio Club at Marshall is going strong. The Club is giving code classes and has a transmitter for emergency work powered with a 2½-kw. generator loaned by the CAP. QZ has organized an emergency unit at Excelsior. HEO is Net Control on 75-meter 'phone evening net with GUS as first assistant. QHT is flying B36s at Fairchild AFB. PCV is flying B29s in Korea. ANY is serving on C119s, also in Korea. PQX is back from the Navy and operating mobile. MJJ now is Advanced Class on 3.8 and 14 Mc. JBJ now is living in Minneapolis. 9WSO/Ø now is on with 500 watts on 3.8 Mc. The Fairmont Radio Club held its annual election and elected ENZ, pres.; NQK, vice-pres.; DZZ, secy.-treas. EBX is a newcomer. The Mesabi Net is operating on 1895 kc. at 7:00 P.M. on Mondays and Tuesdays. HRO has insulated his 65-ft. tower and is going to load it for 160 meters. DUS is planning an all-band pair of 807s. KZE soon will be on 28 Mc. with an 813. LGA has been back on the air on 28 Mc. DCL, of Eveleth, is a new ham. RMP now is running 1 kw. on 14 Mc. with a beam antenna. ZXV had his call changed to ETO. HBI now is located in Monrovia, Calif. EA is back from the West Coast. QEQ has moved to a new QTH in Minneapolis. QIN has moved to his new home on the highest hill in So. Minneapolis. BWR has a new 9-lb. 4-oz. baby boy at his house. TKX has been keeping skeds with JA2KW and KT1OC. The Mobile Amateur Radio Corps elected new officers. EOP is chairman and YBM is secretary-treasurer. JCL has a new 8-lb. 10-oz. baby girl. BZG has a new Viking. RXL is building a modulator for his kw. after an eleven-year absence. Traffic: WØITQ 238, HEO 120, TKX 48, MXC 30, BUO 26, BGY 15, RXL 15, EG 13, BRA 10, FTJ 1.

DELTA DIVISION

ARKANSAS — SCM, Dr. John L. Stockton, W5DRW — TTG is a new ham in Springdale. EA has been elected director of MARS for the State. ICS had a nice trip to the East Coast on business. ASO has been working on portable rig and emergency gear. BAB worked portable in Fayetteville while at Veterans Hospital. All Novice amateurs are invited to take part in the Arkansas Slow-Speed Net that meets week-day nights at 6:30 P.M. on 3700 kc. Also you are urged to send in monthly reports and take part in League affairs. OCO is new EC in Magnolia. NKII is Class I Official Observer in Texarkana. LUX, FPD, and ASO renewed EC certificates. WN5TIR is on 3.5 Mc. at Little Rock using a Viking transmitter. ANR is QRL with MARS c.w. net training program. Arkansas has dropped the Ozark Net because of lack of interest in a straight traffic net. The Arkansas Slow-Speed Net is handling all traffic on c.w. at the time and frequency as stated above. Also there are two sessions of MARS c.w. net in the State on 4025 kc. Monday nights at 1900 and Wednesday mornings at 0600. MARS 'phone net meets on 4025 kc. at 1900 Wednesday nights. Arkansas Emergency 'Phone Net meets at 0600 Mondays on 3885 kc. Traffic: W5DRW 53, EA 45, LUX 21, MRD 9, ANR 7.

LOUISIANA — SCM, Robert E. Barr, W5GHF — NOP sends an excellent account of the ham-TV experiments in New Orleans. He is building with an AX-9903 straight through on 420 Mc. WN5TVW has a 1625 final on 3.7 Mc. and is building 220- and 420-Mc. finals. NG is back on the TXN, CFN, and Hit and Bounce Nets full time. RIQ and OXF provide regular outlets from Barksdale AFB to Ramey AFB in Puerto Rico. HEJ and wife, HEK, both operate rigs on MARS. KTD again is mobile following an auto accident which destroyed first equipment. QAW is remodelling the final on 75 meters to eliminate bad flashovers. PXW is NCS for a transcontinental all-states net on the MARS frequencies. CIO is another ham-TV enthusiast in New Orleans. SAY is one of the latest newcomers to the 75-meter band from Baton Rouge. Quite a number of Louisiana and surrounding state amateurs met at Fontainbleau Park on Lake Ponchartrain Nov. 4th for a very successful picnic and hamfest. MFT has returned to Springhill after a year or so at the RCA laboratories in New Jersey. 2GRY, now at Springhill, is operating mobile on 28 Mc. GHF has a new NC-183B. RDD has new Globe-trotter transmitter. QIX has one of the most consistent 28-Mc. signals out of N. W. Louisiana. KME and his father operate portable from Jonesville. CEW, CGC, KC, and EB continue to be the leading "new-country-getters" on DX bands. KKI, KKT, ML, and ZS stay on the high frequency bands. FDC and Lou are about the most consistent 75-meter net members. FYZ is a leader in MARS net and training activities. BZR is on 3.8- and 28.5-Mc., 'phone. FMO now is acting NCS for the Delta Net. On Nov. 9th there was a complete fade-out throughout this section of signals on the 4-Mc. band. Observations showed the fade-out to extend throughout the 80-meter band as well. Traffic: W5RIQ 521, NG 205, GHF 60.

MISSISSIPPI — SCM, Norman B. Feehan, W5JHS — The Keesler Amateur Radio Club and the Hattiesburg Club demonstrated what can be done in the way of communications in the Simulated Bombing of Hattiesburg on Oct. 13th.

(Continued on page 72)

Help Fight TB *{Number two hundred thirteen of a series}*

Buy Christmas Seals

★

Merry Christmas

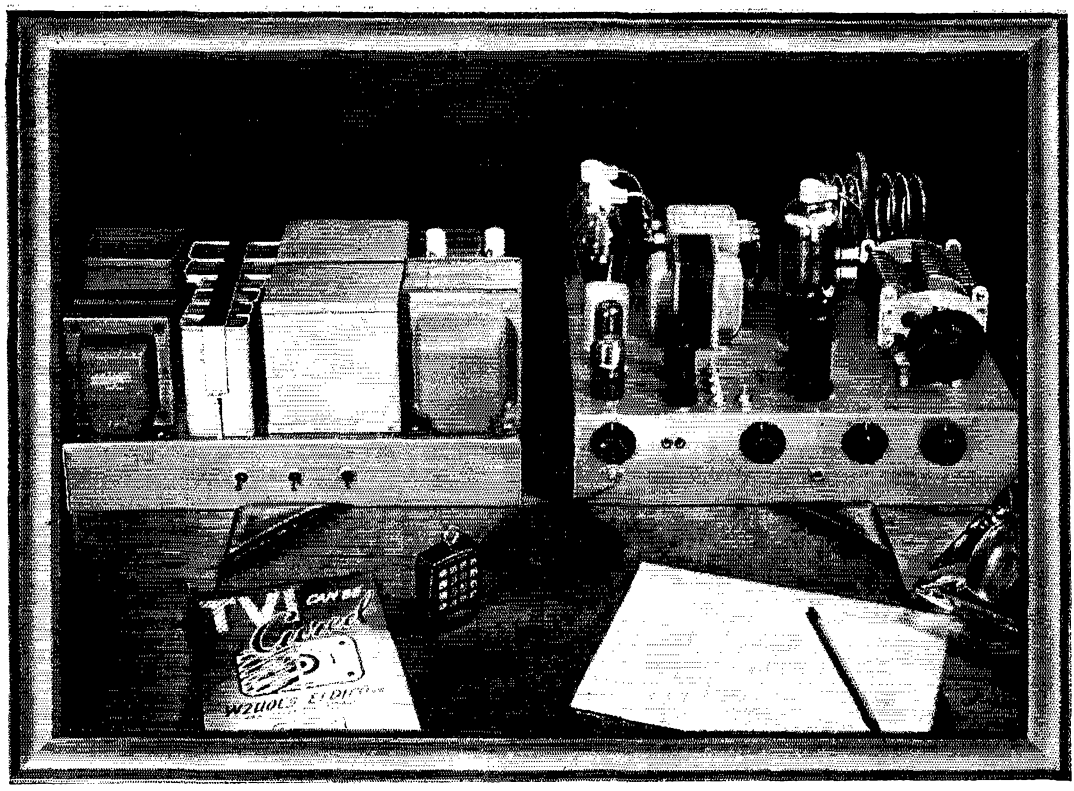
and

Happy New Year

from NATIONAL COMPANY

C. L. Gagnebin	W1ATD	John Halchak	W1TOD
James Ciarlone	W1BHW	Vincent Pelrine	W1HOX
Calvin Hadlock	W1CTW	Victor Jarvis	W1KXQ
Seth Card	W1DRO	Richard Moore	W4MLC
J. Francis Bartlett	W1EU	Herman Bradley	W1BAQ
George Ringland	W1EYZ	Harvey Poore	W1DKM
Don Hinds	W1FRZ	William Osborne	W1EXR
Dave Smith	W1HOH	Robert Murray	W1FSN
John Baxter	W1HRK	Alfred Zerega	W1JMK
Vincent Messina	W1HRW	Frank Lopez	W1KPB
Jack Ivers	W1HSV	Leo Green	W1LML
Joe Rossi	W1HXY	Francis Waden	W1LNV
Edmund Harrington	W1JEL	Sam Beverage	W1MGP
Gustave Jacobson	W1JDG	Victor Penney	W1MTS
Robert Williams	W1JOX	Dexter Atkinson	W1MYH
John Stanley	W1LFF	Austin Banks	W1ORK
Richard Thurston	W1MFZ	Charles Coyle	W1PME
Thomas Benard	W1MLL	Harry Mayo	W1QPQ
Martin Oxman	W1NYU	Ralph Hemeon	W1MWX
Ralph Hawkins	W1OEX	Ted Smith	W1TPB
Henry Cross	W1OOP	William Langton	W1TWL
John Prusak	W1OPT	Edward Braddock	W2BAY
William McNamara	W1OTK	Arthur H. Lynch	W4DKJ
William Bartell	W1PIJ	Martell E. Montgomery	W4ZO
Harry Paul	W1PMS	Herb Becker	W6QD
Richard Brayley	W1PRZ	Andrew H. Elsner	W6ENV
Hyman Kana	W1PSJ	W. Clif McLoud	WØAZT
Raymond Jordan	W1QIU	Kenny Raymond	WØNWW
Stuart Tuma	W1QXS	Clyde Schryver	WØRPE
S. W. Bateman	W1RX	Dick Gentry	W2AEK
Frank Finnegan	W1TAO	Carroll Banfield	W2BLS
William S. Doyle	W1TV	Dayton Warner	W9IBC
		Robert Lundeen	WØVVX

★ It is a privilege to reproduce the 1951 Christmas Seal of the National Tuberculosis Society as a token of our contribution



Available—Amateur Priority M-85

Our Government, in recognition of the vast services rendered by the amateur in the past has guaranteed the use of their services in the future, by establishing an AMATEUR PRIORITY M-85, for purchase of amateur equipment up to $100/200 per amateur, per year. (For complete priority information see December QST, Page 36.) This now makes available all of the Eldico products to the amateur.

Topping the list of Eldico products is the TR-1 transmitter. 300 watt c.w.—250 watt AM phone. An all-band transmitter constructed from conservatively designed circuits built around components that loaf at rated power. Lineup consists of a 6V6 crystal oscillator; 6V6 frequency doubler; 6L6 buffer-amplifier; 813 power amplifier. A 6L6 keyer tube provides clickless electronic keying. For phone a 6SL7GT into a 6V6GT drives 811 modulators. Includes detailed instructions, all components, power supplies, tubes, meter, microphone, etc. Carries standard manufacturers warranty. TR-1, complete kit with instructions.....**$199.95**

Every Eldico Product Is Now Available on Amateur Priority M-85

TR-75 Transmitter designed for TVI free reception for the CW man. Simple enough for the beginner to assemble, sturdy enough for trouble-free operation. 6AG7 crystal oscillator-807 final. Plug-in coils eliminate trick circuits. Internal husky power supply. All stages metered. Complete with components, tubes, set of coils and complete shielded enclosure. Combined with MD-40P Modulator makes an ideal all band phone rig. TR-75 complete kit with instructions.....**$44.95**

MD-40, MD-40P, MD-100 Modulator: The MD-40 delivers 40 watts of A.M. phone using 6L6 in class AB2. MD-40P is identical with self contained power supply. MD-100 delivers 100 watts of AM phone using 807's in AB2 complete with power supply. Each kit complete with components, tubes, crystals, microphone, etc. **MD-40—$34.95, MD-40P—$44.95, MD-100—$49.95**

Grid Dipper and Antennascope: Two instruments no ham shack should be without .For complete details see our advertisement in December QST. Available both in kit or, wired and tested. **GDO Complete** kit with instructions **$29.50,** GDO wired and tested.....**$43.00**

Antennascope Complete kit with instructions **$24.95.** Wired and tested.....**$29.95**

2-Meter Mobile Receiver and Transmitter: Designed for mobile or fixed station operation. Ideal for amateur, Civilian Defense or CAP usage. Receiver complete superhet tuning 144 to 150 mc, with sensitivity of better than 1 uv for 6 db signal to noise ratio. Transmitter is crystal controlled 144 to 150 mc. 6AQ5's crystal and doubler stages driving 2E26 final up to 22 watts input; 6C4 speech amplifier for carbon microphone input; 6V6's modulators. Modified pi network output for ease of coupling to any type of antenna.

2-Meter Receiver. Complete kit with instructions **$59.95.** Wired and tested.....**$94.95**

2-Meter Transmitter. Complete kit with instructions **$49.95.** Wired and tested.....**$74.95**

Power supplies for above. AC—**$30.00.** 6VDC.....**$45.00**

Signals of Distinction

ELDICO OF NEW YORK INCORPORATED

Have you heard our "Private Tutor" Novice Course? See your distributor or our ad in *QST*, November, pages 70-71.

44-31 DOUGLASTON PARKWAY • DOUGLASTON, L. I., NEW YORK • BAside 9-8686

"WE HAVE ELDICO PRODUCTS"

ACK RADIO SUPPLY CO.
2205-3rd Ave. No.
Birmingham 3, Ala.

ALLIED RADIO CORP.
833 W. Jackson Blvd.
Chicago 7, Ill.

ALMO RADIO CO.
509 Arch St.
Philadelphia 6, Pa.

WALTER ASHE RADIO CO.
1125 Pine St.
St. Louis 1 ,Missouri

GEORGE D. BARBEY CO.
2nd & Penn Sts.
Reading, Pa.

BLUFF CITY DISTRIBUTING CO.
905 Union St
Memphis 3, Tenn.

CONSOLIDATED RADIO CO.
612 Arch St.
Philadelphia 6, Pa.

THE CRAWFORD RADIO
King, Wm. & Hughson
Hamilton, Ontario, Canada

DE MAMBRO RADIO SUPPLY CO.
90 Broadway
Providence, R. I.

M. N. DUFFY & CO.
2040 Grand River Ave. West
Detroit 26, Mich.

W. H. EDWARDS CO.
94 Broadway
Providence, R. I.

ELECTRONIC WHOLESALERS
2345 Sherman Ave. N.W.
Washington 1, D. C.

EVANS RADIO
P.O. Box 312
Concord, N. H.

FEDERATED PURCHASER, INC.
911 So. Grand Ave.
Los Angeles 15, Calif.

FEDERATED PURCHASER, INC.
1115 S. Hamilton St.
Allentown Pa.

FEDERATED PURCHASER, INC.
114 Hudson St.
Newark, N. J.

FEDERATED PURCHASER, INC.
701 No. Hampton St.
Easton, Pa.

FORT ORANGE RADIO DISTRIBUTING CO., INC.
904 Broadway
Albany 7, N. Y.

HARRISON RADIO CORP.
225 Greenwich St.
(10 W. Broadway)
New York 7, N. Y.

HARVEY RADIO CO., INC.
103 W. 43rd St.
New York 18, N. Y.

HATRY & YOUNG OF SPRINGFIELD, INC.
169 Spring St.
Springfield, Mass.

HATRY & YOUNG OF LAWRENCE, INC.
262 Lowell St
Lawrence, Mass.

HENRY RADIO STORES
211 No. Main St.
Butler 1, Mo.

11240 W. Olympic Blvd.
Los Angeles 25, Calif.

THE MYTRONIC CO.
121 W. Central Parkway
Cincinnati 2, Ohio

NEWARK ELECTRIC CO.
323 W. Madison St.
Chicago 6, Ill.

OFFENBACH & REIMUS CO.
1564 Market St.
San Francisco 2, Calif.

RADIO AMATEUR CENTER
411 Hillsboro St.
Raleigh, No. Car.

THE RADIO CENTER
62 Craig St. West
Montreal, Canada

RADIO ELECTRIC SERVICE CO. OF PENNA., INC.
701 Arch St.
Philadelphia, Pa.

RADIO ELECTRIC SERVICE CO. OF PENNA., INC.
1042 Hamilton St.
Allentown, Pa.

RADIO ELECTRIC SERVICE CO. OF PENNA., INC.
916 Northampton St.
Easton, Pa.

RADIO ELECTRIC SERVICE CO. OF PENNA., INC.
3rd & Tatnall Sts.
Wilmington, Del.

RADIO ELECTRIC SERVICE CO. OF N.J., INC.
513–515 Cooper St.
Camden, N. J.

RADIO ELECTRIC SERVICE CO. OF N. J., INC.
452 N. Albany Ave.
Atlantic, N. J.

RADIO EQUIPMENT CO.
821 W. 21st St.
Norfolk 10, Va.

RADIO PARTS CO., INC.
538 W. State St.
Milwaukee 3, Wis.

RADIO PRODUCTS SALES CO.
1237–16th St.
Denver, Colo.

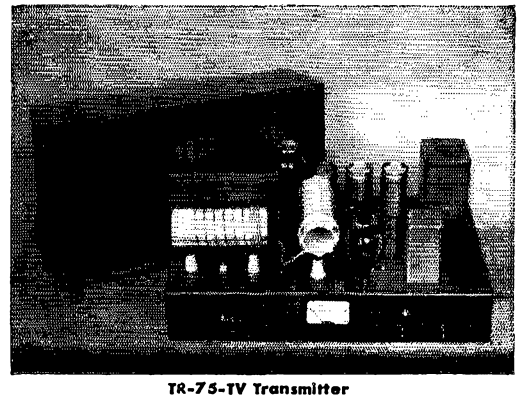
RADIO PRODUCTS SALES CO.
1214–1st Ave.
Seattle, Wash.

RADIO SHACK CORP.
167 Washington St.
Boston, Mass.

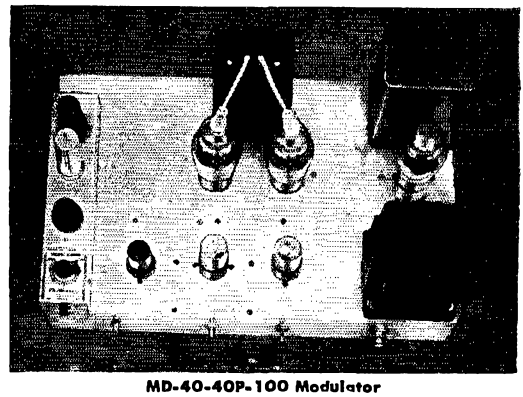
SREPCO, INC.
135 E. 2nd St.
Dayton 2, Ohio

WESTERN DISTRIBUTORS
227 No. Santa Fe
Salina, Kansas

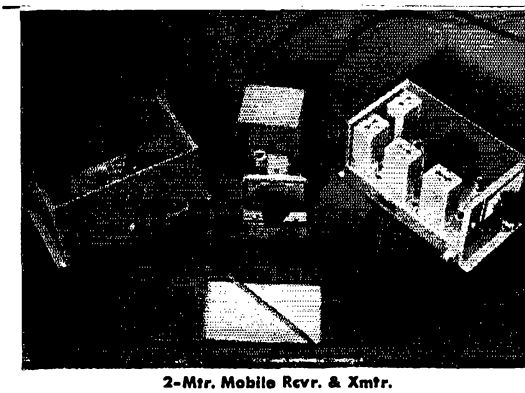
WORLD RADIO LABS, INC.
744 Broadway
Council Bluffs, Iowa



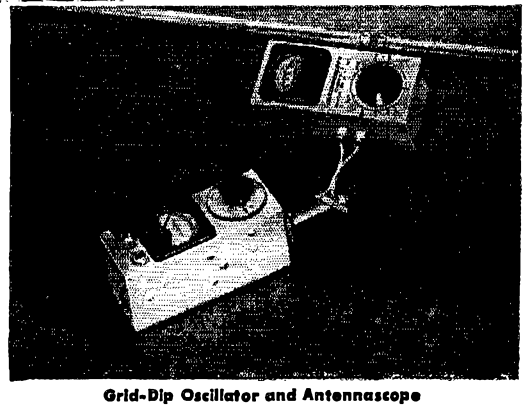
TR-75-TV Transmitter



MD-40-40P-100 Modulator



2-Mtr. Mobile Rcvr. & Xmtr.



Grid-Dip Oscillator and Antennascope

(*Continued from page 68*)

A very successful hamfest was held in Meridian. The highlight of the show was the radioteletype demonstration. RJT, retiring secretary of the Keesler Club, will be heard from Tampa, Fla. 9OQE/5 is new secretary. SCE is new treasurer. PNM is on 7 Mc. with a 2E26. The first contact of WN5TNO, on 3.5-Mc. c.w., was 400 miles using one tube transmitter and long wire antenna. TBI is on 28 Mc. with 20-watt rig. RUT says don't leave your lead-in lying on the ground. Jim did not check into the Hurricane Net because the puppy chewed the twin lead in two. SSB and JHS have formed a new net, the Hair Net, on 7 Mc. W4NOX is NCS. ROB is holding regular sked with 9TG. She also checks into the Hair Net. WZ reports that the Rebel Net this year has effected a merger with TLAP forming a southern division. Traffic: W5WZ 143, K5FBB 105, W5SSB/5 103, JHS 57, K5FBB/5 27.

TENNESSEE — SCM, D. G. Stewart, W4AFI — The Smoky Mountain Hamfest, staged by the Kingsport Amateur Radio Club, Inc., early in November, was a whopping success with some two hundred in attendance from eight states. Civil defense was the keynote, with all the speakers dwelling upon the subject. Among the speakers were F. E. Handy, Brig. Gen. Martin, Sydney Macbeth, Major White, Wm. D. Kennedy, and Mayor E. C. Cross. The C. D. Control Center for Kingsport was open for inspection and all visitors were impressed with the completeness and efficient arrangement. MARS had a radioteletype mobile unit in operation and a staff of trained technicians. HBZ walked away with the major prize, an NC-125 complete with speaker. EGK won the prize for the homemade mobile station and LU for the commercially-built installation. ZD easily won the prize for the oldest working b.c. set. FLW is conducting educational introduction to amateur radio for the Boy Scouts in his area. AEE is experimenting with bandswitching mobile converter for 14, 28, and 50 Mc. New ORS appointees are AGC and APC. AGC recently moved into our section and is active on 3.5 Mc. CBU was erroneously reported as moving to New Jersey; he's still in Kingsport. HHQ is on 4 Mc. with new antenna and 813 final. Traffic: W4PL 1844, AGC 466, APC 354, CXY 70, RMJ 38, IIB 30, AEE 10, AFI 9, FEB 8, RHO 7, FLW 5, PMR 3, QAN 3, NDC 1.

GREAT LAKES DIVISION

KENTUCKY — SCM, I. W. Lyle, jr., W4KKG — MDB won first place in the DX Quiz at the Central Division Convention. KLP, VP, and BAZ also attended from Louisville. WN4TQC puts a nice signal into Jeffersontown from down Glasgow way. SFD is back on after lightning damage. RYL is about ready to go over in Danville. RPZ is the Missionary Radio Club at Asbury College. The Club attempts to contact missionaries in foreign countries. BNW is back on the air after an operation on the right arm. TAV is working up some traffic schedules. MGT, SEC, turns in a whale of a traffic report. W2PMM/2 has settled in Danville and has applied for a W4 call. CDA runs a newspaper, sends the SCM dope on new hams, and finds time to be RM and NCS of the KYN1 RQV has changed to morning operation to get around TVI. OXT is a new ORS. BAZ is handling the Louisville Emergency Net in good shape and also is active on TLJ and KYN. BXU reports into KYN again. OYG has worked 100 countries on 28 Mc. and now is after the century on 14 Mc. JUI has been appointed OO Class I. Louis has consistently turned in excellent readings in ARRL Frequency Measuring Contests. KQI takes another vacation and spends this one in Florida. KKG is busy with work for the telephone company but gets on in the mornings quite a bit. PRT reports the Blue Grass Amateur Radio Club is resuming meetings. Traffic: W4MGT 420, BAZ 89, CDA 24, PRT 21, RQV 11, KKG 4.

MICHIGAN — SCM, Norman C. MacPhail, W8DLZ — Asst. SCM (c.w.) J. R. Beljan, 8SCW. Asst. SCM ('phone) R. B. Cooper, 8AQA. SEC: GJH. PAM: UTH. RMs: UKV and YKC. New appointments: PAM (Lower Peninsula) to UTH; OBS to BDF and SPF; ORS to BDF. The Detroit and Dearborn gangs certainly have a corner on the OBS appointments. All holders of this honor live in or near the Motor City. W4FQQ/8 (a good c.w. man) got his call really shortened and now whips through W8IBB with the greatest of ease. Another Michigan Novice Net now is operating daily at 9:00 P.M. on 3735 kc. SYQ is NCS, with FFG as alternate. Other WN8 regulars are HMA, HPF, HIW, and HJA. New officers of the Grand Rapids Club are EXO, pres.; WRI, vice-pres.; WN8HIW, secy.; ZCH, treas.; FCP and IV, club activities directors. BJD is attending a UHF and TV school in Detroit (courtesy of Bell Tel.). AKI sports a new 10-meter beam atop a 75-foot windmill tower. GLU reports CQD has moved to Grand Rapids from Petoskey and is active on 7 Mc. NKK is building a 4–65A rig for 7 Mc. RHD is building a fire under the 2-meter boys up Petoskey way. QGZ is back from a trip through the Dakotas and is active in OBS work again. CORRECTION of last month's election report on the Genesee County Club: FPO is 3rd vice-president, not FNQ. FNQ is secretary. Sorry. THE GRAND RAPIDS GANG ANNOUNCES THE MID-WINTER HAMFEST WILL BE HELD FEB. 23, 1952; SAME PLACE, SAME TIME. SCW is looking for a radio pinochle game on nights when QMN is slow. KBI is looking for some skyhooks to keep his 20-meter-beam elements in line. RJC reports he's running QRL involuntarily. DQL is busy TVI-proofing rigs. EYG has new QTH in Detroit. SWF is taking advantage of occasional good openings on 28 Mc. YNY has moved from Detroit to Crystal Falls and is "DXing" with TV. How about that! BVY reports the Midland gang handled lots of overseas traffic during the recent hobby show there. BKV continues to set the pace for the gang on 4020 kc. and coördinates traffic into Michigan's amateur nets. Traffic: (Oct.) W8RJC 287, ELW 245, SCW 187, BVY 72, BKV 63, QBO 56, FX 49, WXO 42, IV 37, UKV 29, DLZ 27, SWG 27, QIX 26, DOI 24, IBB 23, SPF 22, GJX 21, AQA 18, IKX 16, DAP 15, FLM 15, DQC 12, LR 12, TQP 12, EGI 10, QPO 10, YWF 7, ZEE 7, FOV 4, MGQ 4, YNY 3, EEF 2, GNS 2. (Sept.) W8DAP 30, FLM 24, TQP 7, QGZ 5, IKX 2.

OHIO — Acting SCM, John E. Siringer, W8AJW — Asst. SCM, C. D. Hall, 8PUN. SEC: UPB. PAM: PUN. RMs: DAE and PMJ. It is regrettable that this month's column is a bit on the abbreviated side because many reports were not relayed to the writer as per schedule. New OBS appointee is AMH. WN8HOM has just received his 15-w.p.m. sticker. UPB addressed a group in Chillicothe on Oct. 15 where a c.d. meeting was held. ICC has acquired a new jr. operator, Larry. DJR has received her Advanced Class ticket. KLP has moved to Springfield. FJX recently blossomed forth on 3.8 Mc. It appears as though it will be another year or two before call-letter license plates will be available on account of the steel shortage. The Springfield Amateur Radio Club was awarded the OCARC Trophy for scoring highest among the member clubs in the 1951 F.D. program. BLN worked West Virginia for his 12th state on 144 Mc. UKS still is the king-pin where 3.8-Mc. 'phone DX is concerned. It is reported that JNF occasionally is active on 28 Mc. DMD is threatening to move his rig from the basement to the first floor. ET soon will be active on 3.8, 7, and 14 Mc. May we again state that reports should be in the hands of the SCM as soon as possible after the end of the month as Headquarters desires all section reports be in the mail by the 7th of each month. Traffic: W8FYO 504, IB 440, DAE 299, ARO 112, QIE 41, PMJ 25, PUN 24, EQN 20, AJW 14, DMJ 9, WE 4, ZJM 4, ET 3, AMH 2, LCY 2.

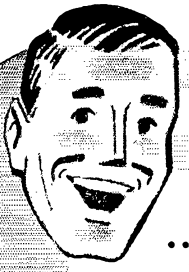
HUDSON DIVISION

EASTERN NEW YORK — SCM, George W. Sleeper, W2CLL — SEC: ILI. AARA had an FB exhibit as the local Hobby Show; also nice newspaper publicity re c.d. work. HCS is recuperating from a ladder fall. Schenectady AREC had a near-perfect performance during the recent c.d. alert. ILI reports great AREC activity and set-up in Westchester. Steve just completed a trip to that County. DXN is QRL at Manhattan College. PHO is new manager of NYSCD. Glad to see you back, Al. KBT sojourned in Bermuda recently and found out what the other end of DX looks like. KYN missed all gear at NYSS sked time — local repaint job in the Armory. KBT is asking for a quieter NYSS frequency. Any ideas other than exact QNZ or receiver technique? APF is quite active even on 144 Mc. HCS still is teaching how to acquire a glass arm in high school. HUM reports WHUC has broadcast tape transcription of last year's Troy AREC demonstration. IIF really is driving to build up AREC in Putnam County. The AREC demonstration spark-plugged by MRR was tops, according to reports. UKA has new jr. operator. RYT attended the Atlantic Division Convention and, of all things, won a pair of tubes. APF threw a swell party for the boys, with an FB demonstration of new 2-meter gear. BGO spoke at the SARA meeting on NYSCD. How about news from Rip Van Winkle, or are they asleep (pun?); also Poughkeepsie, Crystal Valley, etc.? Watch for appointment renewals. Watch for next month's news; it will be different. Appointments: HTH as ORS. Endorsements: GTC as EC. Traffic: (Oct.) W2BNC 599, PHO 197, LRW 123, TYC 112, IJG 81, EFU 72, GTC 52, FEN 50, WBH 48, BRS 29. (July-Aug.-Sept.) W2KBT 47.

NEW YORK CITY AND LONG ISLAND — SCM, George V. Cooke, jr., W2OBU — Asst. SCM, Harry J. Dannals, 2TUK. SEC: SYW. RM: TUK. PAM: YBT. With the appointment of YBT as PAM for the section, the NYC-LI 75-meter 'phone net gets off to a good start. On Sundays at 1000 on 3910 kc. the net holds operations and members are participating to the count of 14 at present. More stations are invited to take part. Liaison is being established with surrounding nets and the net drills will be in 3 parts, namely; traffic, AREC, and rag-chewing with periods of time devoted to the practice of procedure, etc. Coverage of the entire section is being worked on. Contact YBT for full information. BIV, EC for Brooklyn, states total membership in the borough now is 122, with 19 stations on 144 Mc. There are 47 listed mobiles on 28 Mc. and 3 mobiles on 144 Mc. During the month 12 new stations were registered. S.E.T activity resulted in 245 points with 27 stations active on 3.5, 28, and 144 Mc. BIV now is serving on the Red Cross Disaster Committee. In Queens, JSV as EC, a test emergency drill was held in connection with the Flushing Red Cross c.d. unit and the Flushing Hospital, with mobiles in the field operating Red Cross units. In the month there were 24 active members on 144 Mc. and 30 on 28 Mc.

(*Continued on page 74*)

"by far the best I have ever used!"



...that's what they say about the

E-V CARDAX

• The clear call of the *Cardax* gets positive voice recognition . . . and more QSO's. It's the first and only high level cardioid crystal microphone with Dual Frequency Response . . . gives you high fidelity for clear channel or rising characteristic for *extra crisp* speech signals that cut through QRM.

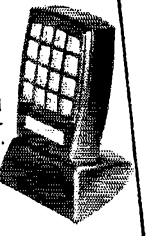
CARDAX, Model 950, lists at $42.50

Authorized Distributors Everywhere

*Names on request

The MERCURY
Rugged, handsome Crystal or Dynamic. Extra quality features at minimum cost.

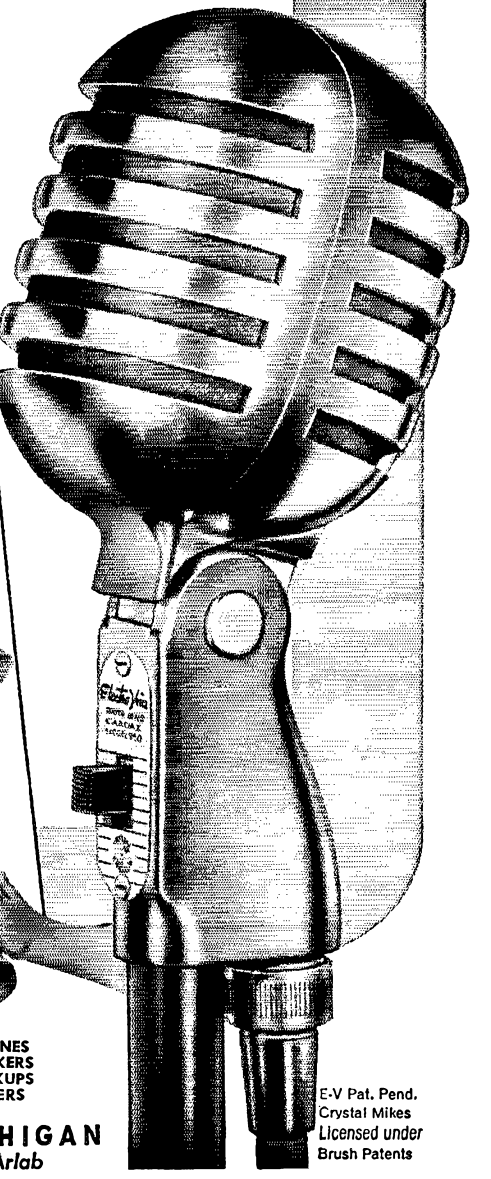
The CENTURY
Low-cost all-purpose crystal and dynamic models. Rugged, dependable. Satin chromium finish.



The "630" DYNAMIC
Very popular super-dynamic. Ideal frequency response. High output. Acoustalloy diaphragm.

TOUCH-TO-TALK
First to fit any mike with 5/8"-27 stand coupler. Finger-tip relay operation or microphone "On-Off." With or without mike.

SEND FOR FREE CATALOG



Electro-Voice

MICROPHONES
HI-FI SPEAKERS
PHONE PICKUPS
TV BOOSTERS

404 CARROLL STREET, BUCHANAN, MICHIGAN

Export: 13 East 40th Street, New York 16, N.Y. U.S.A., Cables: Arlab

E-V Pat. Pend.
Crystal Mikes
Licensed under
Brush Patents

Word from FI, Nassau County EC, tells us ZAI has been appointed EC for the Elmont Area. Novices WN2KFM, AZA, KAC, KAE, KDP, KEB, and KFV all are active in the 2-meter AREC net. Complete plans have been submitted for approval to county c.d. officials of the part Nassau amateurs are expected to play under c.d. The County Control Center is expected to be completed by the first of the year. In Suffolk County, KNA as EC, 8 mobile stations on 28 Mc. are active every Sunday at 1000 on 29.6 Mc. at Smithtown Branch under the direction of JFU. HCA has resigned as EC for the Patchogue Area and IVX has taken over conducting drills on 50.7 Mc. Sundays at 1000. AJF reports light activity in the Islip Area because of changing mobiles from 75 to 10 meters. MZB is expected to return from Japan shortly and will resume his activity in the AREC groups. 144-Mc. activity, county-wide, is good with 16 active every Monday night on 146.8 Mc. VKF reports Staten Island AREC net as follows: Thursdays at 2000 on 29.492 Mc. and contact made with the NYSCDARS Net on Sundays through EDR. Section Net certificates have been issued to FPF, JGD, TBI, and WDT for their fine work in Brooklyn AREC nets. The NYC-LI (NLI) Training Net for Novice and slower-speed operators meets on 3710 kc. Mondays through Fridays. All Novice and lesser-speed licensees are requested to watch the frequency and take advantage of the practice. TUK, RM for the NLI Traffic net, reports the best month this season and that more stations are needed in Suffolk and Queens. Net time is 1930 on 3630 kc. Mondays through Fridays. The Purple Bees Radio Club has been formed in Queens with OWO, chairman, and OTA, treasurer. BZQ now is located at Duke University. The *NRC News*, Nassau Club's new bulletin, is a very fine sheet. The Club's code and theory classes started the season with 65 members at East Rockaway H.S. and conducts classes Wednesdays at 8:00 P.M. New appointments are: MHE and QOW as OBS; QAN, TUK, and YSL as OES; TUK and SDH as OO; TUK and BQM as OPS; IVX and VVP as ORS. Traffic: W2BO 443, OBU 171, EC 157, JBQ 144, VNJ 131, TUK 113, GP 79, VVP 52, OJX 47, VL 32, PF 21, JZX 16, DXN 13, MQB 12, BIV 10, PZE 10, IN 4, IVX 4, EGV 2.

NORTHERN NEW JERSEY — SCM, Thomas J. Ryan, jr., W2NKD — Might as well start right off with the reason why there was no column here last month. SEVENTEEN report cards were received. From those a column was supposed to be written! Only nine listed any activity in the appropriate spot at the bottom of the card! That's why we had no column. Let's get on the ball and send reports every month. CCS painted his tower and ran all leads down the tower and then underground to his shack. EAS, a steady on JN nightly on 3700 kc., came up with a batch of crystals and supplied any of the gang who needed them. CUI followed QST's suggestions about 75-A1 receivers and raised his signal level. WCW is a regular in the Hudson County AREC net. CFB increased his traffic activity and QNIs nightly to JN at 7 P.M. COT reports Maplewood has 2 mobiles on 144 Mc. and 2 on 28 Mc. The Somerset Hills Radio Club of Summit held its annual Fall Dinner on Nov. 23rd at the Valley Inn in Sterling. CZA visited W6s RUE and STM during a California vacation. JKH is using his new 14-Mc. three-element beam. NIY has worked 104 WN stations! It's good to see an OT devoting so much time to the newcomers. CFB reports the formation of a ham radio club at the Lakehurst Naval Air Station. Hams in the vicinity are urged to contact CFB in Toms River for more information. ATE continues his fine work as Official Observer. Just received a very nice note from WN2BVS of Plainfield, a lab technician with RCA in Harrison. New members of NNJRA, as reported by ZBY, are ALZ, GEU, HGT, HTD, JVU, and OAC. ZBY is experimenting with an easily-built coax vertical on 28 Mc. for working locals and mobiles in c.d. drills. The National Guard in New Jersey has organized Novice Class license courses in armories throughout the State. Any civilian is eligible to join a class. Drop a card for further information to Division Signal Officer, 50th Armored Div., 176 Sussex Ave., Newark. The Radio Club of the Newark College of Engineering meets on the first Monday of each month at 1300. SLI is president and WFK is secretary-treasurer. The Club is located at 367 High St., Newark. ATE, MPP, and NYY did OK in the last Frequency Measuring Test. AQT, ex-1AQT, of Leonia, is our newest ORS. He has been coming to JN regularly. Latest New Brunswick Novice is FQD. Thespian tendencies took NQA off the air for awhile. RGV moved to Dover. FGG, who works for Cities Service in Linden, worked so much DX on 14 Mc. with the antenna lying on the ground, he was afraid to hoist it up in the air! GVZ spent the month OOing on 14 Mc. and aided ten of the gang who committed minor infractions. ABL and his son, ZEP, are getting set for winter activity. Traffic: (Oct.) W2CCS 352, CUI 215, ANG 154, WCL 123, NCY 51, IIN 22, OUS 12, OXL 8, CFB 7, ZEP 5, GVZ 3, NIY 2. (Sept.) W2CCS 207, CUI 153, LMB 150, EAS 39, ZEP 22, WCW 8, OUS 6, CFB 4, CJX 4, COT 4, AQT 2.

MIDWEST DIVISION

IOWA — SCM, William G. Davis, WØPP — SEC: FP. RMs: SCA, QVA, and HMM. SCA reports that TEN is working out FB on new frequency of 3545 kc. TLCN is off to another good start with 40 on the roster. Two new members of TLCN are VRA, of Waterloo, and 9LGR, a 17-year-old YL of Taylor Spring, Ill. 4NNN/Ø got his old prewar call, NWX, recently. After two and a half months FCC decided that PP should be made an Advanced Class amateur. New NCS on TLCN are GJT and YTA. The Iowa 75 'phone net meets Mon. through Sat. on 3970 kc. at 1230, not 1830 as listed in the net directory. The Iowa-Illinois Amateur Radio Club now meets on the first Friday of each month. TFT reports that the defense director of the Davenport Area was present during the annual AREC. ZFO reports a new 60-watt rig on. Those at Waterloo participating in the S.E.T. were VRA, JPJ, MG, THU, TBE, YNT, PWE, DNR, AEB, DFF, and KAX as mobile, and TWB, BGQ, DEU, SCA, SCW, PTL, DFE, BEN, IMP, ACE, and KLC as fixed station. JIM has moved to an acreage so he can work ham radio in spite of TV. CVU has a new 1-kw. Collins on the way. AWF has been missing since he bought a new farm. The club at Spencer is working a 10-meter ground-wave net Mon., Wed., and Fri. at 8:00 P.M. on 29 Mc. Traffic: WØSCA 609, YTA 139, QVA 109, CFX 36, AUL 35, DFD 29, NYX 15, BQJ 2.

KANSAS — SCM, Earl N. Johnston, WØICV — SEC: PAH. RM: FDJ. PAM: HEC. The Johnson County Radio Amateurs Club of Mission held a QRP Contest the week end of Oct. 20th and 21st. The winner, ODU, of Overland Park, worked 17 stations with .8 watt using a pair of 31s (VFO-amplifier). The farthest station worked was New Jersey with a 5-2-9 report. Minnesota, North Dakota, and other neighboring states were worked by ODU. IIJ used a folded off-center 300-ohm feed 20-meter antenna with which he worked Florida with his 3-watt rig. WMH got a 5-7-8 with 3.8 watts input out of Virginia station. The Eldorado Amateur Radio Club participated in the S.E.T. Oct. 13th with TDW as Net Control Station and mobiles ONI, BVP, and BWB working at the scene of the simulated tornado. BWB relayed traffic to BVU, airborne mobile of Wichita. The Kaw Valley Radio Club had its S.E.T. simulating an atom bomb hit near the center of the city. During the activities the control station, CET, at Police Headquarters, actually went off the air a bit ahead of time but no time was lost as CFY mobile was outside and took over as NCS. AXZ, of Colby, tells us of activities out in his country. DIV, DHP, KPF, and AXZ are on 7 Mc. most of the time. WOB and VDF work 3.8-Mc. 'phone mostly and both have mobiles on 3.8 Mc. MUY, of Salina, has a new 33-ft. telephone pole to hold up his Zepp. Traffic: WØNIY 153, FDJ 100, MUY 60, BLI 27, KXL 12, VBQ 10, YFE 7, LIX 6.

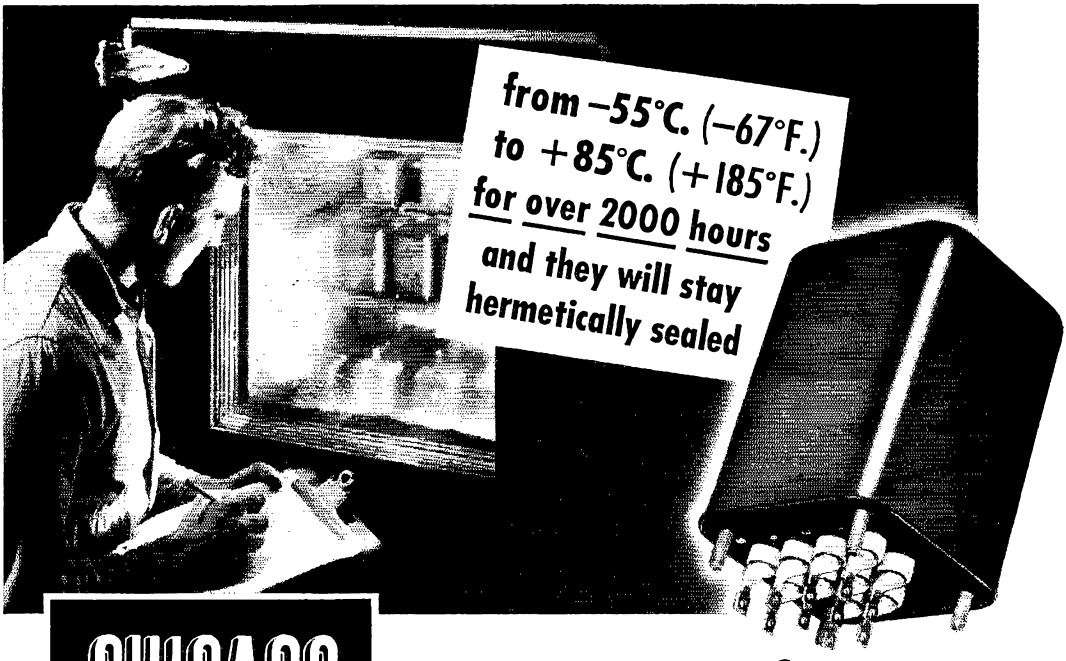
MISSOURI — SCM, Clarence L. Arundale, WØGBJ — The HARC (Kansas City) met October 19th and nominated its officers for 1952. Moarky will meet soon to elect its new officers for 1952. AJD has acquired a new NC-183B receiver. BAF has just received his DXCC certificate. BVG has returned from military service and is building new transmitter to go with new HRO-50T. BPE announces the arrival of a new jr. operator. CEX spent a few days in the hospital for an operation. CFL is active with traffic. CKQ soon will be on 28 Mc. with an 829 final. FIR keeps daily schedule on 7272 kc. with GAR. GAR has the rig operating on 3.5 Mc. now. GMI lost a considerable amount of equipment when his home burned. He did succeed in saving his receiver and transmitter. NNH schedules MARS and MON. OUD works some on 7 Mc. now and then. PLJ has added one new state on 144 Mc. PTG is erecting new 60-foot tower. QXO now is wearing a metal brace on his back and is able to get around again. UXQ had little operating time because of illness in the family. WAP is rebuilding 40-meter rig to eliminate TVI. The Springfield Area Emergency Net (SAN), under the direction of EBE, conducted a very successful S.E.T. on October 14th. Those wanting to participate in a traffic net on Sunday afternoons should tune to 7272 kc. at 4:00 P.M. each Sunday afternoon for the Show-me Net. ICW is Net Control for SE-MO 160 net. Traffic: WØQXO 438, CFL 141, GAR 113, AJD 81, WAP 50, GBJ 39, EBE 30, HUI 29, FIR 21, BAF 20, BVL 20, OUD 14, NNH 12, QMF 8, CKQ 3, PTG 2.

NEBRASKA — SCM, Guy R. Bailey, WØKJP — The Ak-Sar-Ben Radio Club now has its own station with the call EQU, located at Florence Fire Station. Your SCM is indebted to *Ham Hum*, the Club paper, for much of the information in this report. It's an FB paper; let's all support it. BPB, BWK, and BZC have new Advanced Class tickets. BXJ now has a Super-Pro. RYG put up a folded dipole on 3.5 Mc. JDJ built a new power supply for VFO and now has a sweet note. New Novice calls in Omaha are EGU and EFQ. KDW moved to a new QTH. More vitamins are suggested for KVZ. WBU and EIS are back on the air with TVI-free rigs. DHO is trying to whip TVI with a pair of 813s. JED now is running a gallon TVI-free. AGH has a Viking and an HRO-50T, both new and shining. CQX has 400 watts on 14-Mc. 'phone and c.w. completely shielded and TVI-free. FQB still is trying new antennas. RQS has been using a light-weight Sterba on 28 Mc. this summer. BZC is keeping a week-day sked with BOQ. JJK is building single sideband, also mobile rig. USB hopes to get mobile rig in his new Chevvie. UVU has been elected NCS for the 75-meter net for next year. I only hope the gang will give him the fine coöperation they have given yours truly for the last two years. KON has been elected NCS for the Nebraska

(Continued on page 76)

the world's toughest transformers

must "take" this torture, before they take on your tough jobs...



CHICAGO

MIL-T-27 transformers are really rugged

HERE IS THE COMPLETE LINE THAT MEETS MILITARY SPECIFICATIONS

CHICAGO MIL-T-27 Transformers win their spurs in every conceivable "torture chamber" test. Two hundred and forty-seven cycles of alternating heat and cold for over 2400 hours fail to break the seal or cause failure of these rugged CHICAGO units expressly designed for military and special applications. CHICAGO'S unique bushing design and construction, and exclusive process of bonding steel base covers in seamless drawn-steel cases by deep-seal soldering—insure perfect sealing, complete dependability and continuous service under the most adverse conditions. Your parts distributor can supply all CHICAGO MIL-T-27 Transformers: Power, Bias, Filament, Filter, Audio. Use these stock units with full assurance that they will *completely* meet *all* MIL-T-27 specifications.

SEND FOR FREE CATALOG

Have the full details on CHICAGO'S *New Equipment Line*—covering all MIL-T-27 units as well as famous Sealed-in-Steel transformers geared to today's circuit requirements. Write for your free copy of this valuable catalog today, or get it from your distributor.

CHICAGO TRANSFORMER

DIVISION OF ESSEX WIRE CORPORATION

3501 ADDISON STREET • CHICAGO 18, ILLINOIS

CHICAGO TRANSFORMER CT TRADE MARK REG

c.w. net. JDJ reports the slow-speed net going fine. Your SCM would appreciate more reports, so send them in on the first of the month, please. Traffic: (Oct.) WØKON 153, JDJ 79, IAJ 63, SAI 28, IXL 17, KJP 6. (Sept.) WØBZC 4.

NEW ENGLAND DIVISION

CONNECTICUT — Acting SCM, Roger C. Amundsen, W1HYF — VB has resigned because of lack of time and the Connecticut section owes him a vote of thanks for the effort he has put into the SCM job. I will try to keep things going, so please send reports to me at RFD 4, Ridgefield, Conn. The New London Area gang had a nice write-up on the S.E.T. in the local press. NBP has a nice traffic score for 'phone. TD sends official bulletins on 146 Mc. ODW ran up a better-than-200 QSO record in the CD party. AW helps out in CN regularly. BVB free lances in any net he can find when he is not working. NJM still is after BPL. RRE, of Willimantic, is a new regular on CN. CUH will be on more since his working hours have been changed. It's real nice to see activity picking up in the eastern end of the State. The Connecticut Party held on Oct. 27th and 28th had a good number of participants and several new towns were heard and worked. 'Phone operation came into its own and CWA will announce winners soon in the *Connecticut Nutmeg Topics*. WN1UFF, of Danbury, and WN1UEJ, of Newtown, are among the new Novices in our section. We welcome them and hope they will keep us advised of their activities each month. A post card on the first of each month will do the trick. WN1UEJ is the XYL of KAY and both are pounding brass on 3.5 Mc. in the very busy section, the novice band. The SARC of Stratford has moved to its new quarters which is a honey for location. DBM, of South Norwalk, is distributing free an FB compilation of his TVI articles. PEA is on in Weston at his QTH. RTB/IPQ are putting up a new tower for their 10-meter beam. QAB and ADW are now mobile, both on 28 Mc. Much of SJO's traffic was from 43rd Division boys in Germany. FB! Writing this the first part of November I must remember you will read it between Christmas and New Year's so the best of both and see you on the air. Traffic: (Oct.) W1SJO 505, AYC 346, AW 225, NJM 224, LVQ 216, STU 177, HYF 166, LV 102, BDI 93, BVB 57, NBP 43, RWS 40, GVK 25, CTI 15, RFJ 15, ODW 12, RRE 11, SUD 4, CUH 3. (Sept.) W1SJO 110, NJM 86, BDI 44, AW 39. (Aug.) W1AW 53, BDI 49.

MAINE — SCM, Orestes R. Brackett, W1PTL — SEC: IGW. RM: LKP. Net frequencies and time as follows: Pine Tree Net, 3596 kc. at 1900 Mon. through Fri. Sea Gull Net, 3960 kc. at 1730 Mon. through Fri. QQY and two other Portland stations recently established contacts on 440 Mc. 5QVL, ex-1SCP, who now is located in Paris, Tex., has spent a few days with friends in Portland after spending ten months in the Signal Corps at Korea. Those we know of who have just recently been awarded their Advanced Class licenses are PVY and BZF, both of Rockland, SCY and SCU of Union, SNE of Warren, TBZ of West Field, LYR of Presque Isle, and TAS of Saco. Incidentally LYR, the XYL of HXQ, is the only YL that we know of in this group who got this class of license. On Oct. 14th a civil defense test was put on in the Lewiston and Auburn Area. The NCS was LOZ, who did a remarkable job. Those participating were IGW, the SEC, SEJ, the EC, CMO, HUT, HUX, LPJ, OLT, KINAI, PIX, TO, TAM, QQY, PTL, MFJ, LPS, LPA, CV, SWZ, LIZ, NPP, EZR, MML, SXA LDC, WN1UIW, IMI, BOC, OLT, and LYK; also other members of the AARA. 1EBM/3 is in Lutherville, Md., operating on 7130 kc. A new club is being organized at Booth Bay Harbor. Present members are LHA, LUK, KMM, MLP, AMR, and one SWL, Doc Parker. Traffic: W1LKP 170, LRG 169, QUA 82, NXX 54, OHT 46, PTL 46, QQY 45, BTY 42, WN1TWR 28, W1HUL 15, OLQ 15, SRQ 11, KKZ 10, TBZ 9, QEK 8, RSC 8, SEJ 8, COV 6, SJN 5, EFR 3, KDE 2.

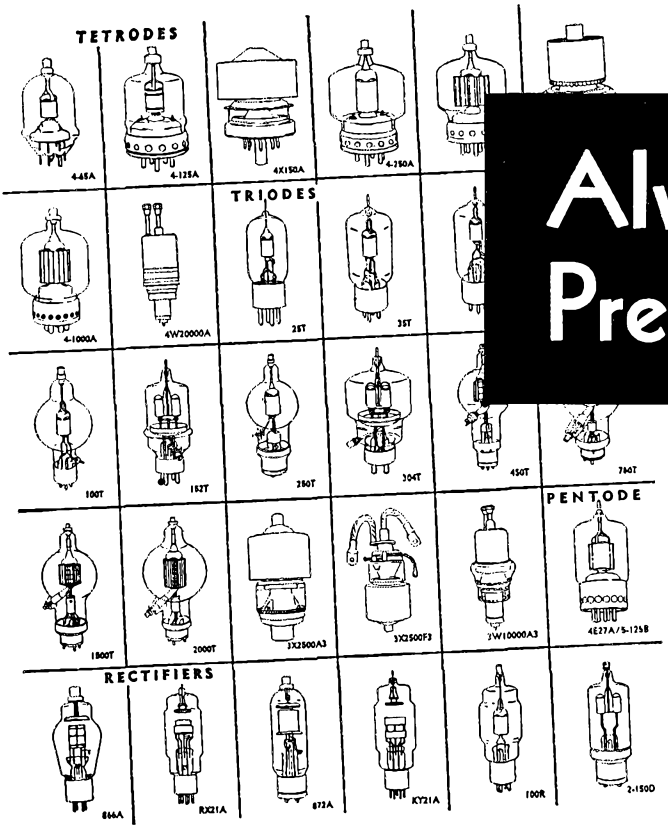
EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — KGP is new EC for Abington. Appointments endorsed: As ECs, HP Merrimac, EK Newton, HRY Wellesley, RRA Winchester, CQN Norwood. As ORS, QMJ. As OPS, LMB and DHX. As OBS, GDY and DHX. As PAM, LMB. We are sorry to have to announce the death of CGM. Our sympathy is extended to KXN on the loss of his mother. TUD is DWO's XYL. UIQ is Warren East of Dorchester. OQP is on 7 Mc. TUI is a new ham in Fall River. IAP broke his back when he fell from the roof of his house and is learning to walk all over again. ORZ is 3.5-Mc. c.w. 2WRZ is quite active at MX and calling in on EMN. OSX and WB have teletype on 144 Mc. HM is moving to Natick. UDC is a new ham in Dedham. KCP now is in California. QPH, Braintree, is on 144 Mc. PID is on 3.9 Mc. Congrats to QON on being our YL Editor. LID is on 28 Mc., also LET and JLI. SOJ is on 3.5 Mc. New officers of the El-Ray Radio Club: RSR, pres.; AQE, vice-pres.; EIQ, secy.; PSV, treas.; BOD, act. mgr.; OQU, chief engineer. RRA reports that there are 8 active hams in Winchester now and the Town has bought some equipment for c.d. TWC is Bruce McLean of Cohasset. THY also is down there. DBH moved to Arlington and is on 144, 28, and 7 Mc. The General Radio Net is on 7 Mc. every Sunday with DDO, PEX, AYW, FES, NJV, TBX, and QJB as NCS. AKC moved to Carlisle and is on 50 Mc. LPM, Natick EC, reports that they have a rig on 28 Mc. with a 2500-volt emergency generator. The sked is every other Monday night at 7:30. AVY reports that they took part in a simulated emergency test with fixed and mobile rigs and CTZ, LAZ, and WU helping out. Braintree ARC had its regular monthly meeting. The Eastern Mass. Club had a talk on DX by FH and on traffic-handling by SS. The Brockton Club had a talk by TAV on mobile rigs. The South Shore Club had a talk by OOP on a low-powered rig, also Navy films brought in by SAI were shown. The Quannapowitt Radio Assn. had a talk by CTW on c.d. equipment for 50 and 28 Mc. The T-9 Radio Club held a meeting at HBG's QTH. JMW and TYP have joined the Club. BHD reports that the Everett Emergency Net will have 100 watts on 146.9 Mc. BGW keeps nightly sked with KR and G8JR. 6AIZ, ex-1AIZ, writes from San Diego that he is on 28 and 3.5 Mc. and is looking for Eastern Mass. QSOs. LML reports on the Melrose net, with PXY, FSK, CZO, QXB, and PGN checking in. MX has skeds with ØDIC on 7 Mc., ØVZL on 14 Mc., and KP4ES on 28 Mc. THU is on 3.9 Mc. and MARS. UE is building an amplifier remote control for his 3 VFO rigs. KYO has automatic h.v. control full break-in. His XYL, TXD, is up to 13 w.p.m. MEG is on 28-Mc. mobile. RPM and SRG have Advanced Class tickets. TTY is editor of the Wellesley Amateur Radio Society paper. DHX will have a 522 in his car. The Gypsy Radio Club is in its new quarters at 17 Hamilton Ave., Haverhill. SNZ and OLN passed Class A exams. AYG has TCS-12 on 1.8 Mc. FVD is on 1.8 Mc. JJY is very busy between National Guard, MARS, and attending M.I.T. GOU now is OBS and will be on each night on 28 Mc. with Official Bulletins. AKN, in the hospital, is coming along slowly. Traffic: (Oct.) W1EMG 304, SS 302, UE 164, JCK 160, TY 147, LM 104, MX 85, DMS 76, THU 60, NUP 53, AVY 25, ALP 16, WU 9, KWD 3, MEG 2. (Sept.) W1JCK 111, KYO 4.

WESTERN MASSACHUSETTS — SCM, Victor W. Paounoff, W1EOB — SEC: JYH. RM: BVR. PAM: RDR. West Mass. net meets on 3725 kc. Mon. through Fri. at 7 and 10 P.M. The slow-speed net meets on the same frequency at 7:45 P.M. Mon., Wed., and Fri. Please note the new time. Novices are welcome to join up in either net. RDR has been appointed PAM. Your coöperation with him is solicited so that we may further increase and improve the 'phone activities in our section. A lot of good work is being done by the 'phone gang but I think it is being hidden. Let's bring it out in the open by sending in a monthly report by radiogram, post card, or letter, so that ham radio can receive its full credit for the public-interest service that each of you is rendering. A report of just one message is worth mentioning. MUN continues his precision frequency-measuring including one 14-Mc. reading that was right on the nose and another only 11 cycles high! AGM is strictly mobile until he can get set up at new QTH. Incidentally, your SCM's new QTH is 702 Rogers Ave., West Springfield. BVR has been elected honorary member of the Tri-City Radio Council serving Eastern Connecticut and Southern Rhode Island. COI finally raised the rhombic. BDV is helping the jr. operator build a record-changer; a new ham in the making. IJT now has his Collins 32V-2 perking properly. New officers of the HCRC are CJK, pres.; RFU, vice-pres.; PHU, secy.; and QUQ, treas. TSY, new activities manager of the Quinebaug Radio Club, reports himself as new General Class licensee and the following new Novices: TTN, TTK, TVR, and TVU. HFO is moving to Connecticut. RF again is active in Southbridge ham affairs. EFC is new secretary of their club. Traffic: W1BVR 45, MNG 24, RDR 14, MOK 5, DXW 3, CJK 2, RRX 2, BDV 1.

NEW HAMPSHIRE — SCM, Norman A. Chapman, W1JNC — RM: CRW. The Great Bay Radio Club put on another one of its famous "Clam Chowder Get-Togethers" at the Hampton Beach Fire Station. HRI spiked the chowder with plenty of clams. Movies and prize drawings rounded out the evening. BXU is the new EC for Merrimack County. AWZ has his s.s.s.c. rig working on 3.8 Mc. POK has made WAC on 7 Mc. Everyone is invited to join in the Fourth N. H. QSO Party. Remember the dates, Feb. 9th and 10th. WN1TTU now is General Class. UDB and UDP are new hams in Concord. We wish to welcome SSK, who has moved from Bangor, Me., to Penacook and QZS, from Haverhill, Mass. to Atkinson. Have YOU registered in the ARRL Emergency Corps? Get in touch with your county Emergency Coördinator and do it NOW. Your Emergency Coordinators by counties: Hillsborough, GDE; Cheshire, KPL; Rockingham, CRW; Merrimack, BXU; Belknap, SAL; Grafton, GTY. Asst. ECs in Coos, Carroll, Strafford, and Sullivan Counties, contact your SCM. C.d. organization has been started in Strafford County. Season's Greetings and a Happy New Year to all the gang. Traffic: W1SAL 82, JNC 46, QJX 35, TBS 30, POK 27, QGU 18, JGI 6.

RHODE ISLAND — SCM, Roy B. Fuller, W1CJH — SEC: MIJ. RM: BTV. PAM: BFB. RIN meets Mon. through Fri. at 1900 on 3540 kc. Rhode Island scooped the nation Nov. 4th with the first all-out c.d. atomic bomb test drill, with the entire State alerted. Amateurs played their usual big part in communications. INM, at the Armory of Mounted Commands, was State Control and was in constant contact via 144 Mc. with 14 communities. Several test messages were handled during the day by all stations. 28-Mc. 'phone served as communications for mobile units at the various marshalling yards. Congratulations to NZR and

(*Continued on page 78*)



Always Preferred . . .

For almost two decades Eimac transmitting tubes have been the undeniable choice of performance-conscious amateurs as well as of commercial electronic engineering groups. These two decades are important because during this time the electron art has undergone great changes and advancement. Throughout this period Eimac tubes have proved themselves — proved themselves not only under normal but also under adverse conditions where other tubes failed.

Eimac tubes are available for all amateur power categories. Invariably their use allows considerable economies in associated circuit and driver stages — this is especially true in the case of Eimac tetrodes.

Complete technical data, prices, and other valuable application information is available without cost or obligation. Write Amateur Service Department, Eimac, San Bruno, California.

JUST OFF THE PRESS. A handy book to have around the shack, "The Care and Feeding of Power Tetrodes", price 25 cents. It's all the name implies. Twenty-eight pages jam-packed with helpful information.

Eimac TUBES

EITEL-McCULLOUGH, INC.
San Bruno, California
Export Agents: Frazar & Hansen, 301 Clay St., San Francisco, California

FOURTH NEW HAMPSHIRE QSO PARTY

The Concord (N. H.) Brasspounders, W1OC, announce their sponsorship of the Fourth New Hampshire QSO Party, and cordially invite all interested radio amateurs to participate. Here are the details:

(1) Time: Saturday, Feb. 9, 1952, 6 P.M. EST to Sunday, Feb. 10, 1952, 6 P.M. EST.

(2) No time limit and no power restrictions.

(3) Scoring: N. H. Stations count 5 points for each N. H. contact, plus 1 point per outside contact; *stations outside the state* count 5 points per N. H. contact; *both* multiply by the number of counties worked (10 maximum).

(4) Engraved certificates will be issued to all participants reporting, with special endorsements for the highest scoring stations, both in N. H. and outside, in the following categories: 'phone only, c.w. only, combined 'phone and c.w.

(5) The same stations may be worked for additional credit on more than one band, 'phone or c.w. The following frequencies are suggested to congregate for this party: 1810, 3550, 3685, 3915, 7200, 14,100, 14,250, 27,000, 28,100, 28,800 kc.; 51, 145 and 221 Mc. (Suggested time schedule for the above frequencies will be mailed upon request.)

(6) General call: "CQ NH" on c.w.; "CQ NH QSO Party" on 'phone.

(7) Contact information required: Report and QTH (including county of N. H. stations). Logs and scores must be postmarked not later than February 25, 1952, and should be mailed to The Concord Brasspounders, Box #312, Concord, N. H.

(8) The "WNH" (Worked New Hampshire) certificate will be awarded to stations working all ten counties during this QSO Party, participating logs confirming.

The Concord Brasspounders sponsor the "WNH" certificate. This is awarded to any and all radio amateur stations submitting confirmation of contacts with all ten New Hampshire counties (Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack, Rockingham, Strafford and Sullivan) any time after 6 P.M. EST Oct. 8, 1949. Contacts must be made between one fixed home location and fixed home stations in each N. H. county. Portable or mobile operation, while satisfactory for credit in the N. H. QSO Party, will not count toward the "WNH" award. Participating logs for the QSO Party will be considered as satisfactory confirmation; after that QSL cards will be required and should be mailed to The Concord Brasspounders, P. O. Box 312, Concord, N. H.

MIJ on a fine job of organizing and to all the others who participated. The Middletown & Southern R. I. c.d. net drills each Sunday 10:00 to 10:30 on 3960 kc. New members are invited to join in. The Newport County Club was active Nov. 4th with its emergency net and in coöperation with the state-wide tests. BVI was elected into the Old, Old-Timers Club, having held a ham license since 1910. 4SKZ now is 1PPE again with the addition of Advanced Class endorsement. TRX and OIK are Rhode Island stalwarts on TCPN. QR is back in traffic work, the yachting season being over. New appointments: TRX as OPS; SKT as ORS. Traffic: W1TKX 36, QR 29, OIK 25, TRX 5.

VERMONT — SCM, Raymond N. Flood, W1FPS — Season's greetings, gang, and the best of everything in 1952. We're growing fast. Novices are popping up like rabbits. The Tri-County ARC has fifteen new licensees. Welcome to one and all. Now let's put Vermont on the air. New hams outside Brattleboro are John Frazer, W1UDU, of Plainfield; Red Jennison, WN1UEQ, of Montpelier; Bobby Badger, WN1UFZ, Burlington; and Father George Demers, WN1UFH, of Putney. Route Manager OAK is looking for more Vermonters on 3520 kc. 7 P.M. Mon. through Fri. Vt. Net also is planning a VNN (Vermont Novice Net), so tell ANN if you're interested. The Chittenden County Emergency Net and the Tri-County ARC took part in the October S.E.T. RCO is studying E.E. at U.V.M. and is home week ends in Barre. MMN is active on 144 Mc. Traffic: W1OAK 137, RNA 75, FPS 54, IT 44, AVP 29, BJP 20, AXN 18, NLO 18, ELJ 11, SPK 7, TAN 3.

NORTHWESTERN DIVISION

ALASKA — SCM, Josiah R. Nichols, KL7MZ — It is with regret that I write this last column before my resignation as SCM becomes final. I wish to thank all of you amateurs in KL7-Land for the great coöperation you have given me. I hope the traffic nets we now have in operation go on and grow to bigger and better traffic-handling facilities. I will be seeing all of you from my new location in Portland. 73 — Nick, KL7MZ. Traffic: KL7PJ 154, AGU 42, YV 40, ABN 25, RE 20, KØWAS/KL7 6, KL7SX 2.

IDAHO — SCM, Alan K. Ross, W7IWU — Heyburn: FT reports new officers of the Magic Valley Radio Club are DLA, pres.; MJZ, vice-pres.; FT, secy.-treas.; and Ed Miller, pub. dir. Blackfoot: LQU took his Advanced Class examination at Los Angeles. Hayden Lake: EC FIS reports two new hams in the area — KL7OBN/7 and KL7NK/7. AREC members are BAA, ISF, and OTD. Rupert: IEY schedules FARM and MARS Nets, and 'phone patches Alaska, Japan, Guam, and Hawaii on 14 and 3.8 Mc. The final rig uses 810s — 1 kw. input. Boise: FOF is back on with home rig now. Two films from the Naval Reserve Armory file were shown at the Gem State Radio Club meeting. "DX" present were ABK from Mountain Home and Capt. Koppe, W8CHO, from the Mountain Home AFB. Meetings are always held the second Friday of each month. Traffic: W7GHT 133, NH 100, BDL 34, BAA 19, FIS 10, FOF 10, IWU 6, LQU 4.

MONTANA — SCM, Edward G. Brown, W7KGJ — There were no activities reports from the gang around the State again this month. KGF is newly-appointed Emergency Coördinator for Yellowstone Valley Area. CT has been hunting both birds and big game on his days off and CVQ also has spent some time in the hills after elk and deer. OPM has his modulator completed and will be active on 'phone this winter. Fred expects to work all bands. WN7PTW is looking forward to the Novice Contest. Walter Marten, KUH, Section Emergency Coördinator, plans an emergency net on 3910 kc. All interested, please get in touch with Walt and help him make a good showing for Montana. Net activities are getting off to a slow start this fall and both 'phone and c.w. nets need more stations, so please QNI and give the boys a hand. Missoula and Billings report a very successful emergency drill in the recent S.E.T. Traffic: W7CT 55, KGJ 54, KUH 33, BNU 32.

OREGON — SCM, J. E. Roden, W7MQ — ADX reports much interest in Inland Empire Emergency Net on 1993 kc. DHX is new EC for the northern part of Clackamas County. AXJ is new OO Class I, and really hits close on the Frequency Measuring Tests. MUY is expecting his orders from the Air Force. NUR keeps regular skeds on OSN, FARM, and MARS Nets. RWU now is located in Condon and plans on participating in 3993-kc. RACES Net on Monday nights. LVN and HLB are tinkering with radio control and already are radio-controlling two four-ft. boats. PES, in Eugene, and FRT, in Salem, are maintaining regular skeds. PGB is newly-licensed in the Eugene Area. LNG is getting ready to install a new 20-meter beam. GLK now is Class A and is active on the air with a new Collins 32V-2. PZM is newly-licensed in the Pendleton Area and has been elected secretary of the Pendleton Amateur Radio Club. LQV is new president. PON now is associated with his Uncle Sam in the Navy. LAQ is back on the air after a sojourn with Uncle Sam in Korea. KYO now is mobile on 3840 kc. KR, KTG, NFU, and AZP are just a few of the Oregon amateurs who are spending some time in the mountains of Eastern Oregon hunting for those ever-elusive elk and all have either portable or mobile rigs along just in case they get snowbound. Traffic: W7II 236, APF 169, HDN 163, MQ 99, AJN 93, AXJ 63, AWI 48, BSY 33, GNJ 32, LVN 24, HJU 23, BDN 21, NOB 21, JKU 18, ADX 15, AHZ 13, NUR 12.

WASHINGTON — SCM, Laurence M. Sebring, W7CZY — SEC: BTV. RM: FIX. PAM: NRB. ETO has new Viking I on the air. LEV put up new 10-over-20 beam. JZR did not do so well this year hunting deer. FQS, EC for Spokane, has built up the AREC in his area from nothing to 40 mobile units participating in weekly drills. AIB is using a 40-meter ground-plane antenna; it works better than his horizontal. Hams in the Seattle Area have donated parts for a station to be installed for an invalid YL in Montesano. AWP is production chief and NRB is arranging a Gypsy Tour to install the gear when it is finished. AVM furnished a code machine and is helping with the theory. NWP has a 5514 tube in the final now and passed his Advanced Class test. KTL built a 10- and 20-meter converter to go ahead of his HQ-129X. KL7TM's new address is Star Route, Priest Point, Marysville, Wash. VI has his ART-13 working on all bands. PGY, PHV, and FAW have new 10-meter beams. FAW works at KING-TV. OZG talked to his wife from New York through the stations of DFS, KO, and BA. CV, the national code champ, was elected president of the North Seattle Radio Club. NGF is away for reserve training and is expected back as brigadier general. The Seattle Totem Emergency Net is active with mobile hunts twice a month. CO and KZP usually are top "hunters." IYU has TBS-50 and Gonset mobile on 3.8 and 28 Mc. JJK is on maneuvers in Nevada and skeds his mother, PQX. HMQ has an 832A in his mobile. NDO is back from the Far East. OEB checks into WSNet. WN7PXY is a new Novice in Sumner. IMB is back on the air. NKB has new Viking. Traffic: W7CZY 1070, IOQ 805, BA 264, KIX 124, NRB 85, FRU 63, OS 54, EVI 42, EHH 32, ETO 19, LEV 16, GAT 15, AVM 13, JZR 12, NWP 12, AIB 11, MBY 11, NTU 6, CWN 3, KTL 2, ZU 1.

(Continued on page 80)

Be Sure of Your Installations... Next Year

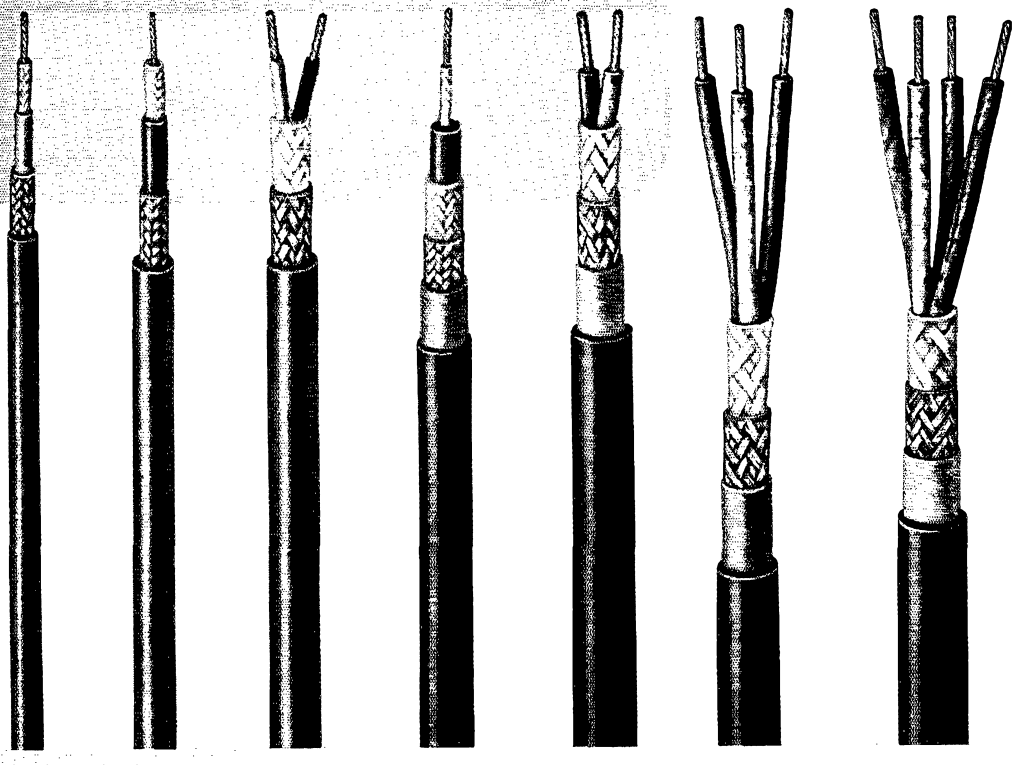
Use *Aptitude-Tested*

MIKE CABLE

Now

● Now, you can be sure of your installations with Belden Microphone Cables. They are *Aptitude-Tested* and rated to give you safe and complete knowledge of their characteristics. Furthermore, Belden Mike Cables are built for maximum service. Put them to work for you now—and be sure... specify Belden.

Belden Manufacturing Company
4621 W. Van Buren Street
Chicago 44, Illinois



No. 8411
Nominal Capacitance 37 mmf per ft. Use particularly for lapel microphone.

No. 8401
Nominal Capacitance 25 mmf per ft. For crystal, ribbon, carbon microphones.

No. 8422
Nominal Capacitance 32 mmf per ft. Use specially for carbon microphones.

No. 8410
Nominal Capacitance 33 mmf per ft. For crystal, ribbon, carbon microphones.

No. 8412
Nominal Capacitance 68 mmf per ft. Use specially for carbon microphones.

No. 8423
Nominal Capacitance 54 mmf per ft. Use particularly for carbon microphones.

No. 8424
Use for interconnecting power cable for all electronic uses. Also microphone cable.

Belden *Radio* **WIRE**

The *Aptitude-Tested* **LINE**

PACIFIC DIVISION

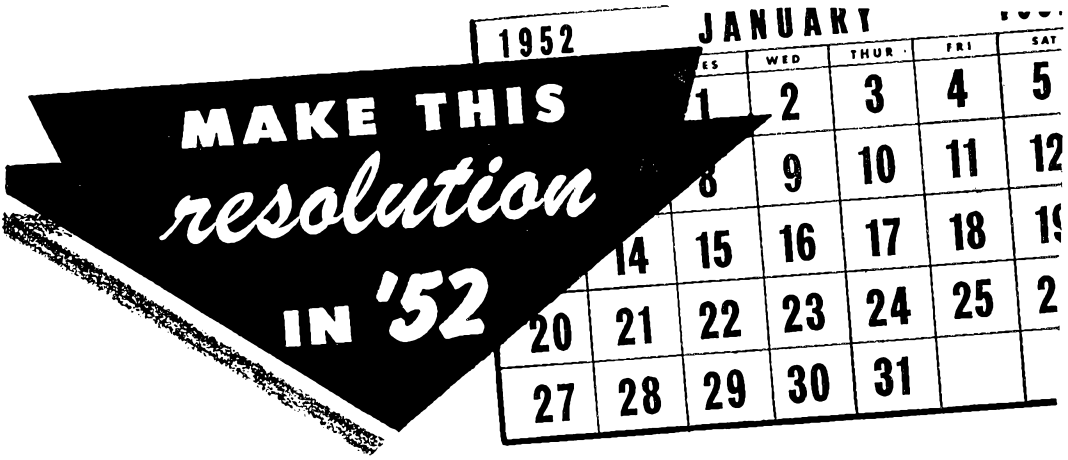
HAWAII — SCM, John R. Sanders, KH6RU — HARC, operating WO Field-Day style at Waimanalo, ran up a fair score in the CQ DX Contest despite poor weather and band conditions. The Honolulu Mobile Club has voted to present a trophy to the first KH6 mobile to work all states after November 6, 1951. A new "Inter-Island Net" now is in operation on 3950-kc. 'phone each Tue., Thurs., and Sat. at 2100 HST. Initial participators were ADK, GG, TS, EB, ID, IJ, ON, PA, QB, TRV, UG, IT, ZT, and ZU. All Hawaiian stations having inter-island traffic are urged to call in on the net or file with it. 'Phone patch traffic also is handled. TS is new OBS on Molokai. Listen for his Official Bulletin transmissions at 2030 HST on Tue., Thurs., and Sat. on 3950 kc. IJ reports the Kauai High School now has 14 Novices coming on the air. ADK is mobile on 28 Mc. ADY skeds QL/KC6 on Truk. AJK, new Oahu station, is interested in a c.w. traffic net. *Far Pacific Area:* JA4AI is the sole fourth-area station active now while recuperating from "busted bones" gained from a 'chute jump. JA4AG now is JA7. JA7AW, ex-KH6AW, lost his 10–20 beam in a recent typhoon. JA4CR has closed down and is departing JA-Land. KG6FAA and KR6AF made BPL. Traffic: KG6FAA 4354, KR6AF 2045, KH6ADY 23, IJ 2.

NEVADA — SCM, Carroll Short, jr., W7BVZ — About 25 hams, YXLs, and jr. operators attended the semi-annual picnic of the Southern Nevada Club at Lake Mead in October. Officers of the Club for the next year are KIO, pres.; LUV and DVJ, vice-pres.; LBE and BJY, secy.; LGS, treas.; BVZ and OXX, act. mgr. Meetings are held the 2nd and 4th Fridays in Henderson. The Club gives an FB certificate for working 25 Nevada stations. Cards should be sent to BJY. OBW and OHJ joined the AREC in 'Vegas. LGS did better than 8 parts per million in the F.M.T. HJ did a bang-up job organizing the S.E.T. in Boulder City. Total points were 138. Frank thinks 15 E.C. members in a town of 4000 is a record! MBQ is building a kw. rig. JVW has 30 youngsters preparing for Novice Class exam. JU has new 3-band Morrow converter. KOA is on 3.8 Mc. JLM has new land north of Sparks and plans many antennas. 6ZHE/7 is new in Yerington. OZV is flying to Japan for Transport Co. 2ZGN/7 is new in Reno on 3.8-Mc. 'phone. EEF has new 75A-2 receiver. 6LBJ and 6ULF were Reno visitors. JLV and IPD are in W6-Land with the armed forces. Does anyone have addresses of MZV and PGQ? Traffic: W7JU 8.

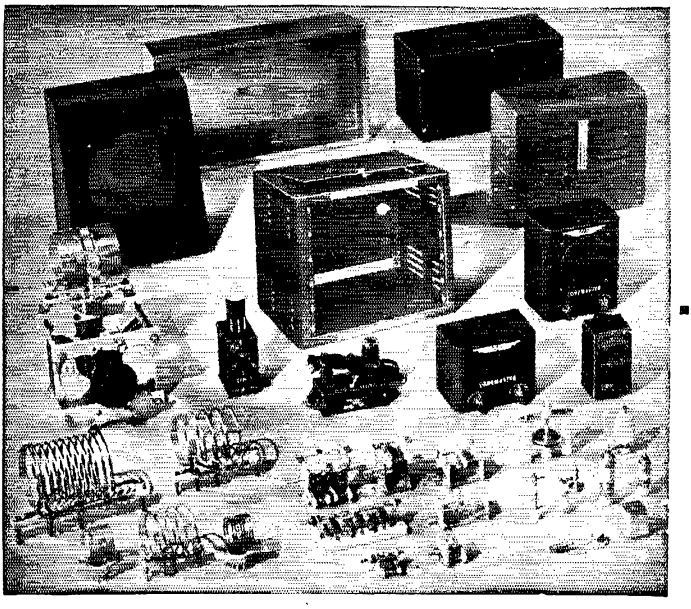
SANTA CLARA VALLEY — SCM, Roy I. Couzin, W6LZL — Notices are being sent out by clubs throughout the section announcing that nominations are open for the election of officers for the coming year. Club members should choose very carefully and get behind their officers and lend a real helping hand in all club projects. The North Peninsula Electronics Club has been holding very successful c.d. drills under the able guidance of QIE. At the October SCCARA meeting John Reinartz, K6BJ, gave a talk on his system of modulation and TVI-proofing the rig. YHM ran up a pretty fair score in the CD Party; he also is keeping busy on the nets. HC is slowing down on the net operation as MTN clerical work is keeping him busy. MMG is working week ends now and almost missed out on the CD Party. CAZ finally got the 813 perking and getting out like mad and says the clipper filter in July *QST* gets the credit. CIS has been very QRL but plans to get in the groove real soon. Congrats to ALL on getting her ticket. JKC has a new rig fired up on 3.5 Mc. FGC has left our midst with that fine signal and moved to Whittier. AEV, our SEC, has been making the rounds throughout the section and finds c.d. activities practically at a standstill. The San Mateo group is about the only one actually holding drills and showing an interest, thanks to TFZ and QIE who are doing a swell job. Traffic: K6WAE 1457, W6YHM 220, HC 43, CIS 7.

EAST BAY — SCM, Ray H. Cornell, W6JZ — Asst. SCM, Guy Black, 6RLB. SEC: RVC. RM: IPW. The East Bay section held its first get-together of the season on Oct. 14th in the form of a picnic in Tilden Park near Berkeley. NTU won the 80-meter transmitter hunt with UHM and BS (working as a team), the runner-up. KZN hid the 10-meter transmitter too well and it went undiscovered in the allotted time. The XYLs enjoyed an afternoon of bingo and other games while the OMs listened to talks about c.d., AREC, NTS, and TVI. Everyone had such a good time it is planned to hold the picnic as an annual affair. RVC, our new SEC, is making progress with plans for AREC in this section. There soon will be plenty of activity for everyone interested. It is hoped that AREC can be correlated to supplement c.d. activities in order to get the most out of time and equipment. IPW has been appointed RM. EBSN (East Bay Section Net) has been organized and is reporting regularly into RN6. For the present EBSN holds joint meetings daily with Mission Trail c.w. net on 3704 kc. All interested are invited to QNI. Gene needs plenty of help to build up the Net. It is hoped that a PAM soon can be appointed and that a 'phone net also can be established. NQJ gave a most interesting discussion of police radio and civil defense at the November SARO meeting. BEZ is a recent OO appointee. He also holds a weekly 20-meter 'phone sked with KH6DSP. AW has 40 watts on 20-meter c.w. It's a pleasure to listen to his electronic keyer. QZ finds

(Continued on page 82)



Start the year off by resolving to get the full measure of pleasure from your equipment. Assure yourself of years of safe and efficient operation by selecting Bud electronics components or sheet metal products. Buy Bud Products and you know that you're getting the best. They are made to exceptionally high standards . . . they work better together. Consult your Bud Distributor for the widest assortment for your needs or send for copy of Bud Catalog.



BUD

BUD RADIO, Inc.

2118 East 55th Street • *Dept. Q* • Cleveland 3, Ohio

time for c.d. work on 3995 kc. aside from his activity on Mission Trail Net. That code practice from JZ has enabled a lot of Novices to take the FCC examination with confidence. The letters of testimonial are pouring in. TI still is chasing DX on 14 Mc. He runs the QSL Bureau as a side issue. CTL has completed an 813 final which is strictly OK. NJO has put up a 10-meter beam again. GGS and PKI are very active on 10-meter 'phone. WGM is a new prexy of the Central California Radio Council. WN6ESB now is on the air and active in the Richmond Club. KZF is doing an FB job as EC for the Mission Trail Net. Any ham interested in radio-controlled airplane models, contact Lee Hansen, 801 Ruth Drive, Concord.

SAN FRANCISCO — SCM, R. F. Czeikowitz, W6ATO — Phone JU 7-5561. SEC: NL. Phone: PL 5-6457. It is with regret that I announce the death of two well-known amateurs of this area, Col. Alan Whittaker, W6SG, and Arthur Arrigoni, W6WN. Col. Whittaker was president of the Marin Radio Amateurs Club and head of the Civil Air Patrol for California. Arthur Arrigoni was a past-president of the San Francisco Radio Club, and a member of the Eimac staff. *San Francisco Area:* EC: BYS. Asst. EC: JWF. The San Francisco Emergency Corps 2-meter net meets every Monday at 8 P.M. on 147.15 Mc. Congrats to GB, who made errors not exceeding 13 cycles in four readings out of five in the Sept. 15th ARRL Frequency Measuring Test. His average accuracy was 3.4 parts per million. HJP now is at Rhein Main Air Base, Frankfurt, Germany. The National Red Cross Pacific Area station, CXO, was activated for the Simulated Emergency Test, handling 117 messages. SEC Van Liew gives the following calls as operators in the S.E.T., and apologizes if any calls are inadvertently omitted: KAH, GYY, JWF, ZVB, YDP, FSL, ZYI, HVN, URA, FNC, GGC, GHI, NL, and BYS, and W6NYD, NAC, and NCK. On Oct. 22nd Capt. T. L. Baisden and Lt. Ralph Spiro, HQ Squadron, Civil Air Patrol, introduced to the cadets, staff, and guests of the CAP at the Presidio, Major Williston Wirts, the new chaplain of the CAP, and ATO, who gave a talk on basic radio communication theory. At the October meeting of the Central California Radio Council it was decided to propose to all the member clubs that a division convention be held in 1952. CTH accepted the chairmanship. CTH has acquired a Collins 30K. As far as is known, Max Dabin is the first San Francisco amateur to exchange his WN novice call for his new W6NAC. The San Francisco Radio Club meets the fourth Friday at 1641 Taraval St., and the High Frequency Amateur Mobile Society meets the second Friday at the Red Cross Building, 1625 Van Ness Ave., San Francisco. *Eureka Area:* EC: SLX. The Emergency Corps continues the weekly emergency 10-meter net. ATO, the SCM, attended the November 9th meeting of the Club and showed colored slides of most of the stations of the Northern California DX Club. The Humboldt Amateur Radio Club meets the second and fourth Fridays in the YMCA rooms, rear of Municipal Auditorium, entrance on "E" Street, Eureka. *Santa Rosa Area:* EC: IEN. Asst. ECs: WOR, LOU, and DRX. The 2-meter net for Emergency Corps c.d. communications operates every Tuesday at 8 P.M. on 145.35 Mc. New members are CVB and YGL. City officials in the Area participated with the EC in the S.E.T. Amateurs participating were AJF, ADM, GGE, DRX, WDM, DTV, LOU, WOR, LGQ, EBI, BAZ, IEN, and K6CA. HQN is about the only traffic-handler. The Sonoma County Radio Amateurs Club meets the first Wednesday in the Tap Room of the Grace Bros. Brewery on Second St., West of the Freeway, Santa Rosa. *Marin Area:* EC: KNZ. Tamalpais RC EC: ZUB. The Marin Radio Amateurs Club meets the second Friday in the Engineering Lecture Room of Marin College, Kentfield. The Tamalpais Radio Club now meets at the new quarters of OZC on Vistazo, near Centro East, in Tiburon, P.O. Box 247. Traffic: (Oct.) W6ATO 6, SWP 2, (Sept.) W6FYJ 16.

SACRAMENTO VALLEY — Acting SCM, Willie van de Kamp, W6CKV — *Northern Area:* Asst. SCM, Edward M. Cripps, 6YNM. HVB is giving 28 Mc. a whirl. HPL is active again. ILY uses suppressed carrier system of modulation of his own design. CFU is heard only on MARS. NCV is active again after deserting radio for flying. IIQ has 10-meter beam up 65 feet. IOI is an electrician. OKK is on from Burney. CKV paid JDN a visit. *Central Area:* Asst. SCM, William van de Kamp, 6CKV. ZNU is assembling Viking I and VFO kit. JRY has new rig and beam for chasing DX on 28 Mc. The GERC enjoyed the ARRL movie on "Cathode Ray Tubes." TID is busy designing and trying automatic calling systems for use on amateur bands. *Southern Area:* Asst. SCM, Richard M. Hall, 6ZYV. The Sacramento Valley Traffic Net is operating again Mon. through Fri. at 1900 on 28.8 Mc. with JEQ as NCS in Southern Area, and KRX in Northern, with PIV as outlet to RN6 and GDO to Mission Trail. KME is active again. JEQ still is waiting for Class A license; GDO is busy with school. Traffic: W6PIV 76, GDO 45, JEQ 39, JDN 36.

SAN JOAQUIN VALLEY — SCM, E. Howard Hale, W6FYM — SEC: FYM. RM: JQB. ECs: BCL, CQI, EHN, FIP, GCS, GKX, HZE, JPU, and VRF. ORS: JQB, LRQ, EXH, GIW, and QUE. OBS: EXH, GRA, GS, GWQ, and OHT. OES: RJE, UWY, and FYM. OOs: FKL, HZE, and JQB. There are 22 different calls now listed in this section with ARRL appointments and the list grows every month.

(Continued on page 84)

Provide EXTRA MARGIN of SAFETY

Where dependability is of the utmost importance, play safe with Ohmite Little Devil molded composition resistors. While they are tiny in size, these units have exceptional ruggedness, stability, and current-carrying capacity. Little Devils are completely sealed and insulated by molded plastic. Under continuous full load for 1000 hours, their resistance change is less than 5%.

Ohmite Little Devils are available in ½, 1, and 2-watt sizes, in ±5% or ±10% tolerance. Standard RTMA values, 10 ohms to 22 megohms are furnished. In the 1-watt size, ±10% tolerance, values as low as 2.7 ohms are provided.

AVAILABLE ONLY FROM YOUR DISTRIBUTOR

OHMITE MANUFACTURING CO.
4863 Flournoy Street, Chicago 44, Illinois

- **RATED AT 70C**— Little Devils have a wide margin of safety—being rated at 70C instead of 40C.
- **WITHSTAND TEMPERATURE, HUMIDITY** —Meet all JAN-R-11 requirements, including salt water immersion and humidity tests.
- **RESISTANCE AND WATTAGE CLEARLY MARKED**—In addition to color coding, the resistance value and wattage are marked on every unit.
- **TEMPERED LEADS**—Tinned copper leads are differentially tempered to prevent sharp bends.

Be Right with **OHMITE** **RHEOSTATS RESISTORS TAP SWITCHES**

Newest appointees are EXH, GIW, and QUE as ORS, and GWQ, HZE, and FYM as OBS, OO, and OES, respectively. The Bakersfield gang reports through EHN as having two emergency nets in operation, 145.4 Mc. Mondays at 1915 and 29.6 Mc. Thursdays at 2000. JPU reports that Fresno c.d. activity still is in the planning stages. However, Ralph says that S.E.T. activity was very gratifying. RLX is trying out ¼-wave vertical on 3.8-Mc. 'phone at Fresno. QEU, our section SS Contest 'phone winner for the past 5 years, is chief engineer at KMOD in Modesto. WJF and his XYL, FEA, are active from 80 to 10 meters. Gertie became western NCS for the YLRL net when it began 20-meter operation in November. A new call in Tracy is AFS. Activity reports were received this month from every country in the section with the exception of the mountain counties. Thanks a lot, fellows, and keep up the good work as it makes this job a lot easier. SJVN is in full swing on 3525 kc. at 1900 Monday through Friday and has good outlets for your traffic. Check in if you have not already done so when NCS calls QRZ after roll call. Traffic: W6EXH 65, WJF 36, GIW 32, FYM 11, FEA 7.

ROANOKE DIVISION

NORTH CAROLINA — SCM, J. C. Geaslen, W4DLX — CVQ reports from Raleigh that things are beginning to run a little smoother at his Ham's Heaven by the Lake. FRH has another ham in the family, son Jim Franklin, WN4TMJ. RXH, of Draper, says TQT, Gen. Class, 13 years old, is burning up 7-Mc. c.w. RRH, from Morganton, is working so many nets he doesn't have even time to eat. AKC reports the Gastonia boys are completing a nice c.d. set-up at their new club headquarters. From Wilmington a nice letter was received from BBZ, who has added Viking I to the set-up there. NXZ has two things new, an XYL and a QTH. FT has developed TV-eyes from too much looking and not much operating. EC can't get through building at new QTH, it takes too much time from operating. MDA is on 3.8 and 28 Mc. when not at college or projecting at movie house. VW now is employed at WMFD. QQS has FB mobile on a jeep. SVY, at Southport, is active on 28 Mc. Boys, the eastern part of North Carolina is on the up-grade. How about some reports from the western end? During the recent Simulated Emergency week end, two cities, Charlotte and Winston-Salem, reported to the SEC. Very successful public demonstrations were put on in both areas. Boys, you're letting ZG down. You ECs get on the ball and let's have some reports from you. The Thomasville Club put on a fine hamfest at Lexington this month. Those who were not there sure missed a swell time. About thirty from North Carolina were present at the Richmond hamfest. Traffic: W4RRH 66, AKC 60, DLX 12, BBZ 6, CVQ 2.

SOUTH CAROLINA — SCM, T. Hunter Wood, W4ANK — We regret that AZT could not accept renomination as SCM. Thanks for a job well done, Wade. HDR reports that new officers of the Palmetto Amateur Radio Club in Columbia are BZX, pres.; DMX, vice-pres.; HDR, secy. and treas.; OAD and CEL, trustees. The PARC has 75-watt rig at the airport and 16 mm. projector with a movie at every meeting. HMG is handling traffic on 7 Mc. and MAO is on active duty in the Army. OGG is operating K4FBD from Donaldson AFB, Greenville, as NCS on 4RN. SSN is on 3.5 Mc. to provide another South Carolina traffic outlet. DCE reports on the Dupont SC Club, which boasts of 8 members and a club station, THR. FM reports that WN4THH is operating from Greer and WN4TEE from Sumter. WN4TWX and WN4TWW are a husband and wife team on 3.5 Mc. at North Charleston. WN4THZ is on 3.5 Mc. at Easley. DX reports SSG is a new call in Bambers. CHD is in California temporarily. All WNs and others are requested to register their calls, addresses, and activities with the SCM at the end of each month. MSN recently was promoted to captain in the Navy. Congratulations, Mac. Traffic: W4ANK 331, DCE 29, FFH 21, EDQ 16, CPZ 10, OGG 8, FM 5, DX 3.

VIRGINIA — SCM, H. Edgar Lindauer, W4FF — One hundred sixty-six hams attended a highly successful hamfest at Richmond. Included in the gang were League officials, headed by Secretary Budlong who recently returned from the Geneva Radio Conference. Other distinguished visitors were Roanoke Division Director Jacobs and SCM Geaslen, of North Carolina, accompanied by 35 North Carolina hams. Highlighting the hamfest was the initial appearance of the following Novice licensees: TQQ, TFA, TEL, TFX, TNI, TSB, TEB, and TVU. The youngest "squirt," TVU, is Michael Bardon of Yorktown, 9 years old. U.h.f. talks were given by SBA, 3BSV, and 3PYW. 3NL gave another of his interesting demonstrations of intricate precision jobs, this time an "auto call" rig that automatically calls him to the rig when some remote station whistles into a mike the code number necessary to activate the rig. Civil defense and AREC relations were thoroughly discussed by AJA and KWY, using the Norfolk and Hampton Areas to explain the very efficient set-up that has been tried and found acceptable by local officials. LW gave a technical talk on the use of an indoor "loop antenna" developed for transmitting. PXA is doing a swell job in the newly-created post of RM of VSN. Attendance has increased and graduates are reporting on VN. New Class I OO is SZY, formerly 9ERU. ORS ap-

(Continued on page 86)

how to have every buying advantage

If you're doing business with us already, you *know* you get *every* buying advantage at ALLIED RADIO. But if you're a newcomer to Amateur ranks or haven't yet done business with us, we want to tell you short and sweet what you can expect to get from us.

you get value: we save you money on all your station needs, because we sell at the *lowest* market prices—often lower than you can buy elsewhere.

you get everything you need: yes—*everything* from *one* source because we carry the world's largest stocks of Amateur station supplies —*all* the nationally-known dependable lines.

you get it fast: we'll prove it—just mail, wire, or phone your order —and you get it quick from our central location. Big order or small— we give you the same fast, expert service.

you get the best terms: you can't beat our Easy Payment Terms. You get full carrying charge refund on 60 day payment, 50% back on payment in half the required time. There's no red tape, no long delays—we finance the terms ourselves.

you get the best trade-ins: just try us—we mean business—FB for you. Drop us a line—or visit our Ham Shack. We'll go all-out to give you the best trade-in deals in the business.

you get real help: we back up the buying advantages we give you with down-to-earth help. Our Ham staff will do its darnedest to give you the dope you want. You'll profit by the personal kind of attention Amateurs have enjoyed at ALLIED for over 22 years. Try us today.

FREE **AMATEUR RADIO'S LEADING BUYING GUIDE**

You'll find *everything* you need in this latest 212-page ALLIED Catalog—not only *all* the station supplies you want, but the world's largest selection of industrial electronic equipment, special tubes, test instruments, recording and high-fidelity audio equipment, replacement parts—all at lowest, money-saving prices. You'll want to get and use the ALLIED Catalog—your reliable one source Buying Guide.

SEND FOR IT—KEEP IT HANDY

ALLIED RADIO

833 W. JACKSON BLVD., DEPT. 15-A-2, CHICAGO 7, ILL.

pointees are PXA, RYS, KSW, NAD, KX, and SDK. VFN still tops attendance records with a total all-time QNI of 52, a low of 29, and an average of 38. FV is getting very fine support from the 'phone gang. OGX, JAQ, WG, LK, and NV are alternate NCS. MWH and QDX are associated with 4RN and represent an excellent medium of QSP for cross-country tie-ins including MARS. SUN, a nightly QNI on VN and VFN, is a direct MARS tie-in and is part of MARS (K4WAG). SDK is another direct hook-up and is attached to MARS at Pentagon Air Force Headquarters. Traffic destined for overseas must show serial numbers of addressee and APO number, the lack of which makes delivery impossible. Traffic: W4MWH 134, PWX 134, KFC 64, FV 61, QDX 60, FF 59, STM 51, NAD 44, NBA 41, PXA 39, IA 32, OKN 29, NV 27, RYS 24, IYI 19, JAQ 19, LK 12, KSW 8, KX 4.

WEST VIRGINIA — SCM, Donald B. Morris, W8JM — The West Virginia 160-meter gang is organizing a traffic net on that band. If interested contact YPR. YPR lost his high-voltage power supply. WN8HHG has applied for EC appointment. WN8HLI is a new station in Fairmont. AUJ keeps his station active on traffic nets. DFC reports that GGC, YPR, GEP, GCZ, and HXG are all on WVN from Princeton. PZT reports HYS and his XYL, WN8IES, are new stations in Weston. Congrats to IES, the first WN XYL and the second licensed West Virginia XYL. GCZ received his 30-w.p.m. sticker. MCR is doing a bang-up job on the West Virginia 'phone net. BOK is back on 3.8 Mc. after a long absence. OXO also is active again on 3.5-Mc. c.w. Twenty-five MARA members attended the 5th Annual Freeze-out at Cooper's Rock State Forest. New officers of MARA are ESQ, pres.; NTV, vice-pres.; Ken Parks, secy.; and SMV, treas. NCSs on WVN 'phone net are MCR, BFS, and EVR. EZR is recovering from a recent illness and is on 3.5-Mc. c.w. FMU conducted successful E.C. disaster tests in Morgantown and received FB newspaper publicity. Traffic: W8AUJ 397, DFC 41, MCR 25, YPR 20, GCZ 18, PZT 1.

ROCKY MOUNTAIN DIVISION

COLORADO — SCM, M. W. Mitchell, WØIQZ — SEC: KHQ. Asst. SEC: PGX. RMs: LZY and ZJO. AGY is new EC at Nucla. KHQ is reorganizing the Colorado Slow-Speed Net (CSSN) and is looking for an NCS. LZY, who was the mainstay of this net a year ago, now is on the swing shift and unable to handle the deal. A very FB hamfest was held at Greeley, Nov. 4th. Approximately 125 attended from 3 states. It has been definitely decided to make this an annual affair. ZJO has been slowed down considerably with the advent of the deer-hunting season. He bagged two deer and an elk and still made BPL on deliveries! MOM is working with Civil Defense Agency, and handles some traffic with them. PNK has new 813 final and finds he is low in audio. OWP is doing an FB job in Brush, training embryo hams for their tickets. They have enough to start a club. One of his requirements is that each "would-be" ham build his own gear and become a member of ARRL. 5RRL/Ø, in Estes Park, still is trying to make BPL but so far no dice! His XYL is WNØFBW. Yours truly built up a new control panel and tube keyer for the rig. Patch, FL-8 filter, keyer, 100-kc. oscillator, and a.c. for relays, and modulation meter are all in easy reach now. Business is picking up; six cards were received this month! Let's have more! Traffic: WØZJO 322, KHQ 37, MOM 29, W5RLL/Ø 4, WØPNK 4, OWP 3.

UTAH — SCM, Leonard F. Zimmerman, W7SP — The members of the UARC 10-meter mobile net recently were sworn in as special officers of the Utah State Police. These fellows have put in a lot of hard work on an emergency communications network and now are getting much-deserved official recognition. Members of the Utah c.w. net (3700 kc.) met at the home of IS, the net director, recently and they say old "Dixie" sure knows how to feed. Present active members of the net are BED, BSE, FRN, IS, JVA, KCT, KUX, SP, UTM, ZDX, and ZZZ. JVU has mobile on 75 meters but says there is no activity around Salt Lake City on 75 meters. JPN, Official Observer, has been doing some FB work in the F.M.T. MFQ, PVJ, and OOK are busy getting Utah C.A.P. communications going. NUZ and LQE are active in MARS c.w. net and are looking for more members. Traffic: W7BED 24.

WYOMING — SCM, A. D. Gaddis, W7HNI — LKQ, our SEC, reports a gain in the E.C. gang. KFV, our PAM, moved rig into the house. DXV finished the hunting season and is leaving for the high seas. HX called the roll on the c.w. net, while AMU let the Docs pull his appendix. OSH is improving 80-meter signal. AEC is living at home again. MIM. ABO is starting on new transmitter. NKR, ATJ, and PGW renewed certificates. MWS is getting hot on 144 Mc. LLP is back in Sheridan. PKX is working some traffic along with chawin'. ACG put up a new pole. NVI is back in Casper with new Viking but the same old Plymouth. HLA had a good report on OO measurements. JRG has 80-meter transmitter. MIM. Someone says GOH has TVI Imagine that!

(Continued on page 88)

TERMINAL

RADIO CORPORATION

Distributors of Radio & Electronic Equipment

85 CORTLANDT STREET

NEW YORK 7, N. Y. Phone: WOrth 4-3311

SOUTHEASTERN DIVISION

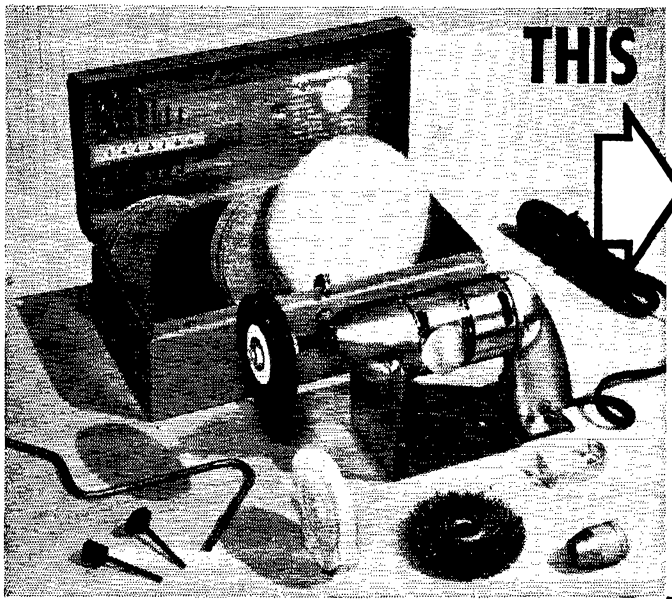
ALABAMA — SCM, Lewis C. Garrett, W4LEN — SEC: ISD. Appointments: OLD as DEC District 3. Endorsements: BA as OPS, OBS, and PAM. AUP finds 160 meters a good band to find old-timers and newcomers alike. BMM is working all bands, 75 through 10, and is thinking about 144 and 420 Mc. EBD has been elected manager of AENR. GXC's son is recuperating from polio. LZX is a welcome voice in AENP from Birmingham. RTI, RRW, and RTP are all Class A from Birmingham. RGQ has organized a radio club at Ramsey High in Birmingham with 25 members. KNW is on the air with a Viking from Birmingham. ROM moved to Ft. Walton, but still is working into AENB. 4KNT now is 5UBR. BCU has a new house with a planned radio room. BCU, PHR, and LEN visited the Birmingham Club. RTI is doing an FB job as president. The Mobile Club paper covers everything from rules, safety, and news to technical discussions and is well worth the subscription price, fellows. Give your full support to your new SCM, fellows. A monthly report with some news will be greatly appreciated. Novice calls: Decatur, WN4TNW; Selma, WN4TZR; Tuscaloosa, WN4TXC, WN4TXK, WN4TXM, and WN4TXN. Traffic: W4KIX 106, HFP 36, LEN 16, ISD 15, SUF 5.

EASTERN FLORIDA — SCM, John W. Hollister, jr., W4FWZ — Watermelons were sent to Jacksonville from Phoenix, Ariz., via American Airlines and National Air Line for a cancer patient. NAL at Jacksonville needed them; the chief operator at Tampa, CQX, put out the message; GTM, at Sarasota, gave it to 5DRJ, an Air Force officer in Texas, who put it into Phoenix, and the melons were on the way. Thanks to BP, at Mt. Dora, for the information. Tiny happened to hear the whole sequence while tuning the low end of the 7-Mc. band at about 7:00 P.M. How much interest is there in keeping the Gator Net going continuously all year? Let me know. There was a nice turnout around the State for the Simulated Emergency Test program, but few reports were sent to the SCM. Jacksonville: DU is as chipper as ever since leaving the hospital. The S.E.T. brought out HWA, FRP, OCN, and OUZ on 75/10 mobile 'phone, with EEZ backing it up at his home station. The two-element beam is popular now. QCJ and DSC have theirs up but CGG is back with 8 this time. PMZ and his XYL, PNA, are off to Clarkesville, Tex. New Port Richey: KJ reminds MARS that 4020 and 4025 kc. at 10 P.M. Sundays is the sked for the new Transcontinental Net. Sarasota: LMT reports the club is in new quarters in Court House. Miami: SAT turned in a nice score in the last CD Contest and also is turning in some nice DX with 30 watts on 7 Mc. Tampa: WN4TEQ reported in ahead of WN4TNR, but to the wrong SCM. He is using a 6L6-807 (like Millen exciter) built by PSH. Receivers are Super-Pro and S-19R. Olin also says that on Nov. 2nd WN4TKL had 12 states toward his WAS. Special note: It's TDK at St. Pete, the XYL of EYI. Tampa: Our FB traffic man, CQX, is on his way to the islands somewhere for NAL. This month Brass-pounders certificates go to CQX and PJU. Traffic: W4CQX 747, PJU 506, KJ 187, PZT 95, LMT 84, RWM 32, FWZ 7, IM 7, IYT 5.

WESTERN FLORIDA — SCM, Edward J. Collins, W4MS/W4RE — SEC: PQW. GQM has finished his 'phone rig. LUF has been on 28 Mc. Congrats to Mrs. PTK, who now is TTM. WN4TKL is our newest Novice. QK is putting the rig in a cabinet. PAA is promoting a private hamfest. AXP is meeting nets. NOX has been handling traffic. NYZ is her technician. BFD has been on 14 Mc. in the wee sma' hours. PQW has rebuilt and is on all bands. SZH is doing an FB job mobile. RZV keeps 28 Mc. hot. NJB, QU, FDL, PLA, BKQ, JPD, and OKB are rather inactive. ODO is working on the Wallman again. SZZ has left our midst. EQZ is dusting off the rig. VR does his usual FB job on 7 Mc. CQF had a visit from lightning. DAO has been heard on 7 Mc. HJA has all mobile gear in the car now. HIZ has been heard on 3.8 Mc. PTK operates 3.8 Mc. while the Mrs., TTM, operates 7 and 28 Mc. Hi. MS is rebuilding the 20-meter beam before it falls down. UC still looks after our parts needs. RDC still is working on v.h.f. gear. LRC is now in Virginia. AOK works 3.8 Mc. AGB is active on 75-meter nets. Traffic: W4MUX 23, GQM 5, NOX 5, MS 3.

GEORGIA — SCM, James P. Born, jr., W4ZD — The November meeting of the Atlanta Radio Club was of great importance to amateur radio operators throughout this section and was attended by hams from all over Georgia. The topic was TVI and Channel 2 and a panel of experts in the radio and TV field were on hand to give their thoughts on this matter. The members of the panel were Mr. W. D. Johnson, engineer in charge, Sixth District FCC; Mr. C. F. Daugherty, chief engineer for WSB AM-FM-TV; Mr. P. G. Walters, W4DAL, field representative for RCA; Mr. R. J. Moore, TV service engineer for Brown Distributing Company and Philco TV; Mr. Lamar Hill, W4BOL, ARRL Southeastern Divisional Director; and Mr. Richard H. Alford, W4BOC, speaking for the amateurs. OCG is a new member of the Camp Gordon Radio Club. K4WAR is building a new rig with a pair of 250THs in the final. PFF is rebuilding. LYG is building a new transmitter for 28, 50, and 144 Mc. EGK won the first prize for the best mobile

(Continued on page 90)



40 PIECE

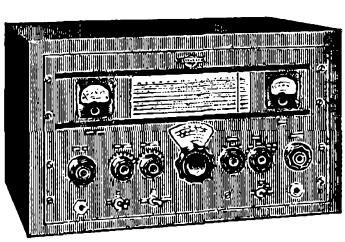
FAMOUS-MAKE DRILL KIT AT A BARGAIN LOW PRICE!

RADIO SHACK SCOOPS THE NATION!

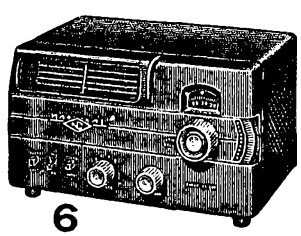
Impossible, but true! A giant 40-piece workshop in its own fitted metal case — by a very famous maker — a 1952 model — for only $14.95. CONTENTS: powerhouse 1/4" electric AC/DC drill with 1/10th h.p. motor geared to 1200 r.p.m. at the key-less 3-jaw chuck without load (700 r.p.m. full load); 7 chrome alloy steel twist drills 1/16" 1/4" by 32nds; back-up disc; 3" grind stone; 5 piece mandrel assembly; paint mixer; 5" lambswool bonnet; 3" wire brush; 14 pieces sand paper; switch clip; 3" cloth buff; drill stand; sandpaper pattern; 2 mounted grinding wheels; auxiliary side handle; metal carrying case with 7-drill index rack. Drill guaranteed 90 days! Phone, write or wire your order TODAY. Ship. wt. 7 lbs.

$14.95

4

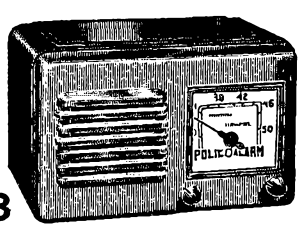


5



6

7

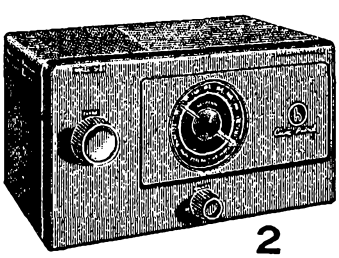


3

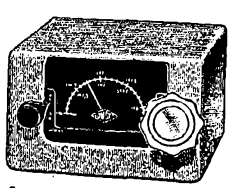
7 / 15,000

SEVEN-15/THOUSANDTHS OF RADIO SHACK'S '52 CATALOG!

1 — GONSET 2-meter converter, *$44.50.* 2 — HALLICRAFTERS S-81 Civic Patrol FM receiver (specify 152-174 or 30-50 mc), *$49.50.* 3 — POLIC-ALARM emergency FM radio (specify 152-162 or 30-50 mc), *$44.05.* 4 — COLLINS 75A-2 receiver, *$420.* 5 — AMPEX model 400 tape recorder, $925. 6 — NATIONAL NC-125 receiver, *$149.50.* 7 — British KT66 hi-fi output tube (interchanges with 6L6), *$3.97.* Units over $48, *15% down, 1 year to pay, no charge if paid within 60 days!* Write for your Radio Shack catalog for 14,993 other great buys!



2



1

RADIO SHACK
CORPORATION
167 Washington St., Boston 8, Mass.

installation at the Kingsport, Tenn., Hamfest. TTT, TGK, WN4TOT, and WN4TKB are new hams in Atlanta. LXE worked 6ESH mobile to mobile on 3.85-Mc. 'phone. 6ESH was near Burlingame, Calif., and LXE near Macon, Ga., at the time of the QSO. NQO has a Panadapter. PDR has a new 40-watt all-band transmitter. EJC is the new SEC for Georgia. All ECs, please send your monthly reports to EJC at 202 North Semmes St., East Point, Ga. KGP is active in DX message-handling. Traffic: K4WAR 1472, W4KGP 115, EJC 86, OSE 54, LYG 48, BOC 30, FVY 24, KXX 21, ZD 20, NS 17, FBH 14, MTS 10.

WEST INDIES — SCM, William Werner, KP4DJ — SEC: ES. AREC registrations were received during October from BQ, BV, BY, CB, CC, CH, CI, CK, CL, DJ, DL, DU, DV, EE, FAA, FB, HG, HM, KD, KE, KZ, LU, MN, MR, MS, and OE. The Simulated Emergency Test, in coöperation with Red Cross and civil defense at Lares, was very successful. CN and DN are new stations on the 3925-kc. net. W4NRW/KP4, a new arrival to KP4, is active on 3925 kc. and 7 Mc. WP4PW is on 3710 kc.; WP4PZ is on 3735 kc.; WP4QA is on 3725 kc. KE, CP, and GP were reappointed as EC for Aguadilla, Guayams, and Arecibo, respectively. OD reports to TCRN nightly at 0515Z. BARC's new officers are NE pres.; OU, vice-pres.; IF, secy.-treas. ZK is a new member of 3559-kc. AREC net. KP4ID, NCS on 3925 kc., removed from the R.C. building and is awaiting new location. HZ flew a helicopter with radio equipment for the SET at Lares. Traffic: KP4CL 72, HZ 55, ES 41, KV4AA 17, KP4OD 16, LQ 12, DJ 9, GP 6, HG 5, DV 3, CP 2, AK 1, AR 1, BQ 1, BV 1, CC 1, CI 1, CK 1, DL 1, DU 1, EG 1, FJ 1, JA 1, KE 1, LU 1.

CANAL ZONE — SCM, Everett R. Kimmel, KZ5AW — Pacific EC RM, and Route Manager CG have formed a new slow-speed practice net, which it is hoped will develop into a slow-speed traffic net. Net members will have for reference a reprint of a simplified net procedure written by the late Arnold Pincus, KZ5PA. GQ, 13-year-old harmonic of AC and PC, qualified for her ticket and became the first YL operator and youngest KZ5. When the local high school team played football in Miami FL, JB, PC, and RM teamed up with W4CAT to bring flash news of the game to the Zone. NM handles traffic via MARS from the Far East on 27,994 kc. WA erected a double-folded dipole beam for 14 Mc. WJ, QRT a year, is getting up a ten-over-twenty. BT is Stateside on leave. BO returned from the U.S.A.

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, Samuel A. Greenlee, W6ESR — SEC: KSX. PAM: PIB. RMs: DDE, FYW, LDR. Looks like a season of terrific activity coming up. SCN (3650 kc. at 8 P.M. PST) is carrying a heavy traffic load, according to LDR, RM. The El Capitan Net, our restricted-speed traffic net on 3725 kc. (Mon. through Fri. at 7:30 P.M. PST) is off to a promising start with Novices, old-timers, and 'phone men checking in, per FYW, RM. In this connection, we ask the coöperation of the fellows to refrain from "parking" on the 'phone and c.w. traffic net frequencies. In most cases it is unintentional, but there are times when we are forced to conclude that the QRM is NOT by accident. A lot of this traffic is vital, why not let it go through? (It might be mentioned that the FCC takes a dim view of wilful interference.) BPL this month was made by KYV, CE, GYH, GEB, and QIW. VKY reports from Hong Kong and says he paid a call on KM6AX at Midway, got on the key and darned near missed his boat. Let's have more reports from the boys on the outer edges of the section. KYV is awaiting movie offers after his picture in Nov. *QST*; his new high-speed tape equipment is in operation (ran tests with K4USA at 100 and 170 w.p.m.). K6NRI is on all bands. IOX is on 7 and 3.5 Mc. and will be back in traffic after some de-TVIing. AM will be assisted by KPC and UQQ on 'phone in the forthcoming DX Contest. There is talk of forming a 2-meter section traffic net. How many are interested? MJA is beginning to handle JA traffic. DDE will have a second station at his place of business and has applied for an extra call. BLY reports: The Whittier Club is organizing 144-Mc. mobile to work with its 75- and 10-meter emergency nets and that UYU is 144-Mc. mobile. KEI reports the following members of the Golden State Net (3965 kc. and 144 Mc.) worked with the Arcadia Red Cross in the recent S.E.T.: DMK, OLC, SCQ, KNI, MRO, DXE, JAU, and K6NBU. FYW reports new stations in Paso Robles are BIY, BJB, BOZ, and WN6ORI (XYL operator). CK (OO) suggests that Novice operators beware of too-close coupling to antenna. QIW reports handling Ventura County Fair traffic. There are 10 mobiles in the new Ventura c.d. net on 2945 kc. Wednesday at 7 P.M. GYH eliminated those birdies in his rig by installing new tubes. Army, K6EA, reports fishing FB in WØ-Land. Contact him via Minnesota NTS. MU has new HRO-50T. EHB is in W5-Land on shh sihh Government business but his XYL, EHA, keeps the home station active. CE sure got his skeds lined up pronto! Inglewood RC has new TVI Committee, COZ reports: Tri-County ARA is compiling a directory of local hams; JMQ now is at Crestline; SW is rebuilding mobile modulator; CAP now is VFO and HYS is /6 at Cal. Poly. LYG skeds training camps throughout the U. S. YLRL news (per WSV): Orchids to UHA for the FB job she is doing on traffic

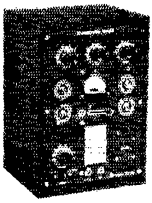
(*Continued on page 92*)

HARVEY — FOR SAVINGS — SERVICE SATISFACTION!

HARVEY-WELLS XMTRS

...have everything from 2 to 80 meters, for fixed or mobile operation. H-W is the transmitter you will use for years. Best for Hams, Business Organizations, Government Departments, Emergency Services and Civilian Defense.

2 BANDMASTER MODELS



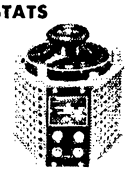
Senior $111.50
DeLuxe $137.50

BANDMASTER POWER SUPPLIES

APS-50 for 110 A.C., $39.50

DPS-50 for 6 or 12 V.
6V .....$87.50, 12V $54.50

SUPERIOR POWERSTATS



Smooth, efficient voltage control, 0-135 volts output from 115 volt AC line. Models also for 230 volt input. Write for free literature. Models for table and panel mounting.

Type 20, 3 amp.....$12.50
116, 7.5 amps, table mtg..... 23.00
116U, 7.5 amps, panel mtg... 18.00
1126, 15 amps..... 46.00
1156, 45 amps.....118.00

TERADO 60-Cycle DC to AC Converter

110v AC in your car. Just plug into cigar lighter or battery. Small enough to hold in your hand. TERADO Senior Model . . . furnishes 110v AC-60 cycles at 40 to 45 watts from 6V car battery. Operates small portable receivers, transmitters, etc. .....$10.99 net

TERADO Junior Model . . . ideal for use with Selenium rectifier voltage doubler or tripler. Will supply 30 watts at 110 volts AC .....$8.24 net

VHF Master Mobile Antenna

for Roof Top Mount.

#113 .....$4.95

Coaxial VHF Antenna

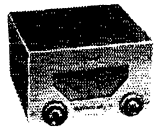
#114 .....$9.95

SPECIAL HARVEY "PACKAGE"

for CD, CAP and emergency VHF communications.

Consists of xmtr., rcvr., (Sonar SR-9 and MB-26) power supply for 6 or 12 volt DC operation; crystal; antenna; microphone; etc . . . everything you need, ready for hook-up and operation. Complete $199.50

VISIT HARVEY'S AUDIO-TORIUM — Come in and visit our new Sound Department... all these items and many more on working display at all times.



IN STOCK FOR IMMEDIATE DELIVERY

New Slug-Tuned

MALLARD MOBILE CONVERTER

for 10, —20 or 75 meters

Attractive! Sturdy! Efficient!

A sensitive converter that's as stable as a rock! Has plenty of band spread with accurate calibration on a large, well-illuminated dial.

Features slug-tuned coil design plus other new advancements.

Installation is a breeze! Only three connections . . . all plug-in!

The MALLARD 10 / 20 / 75 — **$39.95** (Amateur Net)

NEW MALLARD HI-Q BASE LOADING COILS

for All 20 and 75 Meter Whips

Easy to install and adjust, these coils are sturdily built to withstand the rough usage of mobile operation and are completely weather-proofed to maintain their high Q. Designed with 3/8-24 threads for all standard mounts and whips.

MALLARD HI-Q 20 COIL

$8.95

MALLARD HI-Q 75 COIL

$7.95

New HAMMARLUND SP 600 On Display

In Stock For Immediate Delivery **$985** net

Make HARVEY your Headquarters

for CD Emergency and CAP Communications Equipment, LF and VHF

. . . whatever your requirements may be . . . from a 1½ volt cell to a 50,000 watt gas engine driven generator. REMEMBER ...it will pay you well to ask HARVEY first.

HARVEY delivers these famous Emergency Receivers Immediately!

High quality emergency band FM receivers for application. ANYWHERE you are you can HEAR police calls, fire alarms, bus dispatchers, railroad communication, ships at sea, etc.

POLICE ALARM

Mobile FM Receiver 152

Model M-101 covers 152 mc to 162 mc Band $72.50
Model M-51 covers 30 to 50 mc's.

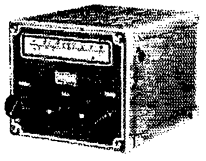
MONITORADIO

For Home or Fixed Location

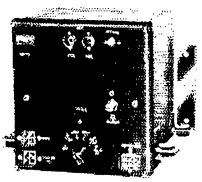
Model PR-31 for 30 to 50 mc band . . . $44.95 complete.
Model PR-8 for 152 to 162 mc band . . . $44.95, complete with 14" whip indoor antenna.

Dependable Performance from "Peanut Size" Mobile Xmtr. and Rcvr. For CD, CAP or emergency activity.

SONAR Model SR-9 Rcvr.



It's a 9-tube superhet receiver with built-in automatic noise limiter, voltage regulated oscillator, slide rule dial. Sensitivity better than .5 microvolt. Size 4-9/16" x 5-3/16" x 5-11/16".



SONAR Model MB-26 Xmtr.

6 Watts output. 6 Standard tubes. Built-in antenna relay system. Power and antenna co-ax connectors. Size 6½" x 7" x 5⅞".

SR-9 .....$72.45
MB-26 .....$72.45
A.C. POWER SUPPLY $30.00

Both Receiver and Transmitter are available in choice of 2, 6, 10 meters and commercial frequencies, AM and FM; also 108-132 mc. for aircraft.

Telephone hrc LUxemburg 2-1500

HARVEY RADIO COMPANY, INC.

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

NOTE: In view of the rapidly changing price situation in both complete units and components we wish to emphasize that all prices are subject to change without notice, and are Net, F.O.B., N.Y.C.

for overseas GIs; at the 5th anniversary of YLRC in October charter members present were UXF, WQK, VWR, WRT, NZP, UHA, and WSV. Y8K is erecting a 130-ft. vertical. Your SCM had a fine time at Long Beach RC meeting (even if he did have to wash dishes. Hi!). Thanks to EAJ, EPL, FZO, KQS, MVF, PMS, Y8K, and WNs NJU and NRK for reporting. Traffic: W6KYV 2610, CE 1557, GYH 714, GEB 703, CMN 263, QIW 207, HLZ 80, BHG 77, CK 58, DDE 49, FMG 38, VG 28, LYG 26, FYW 25, BLY 24, PMS 22, ESR 18, MJA 16, AM 8, COZ 7, KEI 6, OHX 6, K6NRI 4, WN6NIE 3.

ARIZONA — SCM, Jim Kennedy, W7MID — New Advanced Class licensees are JGX, LLO, NSJ, LAD, NRF, OQR, and JGZ. General Class licensee is PZF. New Novices are WN7QDJ, Gettings; QCT, Blake; QCR, Peasly; QCN, Packard; and PSH, Mel, in Ajo. A new call on 3.8 Mc. is 5NEN/7, Charlie, from Oklahoma. PFM's 304TLs put quite a dent in the band on 3.8 Mc. OQR and NRF are handling traffic at Davis-Monthan on a 7-day-week basis, as shown by the traffic total. There are 9 Novices at D-M at present, 7 of them on the air. OZM has a new ranch. LVR spends his time working WNs. NVW and 5RDB/7 have tripped the auto call in Toledo, Ohio, on 29.2 Mc. and worked into the City. HUV has promised to raise his modulation from 2 per cent to 5 per cent. PLM is a new mobile on 28 Mc. in Tucson, and OEN is back in that city. LVR, LLO, ØDBO, PLM, OTR, and NYK have all been issued Emergency Mobile Unit cards after a test. NYT has two converters in his Olds 88. OQR has finished his new shack. MDK is back on after a long illness. OAO has an FB new crystal converter. Traffic: K7FAG 1291, K7NRZ 161, W7PKU 64, PFM 31, LVR 17.

SAN DIEGO — SCM, Mrs. Ellen White, W6YYM — Asst. SCMs: Shelley E. Trotter, 6BAM; Richard E. Huddleston, 6DLN; Thomas H. Wells, 6EWU. SEC: NBJ. RM: IZG. EC: DEY. After a long period of tremendous effort with the San Diego AREC, VJQ has stepped down as EC. All the amateurs in the section join in hearty thanks to Johnny for his outstanding job. Twenty-two members of the OCARC participated in the October S.E.T. New YL Novice in Orange County is WN6PJU, XYL of ZE. ODB's YL, Carla Norris, is expecting her Novice call momentarily. EEK's XYL is working on the code. WN6DVJ, of San Diego, is plugging away on 3.5 Mc. Heavy October traffic brings BPL certificates to ELQ and BAM. BSD now maintains daily schedules with JA9AK on 28 Mc. New officers of the Coronado Radio Club are ZJO, pres.; JCE, vice-pres.; MBC, rec. secy.; JLN, corr. secy.; Peggy Patrick, treas.; and MLW, program chairman. New ORS appointees are KIO and BSD, club station of the Troop Training Unit, NAB, USMC in Coronado. Soledad's pot luck dinner meeting was a big laugh-filled success in November. The local YLRL group invites any YL or XYL interested in amateur radio to attend a meeting the third Wednesday of any month in the AREC Room, Balboa Park. Very fine results in the September ARRL Frequency Measuring Test were attained by both EZL, of Garden Grove, and NCP, of La Habra. Reports have it that ELQ's new "egg-beater" works and looks good. NIC is the first of the Orange County Novices to get General Class ticket. Traffic: W6BAM 815, ELQ 644, BSD 393, IZG 159, GTC 7, CNQ 1.

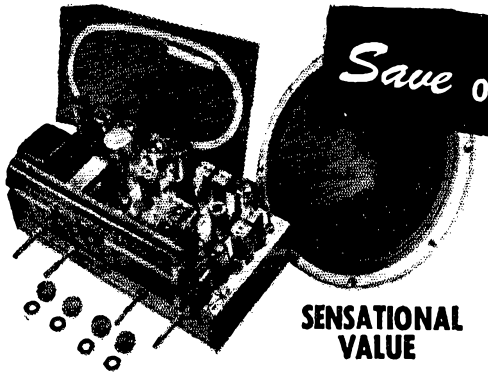
WEST GULF DIVISION

NORTHERN TEXAS — SCM, William A. Green, W5BKH — Asst. SCM, Joe G. Buch, 5CDU. SEC: JQD. RMs: LSN and QHI. PAM: IWQ. QHI has been appointed as RM. Frank is carrying much of the out-of-section liaison, relieving GZU of this duty. Forest has done a fine job. JQD has made distribution of a section map to all ECs, which should prove to be a splendid calling card in making official contacts. PXI reports a very successful S.E.T. for Lubbock. The Blue Ridge 160-meter Net still is fighting a good battle for FCC permission for night-time operation on that band. The Fort Worth mobile AREC group has worked out an auto alarm system. The Lamesa and Big Spring Clubs are staging a joint West Texas ham feed featuring the AREC. The Big Spring ARC is featuring code practice for all local aspirants. New officers of this Club are AW, ROH, and HCB as president, vice-president, and secretary, respectively. The Caravan Club is working closely with LEZ, the EC for Dallas. Pat Parks, TTU, will remember Oct. 16th as the day that she staged an impromptu hamfest, with FLJ, FQT, NOW, OLL, RNM, RJI, and LOS helping. The October meeting of the ETARC was held at Greggton. This Club has sponsored the *E. T. Triple Check Directory*, a fine publication. LGY makes the YLRL net each week. CPW has the best clamp-tube modulation yet heard. New QTH of QDF is Edwards AFB, Calif. LDN has new portable. Traffic: W5KRZ 418, QHI 182, ARK 167, SQW 77, IWQ 57, BKH 52, EBW 41, ROH 19, RHP 16, LGY 15, LEZ 14, HBD 12.

OKLAHOMA — SCM, Frank E. Fisher, W5AHT/AST — SEC: AGM. RM: OQD. PAMs: GZK and ATJ. FOG resigned as RM because of the pressure of other duties. OQD took on the RM job and is getting well under way in this new traffic season. AAJ is about to complete his new shack and will be back on OLZ shortly. 3HJV, who is OLZ's most Eastern member, lost his plate transformer and cut

(*Continued on page 94*)

Save ON THESE NEWARK values

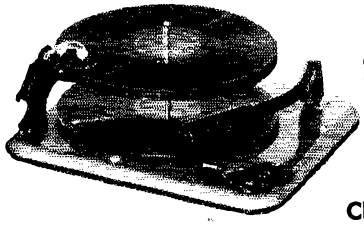


SENSATIONAL VALUE

NEWARK'S FM-AM RECEIVER

Hi-fi FM-AM chassis featuring push-pull audio output. FM circuit is drift-compensated. Has full range bass-treble tone control and phono jack with built-in preamp for magnetic pickups. Chassis is complete with 12" PM speaker, built-in AM and FM antennas, 12 tubes (including rectifier), all hardware, and escutcheon. Size, 13½x9x9". Wt., 20 lbs.

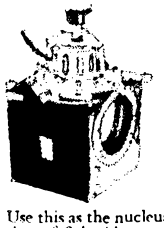
96C034. SPECIAL PRICE.....$69.50



ONLY $19.95 G. I. 3-SPEED CHANGER

Save on this lucky purchase that enables us to offer these fine, new record changers at less than manufacturer's cost! Made by General Instrument, these units automatically play all 3 sizes of records — 7", 10", and 12". Motor provides 3 constant speeds — 33⅓, 45 and 78 rpm. Tone arm uses crystal cartridge with single .002" needle to play both standard and microgroove records. Size: 12¾" wide x 12" deep x 5 7/16" high. Requires 4⅛" above and 3½" below. Wt., 12 lbs.

81G000. SPECIAL PRICE.....$19.95



"NORELCO" BASIC TV PROJECTION SYSTEM AT NEW LOW PRICE

Use this as the nucleus of your own projection TV system. Consists of Schmidt-type optical system and alignment assembly. Contains 3 optical elements: 6" spherical mirror with 200 mm radius curvature, aspherical corrector lens 4½" in dia., and plane mirror to "fold" the light beam. All factory pre-adjusted. Provide 8.6 linear magnification and numerical aperture of 10.62. Housed in black crackle finish case, 8½ x 8½ x 9". Overall size, 13½ x 8½ x 8½". Shpg. wt., 24 lbs.

81G500 SPECIAL PRICE.....$6.95

NEW LOW PRICE! · GE CAPACITORS

While they last, Newark is offering these top-quality Pyranol-filled transmitting capacitors at less than manufacturer's cost! Conservatively rated at 1 mfd, 5000 volts. Porcelain insulators. Hermetically sealed in metal case. 3¾x4¼x4¼". Complete with mounting brackets. All brand new units. Shpg. wt., 7 lbs.

54G004. SPECIAL PRICE.....$4.95

HI-FI OUTPUT TRANSFORMERS

Save on these 50-watt output transformers — they're terrific values at the sensational low price of $2.45! Match push-pull parallel or push-pull 6L6, 6V6, 807, and other tubes to 4, 8, 16 ohm voice coil; also to 250 ohm line. Range, 30 to 50,000 cps. For use in high-powered PA amplifiers. 4000 ohms primary, P to P. Case, 4⅛ x 3⅞" dia. Shpg. wt., 7 lbs.

54G101. Special Price.....$2.45

Power Transformer. Pri., 110 or 220 volts AC. Has two CT secondaries: 140 volts at 50 ma for bias, and 2500 volts at 350 ma. Size, 6⅛ x 7½ x 8⅛". Wt., 36 lbs.

54G104. SPECIAL PRICE.....$8.95

Filter Choke. 6.5 hy @ 230 ma. 3000 volts insulation. Size, 5 x 7½". Shpg. wt., 23 lbs.

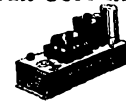
54G102. SPECIAL PRICE.....$2.95

Filter Choke. 4.2 hy @ 300 ma. 78 ohms. 2500 volts insulation. Size, 4½ x 3⅛". Wt., 9 lbs.

54G103. SPECIAL PRICE.....$2.49

RCA WIRED POWER SUPPLIES

A



B

Fig. A. For 110 volts, 60 cycles. Delivers 250 V @ 50 ma, 100 V @ 15 ma, 6.3 V @ 2.5 amps and —24 V bias. Hum level 94 db below 250 V and 57 db below 100 V. Chassis, 4¾x8x2" Less 5Y3 rect. 8 lbs.

54G400. .....6.95

Fig. B. Output: 250-300 V @ 2-8 ma, or 280-320 V @ 8-16 ma. Filament: 6.0-6.3 V, adjustable @ 1.5 A. Hum level 90 db below 300 V @ 10 ma. Size, 3½ x 10¼ x 6". Less 80 rectifier. Wt., 6 lbs.

54G401. .....4.95

Send for NEWARK'S 160-PAGE CATALOG • No. 51

The New Electronics Reference Book . . . Offering a Wide Selection of Electronics Equipment and Supplies for Amateurs and Industrial Users.

► FREE ◄

NEWARK ELECTRIC COMPANY

323 W. MADISON ST. • CHICAGO 6, ILLINOIS

power to 450 watts. This, together with a move to a new home and a new job, makes Lee's net activity considerably curtailed. The Enid ARC held its annual election and now has the following officers: KFN, pres.; NGE, vice-pres.; REC, secy.-treas.; and Howard Mansfield, asst. secy. The Northeast Texas-Oklahoma Traffic Net reports 86 different stations handling traffic during October. OQT now is NCS on Monday, with GVV as alternate. OZE is alternate NCS for HBD on Thursday, and OFG is ANCS for OQD on Saturday. This net is doing a fine job of moving traffic on 75-meter 'phone and has liaison with OLZ and RN5. TKC has passed General Class examination. NMY is taking on the duties of Asst. EC for Oklahoma County AREC. This group has held two Hidden Transmitter Hunts this month and looks on the hunts as a regular feature. MQI now is Advanced Class and gives 3.9-Mc. 'phone a whirl once in a while. Mac now is acting as relay to RN5 from OLZ. Traffic: W5GZK 427, MRK 336, OQD 150, AHT 119, FOM 78, PCQ 76, FOG 52, MQI 49, MFX 38, JHA 31, EHC 2.

SOUTHERN TEXAS — SCM, Dr. Charles Fermaglich, W5FJF — Zone 2 STEN had a hamfest at San Jacinto Battle Ground. HSX was chairman, PTV hid the transmitter for the hunt, and AHW was in charge of the refreshments. NQN set up a portable transmitter. Among those present were OGG, GLD, WN5TSA, DDJ, NNY, PKY, FNH, CTA, FQQ, MIC, JN, HRO, MK, CWS, PTV, IBX, GLS, 8ENT, HPJ, 8KDD, FGR, CCT, OFT, NQN, EKP, APP, KFY, FJF, NRS, MJN, BHO, KWA, EEX, LOF, ON, IZB, OUQ, BCU, and AFE. IUY, assisted by EEX, found the transmitter. Hats off to ON, a "young" old-timer. WN5TPP (son of KFY) is doing FB on 3.5 and 144 Mc. FJF's XYL, who assists him in his dental office, had a nice round table with MSN's XYL and NQN's XYL, who also are dental assistants. PKY is working 3.8- and 28-Mc. mobile. HRO has a swell new mobile VFO. GLD is trying his hand with a new mobile VFO. KWA has a home-brewed 813 on 3.8 and 28 Mc. MJN is about to lick the TVI. SWL N. G. Morris, from Austin, was at the STEN get-together and took a lot of pictures. PTR is back with us again after becoming a grandmother. She recently received a Public Service certificate, made A-1 Operator Club, was selected by the 4th Army to organize a YL MARS 'phone net on 5500 kc., and is secretary of the Post Exchange Traffic Net which meets Mon. through Fri. on 14,255 kc. RAL is new secretary of SARC. KTL has a new 20-meter beam and is back on 20. PGE is modernizing his ham shack and has a new 75A-2. GLP has 600 watts on 14 Mc. and is clamp-tube modulating a pair of 813s. RMP is building a new 20-meter super beam. WN5TFW did very nicely in the recent ARRL Frequency Measuring Test. WN5TWB is one of our new additions from Huntsville. ACL is on every spare hour. NPX, OJU, and NHJ took part in S.E.T. operation. NPX made WAC. Hams in Alice are EIR, EIV, FYE, IQQ, NHJ, NPX, and OJU. K5WAZ is NG Club station on 3.8 Mc. AQE is new EC for Kermit and reports the local club will teach code and theory to anyone interested. IPT is busy as NCS of MARS c.w. net but was able to get KG6FAA on 7 Mc. QCE is active on 28 Mc. SAN has Advanced Class ticket. TARC had a very successful transmitter hunt Oct. 28th with 16 members taking part. A new net, the Houston Emergency Net, meets Wed. 8 P.M. on 29,100 kc. SDA is Net Control; NHB alternate Net Control. Members are RBQ, RPW, RWS, SJK, STK, OXI, QJS, RCT, SCY, IRP, and TOT. NHB is looking for 110-v. a.c. generator to put on his gas-engine for emergency power. QFA is active on STTN and STEN. MN is active on H&B Net. FXN is doing lots of v.h.f. work and reports one opening on 50 Mc. RFG received Old Timers certificate and new 75A-2. CPG is very active on 3.8 Mc. in the STTN. New ORS are IZB, JRV, KWX, QEY, and QJD. Net Controls in STTN are QDX, QEM, PBG, PTV, QFA, QJD, and QGU. PTV reports good DX on TV but the 50-Mc. boys are asleep. KUC is doing an FB job getting out a bulletin for the West Gulf Division DX Club. All you DX hounds should drop KUC a line on what your DX experiences are. The next time you are down on the border look up NET, his family is full of hams. Traffic: W5PTV 531, MN 447, QFA 105, PTR 79, QDX 62, RIH 60, QEM 37, KWX 36, IZB 24, JRV 23, PY 13, QEY 13, CVQ 6, NPX 6, AQE 4, FXN 2.

NEW MEXICO — SCM, Robert W. Freyman, W5NXE — The c.w. net meets Monday through Friday at 7:00 P.M. on 3705 kc. with NKG as NCS. The 'phone net meets Tuesday and Thursday at 6:00 P.M. on 3838 kc. and Sunday at 7:30 A.M. BIW has moved into new hacienda and now is restringing antennas. ZU has been reappointed MARS director. An ORS transferred to Albuquerque is 5AKR, formerly 3AKR. PIZ has new 100-watt all-band 'phone/c.w. rig on the 75-meter 'phone net. OMR is new EC for Los Alamos. New officers of the Los Alamos Club are MYQ, pres.; NJR, act. mgr.; RMH, secy. TOU, new General Class licensee at L.A., has 829B all-band VFO rig going on 'phone and c.w. and a rig on 420 Mc.! DAH is the proud pappy of No. 1 jr. operator. UVA is back from a successful mobile 20 trip to the West Coast. MSG and NTM made 22.7 and 24.1 p.p.m. on Sept. Frequency Measuring Test. KWR, KWP, NFU, and KCW are active on 2 meters in Santa Fe. Traffic: W5DAD 278, NKG 255, ZU 136, IGO 60, OIA 42,

(*Continued on page 96*)

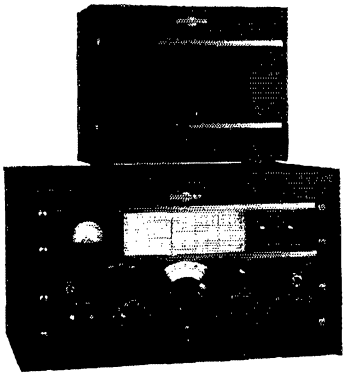
PRICES Slashed

SAVE UP TO 50% during GIGANTIC CLEARANCE SALE of USED TEST and COMMUNICATION EQUIPMENT

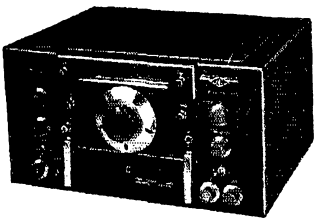
OUR $50,000 STOCK OF RECONDITIONED, "GOOD-AS-NEW" EQUIPMENT MUST GO AT A RECORD-BREAKING SACRIFICE TO MAKE ROOM FOR NEW MERCHANDISE!

Only the popularity of our "Surprise" Trade-In Allowance policy enables us to offer these wanted, late-model units at unheard-of low prices.

All equipment thoroughly checked and guaranteed to be in normal operating condition when shipped. While the following is only a partial list of our huge inventory (available at the time this publication goes to press) bargains like these simply can't last! So act now and avoid disappointment. Wire, write, phone or use the handy coupon today! When ordering, indicate first, second and third choice. All merchandise subject to prior sale.



Collins 75A1 receiver and speaker, $275.00



National HRO-50 Receiver with 4 coils, less speaker..... **$289.50**

Used Communication Equipment

Hallicrafters HT18, VFO.....	**$89.50**
Hallicrafters S38B Receiver.....	**42.50**
Hallicrafters SX42 Receiver, less speaker	**225.00**
Hallicrafters SX43 Receiver, less speaker	**134.50**
Hallicrafters SX71 Receiver, less speaker	**159.50**
National HRO5TA1 with power supply, speaker and 4 coils...	**175.00**
National NC183 Receiver and speaker..	**209.50**
RME HF10-20 Converter.....	**59.00**
Sonar XE10 FM Exciter.....	**14.95**

Used Test Equipment

Precision EV10 VTVM	**$ 49.50**
RCA Rider Chanalyst.	**89.50**
Hickok 305, 3" Oscilloscope.....	**89.50**
Hickok 505, 5" Oscilloscope.....	**139.50**
RCA 155, 3" Oscilloscope.....	**47.50**

Complete list of used test and communication equipment bargains. Thoroughly checked and tested. Many of them are late model units. All are offered at sacrifice prices. Send for your free list today.

All prices F. O. B. St. Louis

Phone: **CHestnut 1125**

WALTER ASHE RADIO CO. Q-52-1
1125 Pine Street, St. Louis 1, Mo.

☐ O. K. Walter, *Rush "Surprise"* Trade-in offer on my

_____
(describe used equipment)

for_____
(show make and model No. of new equipment desired)

☐ Rush Free Copy of your new 164-page Catalog.

*Name*_____

*Address*_____

*City*_____ *Zone*_____ *State*_____

FREE!

Walter Ashe RADIO CO.
1125 PINE ST. • ST. LOUIS 1, MO.

MOX 37, LEF 31, FRP 26, FVY 21, SBU 18, RNT 4, RTS 4, QKJ 3, RMH 3, ZM 3, MYM 2, MYA 1, NXE 1, RCJ 1.

CANADA

MARITIME DIVISION

MARITIME — SCM, A. M. Crowell, VE1DQ — SEC: FQ. EC: EK. RM: OM. While on vacation FQ carried out his famous QSL "service to your door." 6HM recently visited the Halifax gang on his way home from a visit to the U.S.A. Several of the local gang QSOed 3CJ/3 on 14-Mc. 'phone while he was on a hunting trip. EY, the MTN manager, asks all c.w. boys to come on 3715 kc. Mon., Wed., and Fri. nights at 8 o'clock and give this truly representative Maritime c.w. net a boost. PT is getting ready to erect his new 14-Mc. beam atop his new 56-ft. steel tower. WL appeared on 14 Mc. with some nice n.f.m. QZ, one of our pioneer v.h.f. men, also has been heard on the 14-Mc. 'phone band giving his Spanish a workout. DB is of the opinion a little key-click filtering would help a couple of local c.w. sigs. A few notes from the FRAC follow: PF has joined the 3.8-Mc. sewing circle. XYL ABT now is active on 7 and 14 Mc. VJ has a mobile rig going again. BI has the 829 rig going and is busy with the 28-Mc. rig. GU has a four-band antenna. LX has clamp-tube modulation on a TA-12 rig. CM moved to new QTH. AM is settled in new QTH. RF has been hunting in the woods for a stacked array(!). HB and AAV have been testing out the rig for Dune, a new ham. WB is dreaming up a new antenna design. Traffic: VE1FQ 143, OM 64, AAK 36, MK 35, YV 21, ABJ 16, EY 16, HT 16, AL 15, KG 9, XH 9, ZO 9, ABA 7, TO 7, XA 6, DB 5, FR 4.

ONTARIO DIVISION

ONTARIO — SCM, G. Eric Farquhar, VE3IA — Recent appointments and endorsements: As PAM, DGZ. As OPS, KM. As EC, TO. As ORS, VD. Hamilton ARC officers for the coming term are KM, hon. pres.; DGZ, pres.; XZ vice-pres.; WE, secy.; VJ, treas. AVS has RCC certificate and 15-w.p.m. sticker. SG visited W2RSR. BTQ, secy.-treas. of the Ontario 'Phone Club, gave a very interesting talk on "Mobile Communication" to a large gathering of the Quinte Radio Club. Congrats to AVK and KM on a nice piece of mobile emergency work. Through their efforts police were contacted and the location of an auto accident given, resulting in a squad car arriving at the scene within three minutes of the original call. BIK conducts code classes from newly-decorated shack, dubbed the "Blue Room." BBV sports 45-footer and beam. BGT is heard on 28 Mc. and is active on 2-meter net. AJA, with mobile, recently snagged a ZS from signal hill. QU has worked a total of 77 countries on 7 Mc. DLO, DND, and AEI are getting out well on mobiles. BKR, with beam, is rearranging the shack. The Ontario section net, OSN, 3535 kc., operates daily and solicits your traffic. The Ontario 40-meter net, QON, on 7267 kc. at 1930 daily, welcomes all comers. The recently-formed transCanada net, known as the Maple Leaf Net, operates daily at 2100 EST on 7290 kc. VE4HG, manager of MLN, invites your participation. Two old-timers, HP and SG, are heard on OSN. DGA is back on with a reconstructed rig. DH, on tour of duty in England, browses around museums and recently came across exhibits of Marconi, Clark Maxwell, Fleming, and Baird, pioneers of wireless. WY visited W9RCB and JTX while on a trip to Chicago and Benton Harbor. IL, Bill Choat, guest speaker at Burlington Chamber of Commerce "Civil Defense Night," spoke on the part communications will play in civil defense work and particularly the amateur radio operator. During the evening a demonstration of how the AREC works was evidenced by his contacting from the banquet hall several mobile units and also the entire network of the Ontario 'Phone Club. Mobiles in the demonstration included BNQ, DGZ, DHQ, and JU. By means of fixed portable and mobile units at Toronto Island, Scarboro, Barrie, and Kitchener, radio amateurs helped give relay check point service to Ontario Airplane Racing Association during the two-hundred-mile race on Oct. 27th. The following stations participated: AD, AED, AMD, BTZ, BYZ, CY, DL, DDT, DHG, EAM, FA, ID, IL, IZ, and RU. Traffic: (Oct.) VE3ATR 286, IA 210, BUR 136, TX 112, WY 105, DGZ 101, EAM 67, ANO 61, AYW 55, DU 50, YJ 44, GI 27, AZH 24, OJ 23, BJV 20, DGA 19, EAU 8, SG 7, AVS 3. (Aug.) VE3TX 109, BNQ 24.

QUEBEC DIVISION

QUEBEC — SCM, Gordon A. Lynn, VE2GL — AHL has a new rig on the air with VFO and 813 in final with n.f.m. New officers of Club Radio Amateur de Hull are VE3GP, pres.; ex-VE8AZ, treas.; VE2IZ, secy. AJR is on the air either from home with a 4-125A or from his cottage with a TBS-50. TT has a 20-watt rig in the car. ADW has 150 watts n.f.m. on 75 meters and 25 watts a.m. on 10 meters. IZ runs 300 watts to p.p. 35Ts on 75-meter 'phone and 450 watts on the same tubes on 20-meter 'phone. BB is sending code practice 6:30 to 6:45 P.M. Monday to Friday on 3570 kc. CD has rig on 75-meter 'phone in his car.

(Continued on page 98)

Ham's Paradise!

OLDTIMER OR NOVICE

ONE OF AMERICA'S GREAT RADIO STORES

National

NC EST. 1914

NATIONAL COMPANY, Inc.

SW-54

The amazing "Mighty Midget" Broadcast and Shortwave Receiver. (540 kcs. to 30 mcs.) 11" x 7" x 7". Made by the makers of radio equipment for the famous Kon-Tiki Expedition.

★★★

A HIGH PRECISION VTVM KIT BY EICO

TOPS ON ANY WORK BENCH!

Versatility plus! 15 different ranges. Resistance ranges from .2 ohms to 1000 megohms in 5 steps! Exceptionally accurate. Big 4½" fused meter. Dozens of features too numerous to mention. Sum it up in one word, TERRIFIC!

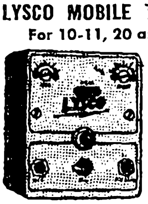
EICO VTVM Kit No. 221K . $25.95
EICO VTVM, wired and tested $49.95

Write for Free EICO Catalogue

★★★★★★★★★★★★★★★★★★

LYSCO MOBILE TRANSMITTERS

For 10-11, 20 and 75 Meters



Compact — 4" x 4½" x 6" • 25 Watts on Peaks • Clamp tube A.M. modulation • Built in antenna relay • Controls on front panel • FB with PE 103 dynamotor

Model	Band	Tubes
A-129	10-11	3-6AQ5
B-129	10-11	3-6V6GT
A-114	20	3-6AQ5
B-114	20	3-6V6GT
A-175	75	3-6AQ5
B-175	75	3-6V6GT

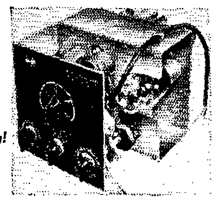
Any above, less tubes **$29.95**
(Kit of 3 tubes $3.60)

Write for Free LYSCO Catalogue

B&W Model 504 All-Band Multiplier Exciter

It's New!

It's Exciting!



Designed to be used with either 80 meter v.f.o. or crystal input, this new unit makes transmission on any one of six Ham bands available at the flip of a switch. (Covers 80, 40, 20, 15, 11 and 10 meter bands.)

Uses 4-6AQ5 multiplier stages. 1-807 power amplifier. 25 Watts output on all bands. Power term. strip provided. Power supply soon to be available. Net **$85.00**

★★★★★★★★★★★★★★★★★★

LAST MINUTE E-V SPECIAL!

New hand held carbon mobile mike by E. V. with locking press-to-talk switch . . **$17.50**

NEW MODEL 100-75 WEBSTER — CHICAGO

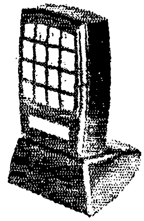
(with flip-over cartridge)

3 Speed AUTOMATIC RECORD CHANGER $24.84

Plays 12", 10", 7" records at 33⅓, 45 and 78 RPM. Brand new sealed cartons.

★★★★★★★★★★★★★★★★★★

THE INCOMPARABLE CENTURY BY Electro-Voice



This popular mike is made available in two types, crystal or dynamic. Can be held comfortably in the hand, or easily mounted on standard upright or special tilted desk stand. Finished in rich satin chromium. Supplied with 7½ ft. shielded cotton covered cable.

Model 915 crystal. Net . . . . . $ 7.50
Model 915S crystal with slide-to-talk switch built in. Net . . . . $ 8.40
Model 615 dynamic. Net . . . $11.70
Model 415 matching 15 tilted stand 90

Niagara Radio Supply Corp.

Phone DIgby 9-1132-3-4

NIAGARA'S GUARANTEE OF SATISFACTION
All items ordered must meet with full approval or your money-back

DEPT. Q-1-2 160 Greenwich Street, New York 6, N. Y.

New officers of the St. Maurice Valley Club are OD, pres.; VE, vice-pres.; EC, secy.; PV, treas.; KY, ABJ, and ZG, directors. ZG has portable rig on 144 Mc., 2 watts output, and in demonstration worked ABI, his XYL, from Trois Rivieres 27 miles and from Sorel 60 miles. NP, of Montreal, and AKG, of St. Felix de Valois, are frequent visitors to the St. Maurice Valley Club. LO is active on the c.w. nets again. NF and AAO took part in Frequency Measuring Tests. VE8SF and VE6HM were recent visitors to CA. AGG has started building the 813 rig by W1FTX in July '51 *QST*. RI has 4 watts n.f.m. on 75 meters. KZ has new VFO and received a card from ET9X. XX has new two-element beam on 14 Mc. ACM has a new rig with a pair of 813s. GW has three-element beam on 20-foot tower on the roof. ARR, who had been SWL for 15 years and recently obtained his call, passed away five weeks after receiving it. Traffic: VE2BB 104, CD 86, CA 39, LO 19, AMB 17, RZ 16, AKJ 13, AGG 7, AO 7, GL 3.

VANALTA DIVISION

ALBERTA — SCM, Sydney T. Jones, VE6MJ — The Northern Alberta Radio Club elected officers as follows: EH, pres.; WS, vice-pres.; HM, secy.; FB, treas. The Club held a very successful weiner roast early in October. On the kind invitation of GY and his XYL, of Fort Saskatchewan, the get-together was held on his property. GA now is official Edmonton district reporter for *RF*. EO claims he has been busy but can see the end of the overtime work. YM had quite a job getting his eldest married off. NA has changed jobs and now is working for the local broadcast station. RA, now of Calmar, has been visiting the Big City regularly. EH and MJ have been constructing 100-kc. crystal calibrators for frequency checking. WS has moved to a new QTH and should put out a real good signal. HM has returned from a trip to Eastern Canada and ARRL Headquarters. RP now is on the staff of a local radio concern. MJ is on the staff on the opposition. EA has changed automobiles and plans some improvements in the mobile set-up. MX and GJ are checking into the Alberta 'Phone Net. LI has returned to the fold after a long absence. Traffic: VE6OD 40, YM 18, MJ 15.

BRITISH COLUMBIA — SCM, Wilf Moorhouse, VE7US — Oct. 14th saw an AREC test in Vancouver utilizing mobiles and battery-operated gear for the first hour and Province-wide for the balance. TT and AMJ were issued ARRL appointments. QC, AMJ, AC, and AOB are thanked for reports received. The VARC holds meetings in Red Cross Board Rooms. Message pads are under consideration with a central location of supply. ASA has 40-meter c.w. rig under construction. An article on "Hams Calling" has appeared in the newspaper. Vancouver Island gets a new EC, with thanks to PO for his ground work. DH is active as usual. ACF has new efficiency modulation. Very little news was received from the 40-, 20-, and 10-meter gang. Must be exclusive operations since no one volunteers any information. AREC nets are operating efficiently, with QC as Regional EC, under DD, the SEC. The BCARA expects to see the mag *Amachewer* republished. There are 19 ARRL appointees in B.C. at present. The RI's offices expect our OOs to act first for our own benefit. Where are the reports? Must this column be dropped or edged in black? ANN, AE, PL, GV, APZ, OO, AEA, AOE, and KZ were all covered in a letter from ALL. Most of the boys are busy but not actually via the air. TT also reported. Traffic: VE7AOB 22, AC 7, DH 5, AMJ 4.

PRAIRIE DIVISION

MANITOBA — SCM, A. W. Morley, VE4AM — Only one report reached me this month and that was from RW, who now is on 14-Mc. 'phone with 807s in the final which are plate modulated. IC and RA both have new jr. operators and both YLs. A few more traffic reports were received from net members but a great number still are missing. With 1952 almost here make a resolution to join in more activities, join the ARRL, take out an appointment and, last but not least, become interested in civil defense. You can get all the official dope from myself or ask any member of the net. Traffic: (Oct.) VE4HG 73, GV 21, AI 12, CE 12, CI 12, QD 7, GB 6, BD 5, LF 4. (Sept.) VE4HV 44.

SASKATCHEWAN — SCM, Harold R. Horn, VE5HR — The NSARC held its annual meeting at Prince Albert Oct. 21st. New officers are MQ, pres.; VB, vice-pres.; and VH, secy.-treas. Visitors attending included BV, FY, HG, HR, RV, UC, YF, and their XYLs. MQ and VH passed their 'phone exams. CW has been transferred to Brandon. QW now is with CKBI at Prince Albert. FY now is a member of the Royal Order of the Wouff Hong. EB has returned to studies at Varsity. AS is proud of his first harmonic, a girl. GA boasts a new 75A-2 Collins receiver. KI is leaving for the U.S.A. to undergo an operation and take up permanent residence. WJ is moving to Alberta. HR now is on AFARS net signing CHJ28. TE is building a new all-band rig with 807s in the final. He also is looking for c.w. stations for the Saskatchewan c.w. net. If interested, contact TE for particulars. PK lost everything in a fire at Tisdale and IC lost considerable equipment stored in the block. Sas-

(*Continued on page 100*)

LEEDS
The Home of H.A.M.

Our 29th Year

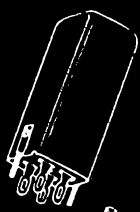
QUALITY – PRICE
DEPENDABILITY

In 29 years we have served large organizations—small organizations—individuals. We have shipped small packages—big packages, to most every country in the world—and we can truthfully say that LEEDS has never had a dissatisfied customer.

IF-RF COILS -- TELEVISION UNITS

IF Transformers—Permeability Tuned

Type No.	Price	Function	Freq. MC.	Mtg. Centers	Dimensions
TV-100	$1.62	1st Pix Amp.	25.3	7/8	7/8x 7/8x2 1/8
TV-101	1.24	2nd Pix Amp.	22.3	7/8	7/8x 7/8x2 1/4
TV-102	.47	3rd Pix Amp.	25.2	7/16 Hole	1/2x1 1/2
TV-103	.47	4th Pix Amp. (Detector)	23.4	7/16	1/2x1 1/2
TV-103	1.30	1st Sound (Detector)	21.25	7/8	7/8x 7/8x2 1/4
TV-105	1.30	2nd Sound (Detector)	21.25	7/8	7/8x 7/8x2 1/4
TV-106	1.53	Sound Discrim.	21.25	1 1/8	1 1/8x1 1/8x2 1/2
TV-107	1.62	Converter	21.8	7/8	7/8x 7/8x2 1/4
TV-108	1.62	Input Amp.	4.5	1 1/16	1 1/8x1 1/8x2 1/8
TV-109	1.76	Sound Disc.	4.5	1 1/16	1 1/8x1 1/8x2 1/8
TV-110	1.94	Sound Ratio Det.	4.5	1 1/16	1 1/8x1 1/8x2 1/8
TV-111	1.94	Sound Ratio Det.	21.25	1 1/8	1 1/8x1 1/8x2 1/2
TV-112	.59	Tunable Choke	21-25 MC	7/16	1/2x1 1/2

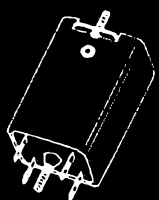


TRAPS—PERMEABILITY TUNED

Type No.	Price	Function *Includes Condenser.	Freq. MC.	Mtg. Centers	Dimensions
TV-150	$1.18	Cathode Trap*	21.25	1 7/16 Hole	1/2 O.D.x1 1/4
TV-151	.69	Sound Trap	4.5	1 7/16 Hole	1/2 O.D.x1 1/2

HORIZONTAL "SYNC." TRANSFORMERS

Type No.	Price	System	Mtg. Centers	Dimensions
TV-160	$1.62	"Sync." Lock	1 7/16	1 7/16x1 7/16x2
TV-161	1.18	"Sync." Guide	1 7/16	1 7/16x1 7/16x2
TV-162	1.47	"Sync." Freq. and Phase	1 7/16	1 7/16x1 7/16x2
TV-163	1.18	Ringing Coil	7/16 Hole	

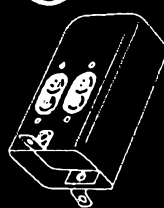


ANTENNA COUPLING TRANSFORMERS

Type No.	Price	Impedance Ratio	Mtg.	Dimensions
TV-170	$1.18	52/300 or 300/52	"L" Bracket	3/4x3/4x1 3/4
TV-171	1.18	72/300 or 300/72		3/4x3/4x1 3/4

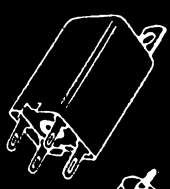
PEAKING COILS

Type No.	Price	Inductance Micro Henries	Color Code	Shunt Resistor
TV-180	$0.27	36	Black	—
TV-181	.27	93	Red	—
TV-182	.27	120	Blue	22K
TV-183	.27	180	White	39K
TV-184	.30	180	Yellow	—
TV-185	.30	250	Green	—
TV-189	.30	.8	Orange	—
TV-186	.30	73	—	10 meg.
TV-187	.30	250	—	22K
TV-188	.30	500	—	10 meg.



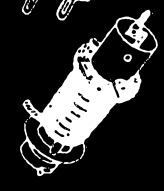
HIGH-PASS FILTERS

Type No.	Price	Line Impedance	Mtg	Dimensions
TV-210	$3.24	72 Ohm	L-Bracket	1 7/16x1 7/8x3 1/2
TV-211	3.24	300 Ohm	L-Bracket	1 7/16x1 7/8x3 1/2



WAVE TRAPS TV-FM

Type No.	Price	Freq. Range	Mtg. Centers	Dimensions
TV-220	$2.59	150-250 MC.	1 7/16	1 3/4x1 7/8x3 3/4
TV-221	2.59	75-150 MC.	1 7/16	1 3/4x1 7/8x3 3/4
TV-222	2.59	40- 80 MC.	1 7/16	1 3/4x1 7/8x3 3/4
TV-223	2.59	20- 40 MC.	1 7/16	1 3/4x1 7/8x3 3/4



HI-VOLT OSCILLATOR TRANSFORMERS

Type No.	Price	Output Volts	Mtg. Centers	Dimensions
TV-230	$4.85	To 4000	1 1/4	1 1/4 dia. x 3 3/4 high
TV-231	8.09	To 30000	2 1/4	2 1/4 dia. x 6 high

PLUS a complete replacement line of coils for FM—Short Wave—Broadcast

That is why we can proudly say that for dependability—for quality—for values—LEEDS heads the list. All our thousands of friends continually get their equipment from Leeds.

If not rated 25% with order, balance C.O.D. All prices F.O.B. our warehouse New York. No order under $2.00
We ship to any part of the globe.

LEEDS RADIO CO.

75 Vesey Street — Dept. QS 1
COrtlandt 7-3440 — New York City 7

katchewan amateurs were called upon to provide communications for the Power Commission during a storm when power and telephone lines were down. Their efforts were greatly appreciated by the Commission. Traffic: VE5TE 49, HR 47, DS 29, YF 18, DR 7, DD 6, DN 4, PJ 4, FG 2, WJ 2.

Hints and Kinks

(*Continued from page 58*)

ANOTHER CRYSTAL-FILTER CIRCUIT

THE circuit shown in Fig. 3 has been in use here to provide a flat response between two crystal frequencies. It is an adaptation of the Hammarlund SP type filter. A variable resistor in the tuned output circuit is used to adjust the shape of the "nose" of the response curve. It can be made to show double-peaked response by increasing the resistance in the circuit. With the resistor in the zero position, the resulting curve has a rounded top, provided the circuit is tuned to the center frequency. Otherwise, double peaks of unequal amplitude are obtained.

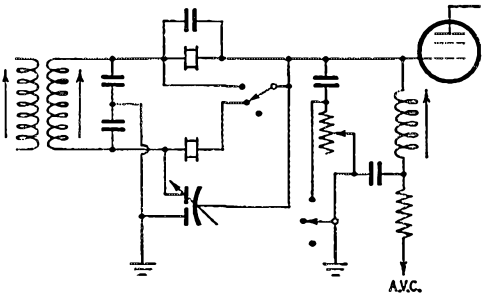


Fig. 3 — Crystal-filter circuit used at W3IUF. A modification of the Hammarlund filter, it permits a wide range of adjustment with two crystals.

The original selectivity switch was modified to permit switching one or both crystals out of the circuit. Use of a.v.c. does not appear to change the response characteristics through Miller-effect detuning.

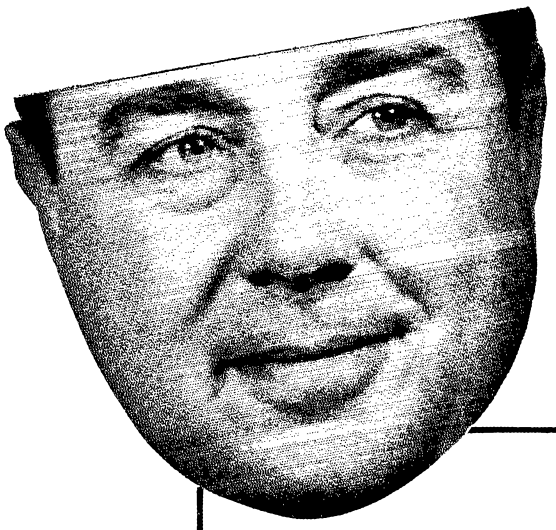
It should be pointed out that conventional i.f. crystals are not suited for this application unless they are damped in some way. An exception is where the circuit is to be used for c.w. alone, when the resonant frequencies of the crystals are separated by only a few hundred cycles. — *Harold M. Nickel, W3IUF*

IMPROVING PERFORMANCE OF GRID-DIP OSCILLATOR

AFTER assembling a grid-dip oscillator kit, I found that in the v.h.f. range two distinct dips were present, even though the unit was not coupled to anything. After much rebuilding, it was found that the trouble was caused by the tuning condenser, which is one of the type using a "pig tail" at the rear of the rotor shaft for ground connection. Apparently, the front of the rotor shaft is not grounded to the frame, merely passing through a bushing.

To clear the trouble it was simply necessary to add a second ground connection at the front of

(*Continued on page 102*)



HENRY RADIO offers YOU:

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, Morrow, Mallard, Eldico, Master Mobile, Hy-Lite, all other receivers, transmitters, parts at lowest prices.

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: Try any communications receiver ten days—if you return it your only cost is shipping charges. 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"

the rotor shaft. A slider from a discarded volume control was used. The spring fingers of the slider were cut to fit the rotor shaft. One end was then soldered to the condenser frame at the front. The other end made contact with the rotor shaft. This arrangement provided a 100 per cent cure, resulting in complete stability and increased output. — *Frank Sikonski, W1KWY*

TEMPORARY REPAIR OF WIRE-WOUND RESISTORS

IF you're in a tight spot because one of your large wire-wound dropping resistors has opened up, the following method may be used to effect temporary repairs. If the two broken wires are close together (they usually are), take a soft lead pencil and rub it around the break, filling it with graphite. In this way a 50-watt bleeder passing 30 ma. was repaired, and while continued use of the repaired unit is not recommended, it should hold for long enough to keep you on the air until the "crisis" has passed. — *T. J. Rogers, W5SNG*

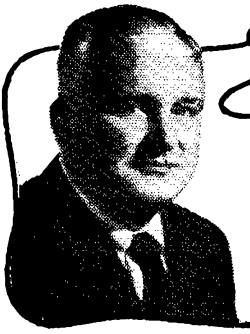
A.R.R.L. QSL BUREAU

The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. Its operation is made possible by volunteer managers in each W, K and VE call area. All *you* have to do is send your QSL manager (see list below) a stamped self-addressed envelope about 4¼ by 9½ inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

For a list of overseas bureaus, see p. 57, Dec. '51 *QST*.

(*Bold-face type indicates recent change of address*)

W1, K1 — J. R. Baker, jr., W1JOJ, Box 232, Ipswich, Mass.
W2, K2 — H. W. Yahmel, W2SN, Lake Ave., Helmetta, N. J.
W3, K3 — Jesse Bieberman, W3KT, Box 34, Philadelphia 5, Penna.
W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
W5, K5 — L. W. May, jr., W5AJG, 9428 Hobart St., Dallas 18, Texas
W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.
W7, K7 — Mary Ann Tatro, W7FWR, 513 N. Central, Olympia, Wash.
W8, K8 — Norman W. Aiken, W8LJS, 701 East 240th St., Euclid 23, Ohio.
W9, K9 — John F. Schneider, W9CFT, 311 W. Ross Ave., Wausau, Wisc.
WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.
VE1 — L. J. Fader, VE1FQ, 125 Henry St., Halifax, N. S.
VE2 — Austin A. W. Smith, VE2UW, 6164 Jeanne Mance, Montreal 8, Que.
VE3 — W. Bert Knowles, VE3QB, Lanark, Ont.
VE4 — Len Cuff, VE4LC, 286 Rutland St., St. James, Man.
VE5 — Fred Ward, VE5OP, 899 Connaught Ave., Moose Jaw, Sask.
VE6 — W. R. Savage, VE6EO, 329 15th St., North Lethbridge, Alta.
VE7 — H. R. Hough, VE7HR, 1330 Mitchell St., Victoria, B. C.
VE8 — Roy Walton, VE8CZ, Box 534, Whitehorse, Y. T.
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
KZ5 — P. C. Combs, KZ5PC, Box 497, Balboa, C. Z.
KH6 — Andy H. Fuchikami, KH6BA, 2543 Namauu Dr., Honolulu, T. H.
KL7 — Box 73, Douglas, Alaska



Scotty Says

Merry Christmas and a Happy New Year from the gang at Lafayette! In this, and future ads, we will highlight products of nationally known manufacturers available at Lafayette. This month we feature the transmitting equipment of Harvey Wells and Barker and Williamson, as well as the very excellent pocket meter by Triplett. Down there on the bottom of the page are a couple of good bargains . . . Our supply of both is limited — so send your order in early . . . send it to my attention. 'Til next month — "73."

Duncan Scott, W2LAL

OUTSTANDING VALUES AT LAFAYETTE

HARVEY-WELLS 50-Watt Phone & CW TRANSMITTER

SENIOR MODEL: This little powerhouse is everywhere—at fixed locations, as a portable, a mobile, at CD headquarters, mobile marine, in commercial applications. A great rig for phone or CW, covers 80-40-20-15-11-10-6 and 2 meters. Optional crystal control or vfo input, 100% break-in keying. New crystal-oscillator-vfo switching circuit. Integral antenna coupler. Excitation control to set output level if you want to drive your gallon with the Bandmaster. Circuits are sufficiently broad to tune completely over any band with adequate excitation for any frequency on first six bands. Retuning may be necessary to cover entire 6 and 2 meter bands. No plug-in coil. Provision for external vfo. Supplied wired and tested, with tubes. 12"x8"x8". **$111.50**

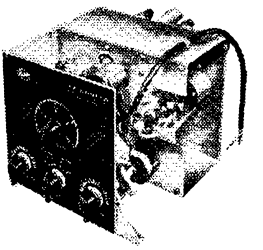
DE LUXE: *Includes all of the features of senior model plus a 3 stage speech amplifier for a crystal mike.* **$137.50**

POWER SUPPLY: *A complete AC power supply to operate either of the above transmitters. Delivers 425 v at 275. ma. and 6.3 v at 4 amps.* **$39.50**

Building a New Rig? Both Old Timers and Novices can use this

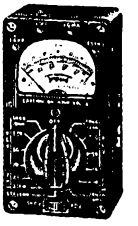
B & W 30-Watt FREQUENCY MULTIPLIER

. . . an exciter or low powered rig. Covers 80,40,20, 15,10 meters at the turn of a switch. Factory built and tuned — no bugs. May be operated with 80 meter vfo providing 10 volts output, or 80 meter crystals. Miniature tubes used for all multiplier stages. Supplied with 4-6AQ5, 1-807. B&W Model 504. 6¾"x7¾"x10½". **$85**



TRIPLETT 666-HH POCKET-SIZE VOLT-OHM-MULTITESTER

A compact, volt-ohm-miliammeter. Sensitivity 1000 ohms/volt on DC and AC, DC and AC volt ranges: 0-10/50/250/1000/5000. DC current: 0-10-100 ma. Resistance: 0-2000/400,000 ohms. 0-200 microamp meter. Completely insulated black molded case, 3⅛x5⅞x2⅞. White markings on panel. Supplied with batteries, 50" test leads and instruction book. **$24.01**



EXPERIMENTERS' MOTOR

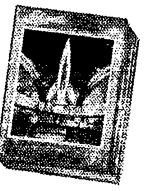
Compact Induction Type AC Motor. Operates from 20-25/volts, 60 cycles AC. Motor speed 2400 RPM, with gear train driving ¼" shaft at 24 RPM. Has clutch which disengages motor from gear train when power is removed. For intermittent operation with termal cut-out. 2"x1¾"x3" overall, excluding ¼" OD shaft extending 2⅞". Clutch is operative only when shaft is in horizontal plane. Four ⅛" mounting studs extend ⅛" from case. Shpg.wt. 2 lbs. Stock #22723. **$1.75**

FAMOUS-MAKE OIL-FILLED TRANSMITTING CONDENSERS

Limited Quantities! All Famous Makes!

		EACH
0.5 mfd.	600 volts	.65
1.0 mfd.	600 volts	.75
0.5 mfd.	1500 volts	1.45
1.0 mfd.	2000 volts	1.65
1.0 mfd.	3000 volts	2.60
1.0 mfd.	5000 volts	2.95
0.05 mfd.	7500 volts	3.35

FREE



If you don't have our 1952 catalog yet, write today to Dept. VA.

Interested in our Hi-Fi Guide? It's yours on request. Remember we are Authorized Distributors for such famous makes as Partridge Hi-Fi transformers (Type WWFB in stock at $24.50), Magnecorder, Jim Lansing Speakers, McIntosh Amplifiers. Send us your requirements.

Lafayette Radio — **Radio Wire Television Inc.**

NEW YORK 13, N. Y.	BOSTON 10, MASS.	NEWARK 2, N. J.	BRONX 58, N. Y.
100 SIXTH AVENUE	110 FEDERAL STREET	24 CENTRAL AVENUE	542 E. FORDHAM RD.
REctor 2-8600	HUbbard 2-7850	MArket 2-1661	FOrdham 7-8813

Pi-Network Circuits

(*Continued from page 15*)

C_2 wants to be large enough to have a reasonably good by-passing effect above 54 Mc. A value of about 50 $\mu\mu$fd. is satisfactory since the grid-circuit impedance is usually at least several thousand ohms. This resistance is of the same order as the load resistance required by the driver tube, so C_1 should have roughly the same capacitance as C_2. Since the two condensers in series across L_1 determine the resonant frequency, an inconveniently large coil may be required at the lower frequencies with only 50 $\mu\mu$fd. at both C_1 and C_2, so additional condensers may be switched in parallel with C_2 at 3.5 and 7 Mc. if desired. If this is done care should be used to avoid damaging parallel resonances formed by these condensers and their leads, just as was pointed out in connection with the condensers connected across a coax line.

The inductance of L_1 can be fixed at an optimum value for each band, the tuning being done entirely with C_1. The proper size of coil (or the placement of taps in the case of a coil used for all bands) should be determined by cut-and-try, the object being the usual one of obtaining maximum amplifier grid current with minimum driver plate current. The transmitter shown in the photographs uses the tapped-coil method of switching over three bands. If 28-Mc. output had been available from the oscillator, it would have been handled by using a separate small coil for this band only, additional inductance being connected in as required for the lower-frequency bands.

The writer has used this method of coupling in a number of transmitters, invariably with the result that grid-circuit v.h.f. harmonics were greatly reduced. The harmonic voltage across C_2 is so low that little or no harmonic current can slip by the grid choke to be radiated by the d.c. grid lead.

A pi network used in this way also is of considerable help in stabilizing a screen-grid amplifier because it steps down the plate resistance of the driver stage and thus loads the amplifier grid circuit quite effectively. The higher the fixed capacitance at the grid, the more difficult it is for energy fed back from the plate circuit to develop enough r.f. voltage in the grid circuit to cause self-oscillation.

It is possible to series-resonate C_2 and its leads so that the impedance is even lower than the impedance of the condenser itself. While this will be of benefit for reducing harmonic feed-through to the d.c. grid lead, it does not necessarily help in reducing the harmonic voltage between the grid and cathode of the tube. This is because there is no convenient way to tell what effect the leads inside the tube have on the series-resonant frequency of the circuit as a whole. If the whole circuit, from the grid itself through the external path back inside the tube to the cathode, could be series-resonated at a desired

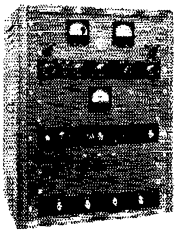
(*Continued on page 106*)

Fellows...

one of the world's best buys is still a WRL TRANSMITTER...

ask any Globe King Owner

Leo I. Meyerson WØGFQ



NEW WRL 400-B GLOBE KING TRANSMITTER

HIGH POWER — MORE WATTS PER DOLLAR

Our newest model with increased power — 420 watts Phone, 420 watts CW. Incorporates some of the latest TVI protective features. Efficient performance on all bands — 10 to 160 on phone and CW. Provisions for ECO. Complete with tubes, meters, and one set of coils. Low Down Payments.

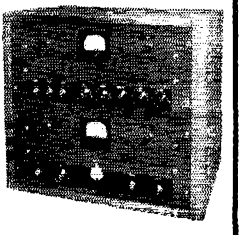
KIT FORM **$475.00** WIRE-TESTED **$495.00**

WRL 150 WATT GLOBE CHAMPION TRANSMITTER

MORE WATTS PER DOLLAR

R. F. Section a complete 150 watt XMTR. Provisions for ECO. Automatic fixed bias on Final and Buffer. Class B Speech Modulator. 150 watt input — 10 thru 160 meter bands. Complete with tubes, meters. Low Down Payments.

KIT FORM **$329.50** and one set of coils. WIRED **$349.50**



EXTRA SPECIAL — GOOD CONDITION 100 WATT XMTR's

Collins 32MA.....$99.50

JUST OFF THE PRESS

WRL 1952 CATALOG

IT'S NEW! IT'S FREE!

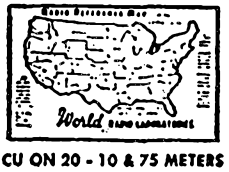
Send For Your Copy

— TODAY —

Contains everything new in radio and television. Jam-packed with bargains.

LIBERAL TRADE-INS
LOW DOWN PAYMENTS
PERSONALIZED SERVICE

GIANT RADIO REFERENCE MAPS



Just right for your control room walls. Approximately 28" x36". Contains time zones, amateur zones, monitoring stations. Mail coupon today and ..... **25¢**

CU ON 20 - 10 & 75 METERS

NEW LOG BOOK

For mobile or fixed station. Spiral binding — turns up — lies flat. Full column log listing all FCC required info. Log will accommodate 1,525 stations. Front and back covers show "Q" signals, phonetic alphabet, and amateur international prefixes. **25¢**

GUARANTEED CRYSTALS

IN HOLDERS Type FT-243

160 METER

1.8 to 1.825 1.875 to 1.9
1.9 to 1.925 1.925 to 2.0
$1.50 ea.

80-40 METER

3.5 to 4.0 7.0 to 7.4
$1.25 ea.

Please state frequency. We will come as close as possible. No refunds or exchanges please.

Write for detailed XMTR specification sheets.

WRITE - WIRE PHONE 7795

World Radio LABORATORIES EVERYTHING IN RADIO **INCORPORATED**

COUNCIL BLUFFS, IOWA

World Radio Laboratories, Inc. Q-1
744 West Broadway
Council Bluffs, Iowa

Please send me:

- ☐ New Log Book
- ☐ New Catalog
- ☐ Radio Map
- ☐ Globe King Info
- ☐ Globe Champion Info
- ☐ Used Equipment List

Name_____

Address_____

City_____ State_____

frequency the harmonic application no doubt would be minimized. However, this would result in more feed-through to the d.c. grid lead than would otherwise be the case, since a relatively large harmonic voltage will appear across the condenser if the whole circuit is series-resonant. It seems likely that in this case it is best not to attempt to use the resonance effect but simply keep it above the television range, if possible, since resonance at some frequency is unavoidable.

There are many variations of these basic network arrangements, some having very definite advantages at the higher frequencies. Space does not permit discussing them in this article, but it is hoped that they can be treated later because they frequently result in an improvement in transmitter efficiency and harmonic suppression with little or no added cost or constructional complexity.

The Novice Round-up

(Continued from page 21)

tion 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, January 5th, or from W1AW and WØTQD, January 17th. 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, 1952. No entries can be returned.

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. In all cases of question, the decisions of the ARRL Contest Committee are final.

Novice Amplifier

(Continued from page 87)

antenna indicator lamp should come to a peak of brilliance, dimming on either side. The condenser should be set at the point of maximum brilliance. If the lamp burns too brightly, loosen the coupling between the loops by placing wood or cardboard spacers in between. This adjustment should cause the plate-current indicator bulb also to increase in brilliance. Now, without touching the antenna tuning, swing the plate tank condenser back and forth through resonance. At resonance, the plate-current bulb should dim noticeably, increasing brightness on either side. If resonance cannot be found by the dimming point, the antenna coupling should be loosened by bending the antenna coil slightly forward toward the antenna tuning condenser. Use the tightest coupling that results in a well-defined dip

(Continued on page 108)

Gosh! OM!

Megathanks!...

...for the FB Ham and Industrial business you have been sending me —

It certainly is appreciated!

I hope you had a real Merry Christmas, and that your New Year will be the best ever!

73,

Bil Harrison, **W2AVA**

NEW! LYSCO NOVICE XMTR

The latest addition to the famous Lysco line. 40 watt Novice transmitter. Built-in antenna coupler. Simplified tuning. Attractive black wrinkle finish cabinet only 9" x 11" x 15" long. Tunes 80 and 11 meter Novice CW bands. Covers all bands 160 thru 10 meters. When you get your general Class license, may be used as all band xmtr or exciter for high power final.

Lysco 650 transmitter — $109.95

EAGLE NOVICE TRANSMITTER

Novice Operators! Beginning Hams! Assemble this rig in less than two hours. Foolproof! — 6F6 tri-tet oscillator drives 6L6 final to 35 watts input on 20, 40, 80, and 160 meters. Pi-network loads any random length antenna. 6L6 PA will double for two band operation. Built-in resonance indicator. Kit supplied complete with punched and drilled chassis, all sockets, hardware, and parts — ready to complete. Photographs supplied show exact placement of components.

Eagle X-30 transmitter kit —	$8.95
Plug-in coils (specify band) —	.99
PR Crystals (80 or 40 meter) —	2.75
Tubes: 6F6G — $.99	6L6G — 1.92
Professional type telegraph key	$1.17

Power supply for above (complete with 80 rectifier) may be mounted alongside transmitter in rack or panel — $9.75

HARRISON HAS MALLARD!

Sensitivity — Stability — Slug-tuned coils — Accurately calibrated bandspread — ALL in the MALLARD converter. Here's the newest thing to hit the mobile field. Tube line-up: 6AB4 oscillator, 6AG5 mixer, 6AG5 RF amplifier. Simple installation — only three connections — all plug in! Attractive gray hammertone finish. Immediate delivery — order now! $39.95

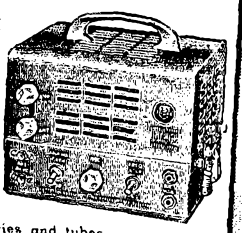
MALLARD BASE-LOADED COILS
For all 20 or 75 meter whips
HI-Q 20 — $8.95
HI-Q 75 — $7.95

NEW JOHNSON VIKING VFO KIT

A companion unit for the Viking I Transmitter — can also be used with any similar transmitter. Features accurate frequency calibration on all bands, 10 through 160 meters — High Stability — Cleanest Keying — Assembly so simple that it can be built in one evening. Cabinet finished to match Viking I. Send orders now.

Complete Kit, less tubes $42.75
Wired Tested, with tubes $59.95

STANCOR ST-203A MOBILE XMTR



Stancor's ever popular 10-11 meter transmitter. Mobile operation from dynamotor or vibrator supply — use AC pack for home or portable use. 6V6 Osc., 2E26 Final — conservatively rated 25 watts! 6J5 Speech Amp., Push-pull 6V6 modulators for 100% AM modulation. Handy xtal switch, antenna loading system, and changeover relay. Attractive case finished in silver-gray hammertone — novel spring fasteners allow instant removal. 8⅝" W x 7¾" H x 6¾" D. Kit comes complete with instructions, less only accessories and tubes.

STANCOR ST-203A KIT — $47.50
Wired model has been discontinued.

HARVEY-WELLS BANDMASTERS

For Portable — Mobile — Fixed Station

Compact! Versatile! Modern! Ideal xmtr for old timer or novice operator. (Covers Novice Frequencies: 80 CW, 11 CW, and 2-Meter Phone) 40 to 50 watts to 807 final — Phone or CW — Completely bandswitching — just turn knob to work 80, 40, 20, 15, 11, 10, 6 or 2 meters. 100% break-in operation. All controls and xtal sockets located on front panel for quick QSY — provision for VFO input.

YOUR INVESTMENT PROTECTED!

All Bandmasters remain modern as unique factory plan permits addition of all newly developed features to older models.

BANDMASTER SENIOR — Carbon Microphone Input	$111.50
BANDMASTER DELUXE — With pre-amp for crystal mike	137.50
APS-50 Power Supply for 110V AC Operation	39.50
DPS-50 Dynamotor Supply for 6V DC Operation	87.50

GONSET CONVERTERS

New! Two-Meter Converter — 144 to 148 MC	$44.50
Tri-Band Converter for 75, 20, and 10 meters	47.60
6, 10-11, 20, or 75 meter converters. Your choice	44.75
Latest Model Gonset Noise Clipper	9.25
Universal Steering Post Mount for all Gonsets	3.90

SONAR TWO-METER RECEIVER

Covers 143.8 to 148.2 Mc. 9 tubes. Over-all sensitivity better than .5 microvolt. Compact, universal-mounting cabinet. Designed for best reception. Use any external speaker. Model SR-9 $72.45

SONAR 2-METER TRANSMITTER

Companion to the above. Rugged, power packed transmitter designed for better mobile operation. Complete with all plugs and connectors. $72.45

HARRISON

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

in the plate-current bulb at resonance. Leave the plate tank condenser set at the center of the dimming point. (If a d.c. plate-current milliammeter with a scale of 150 ma. or more is available and is connected in series with the positive high-voltage lead to the amplifier, the coupling should be set at the point where the plate current is 110 ma. when both antenna and plate tank circuits are tuned to resonance.)

Other Antennas

If a single-wire antenna longer than 100 feet is used, it will be necessary to connect the antenna condenser across the antenna coil, as shown in Fig. 4A. It will also be necessary to connect the indicator lamp in series with the antenna wire. Antennas fed with two-wire lines, as described in the ARRL *Handbook* and *Antenna Book*, can also be used by shifting the connections as shown in Figs. 4B and C. Depending on how long the system is, the indicator lamp may have to be coupled with a loop as previously described, rather than connected directly in the feeder as shown. Otherwise, the lamp may burn out or show no indication, depending on whether it comes at a current loop or voltage loop in the antenna system.

Amplifiers for 420 Mc.

(Continued from page 30)

In addition to the improved noise figure, the use of an r.f. amplifier like either of these serves other useful purposes. It greatly reduces oscillator radiation (which will be a potent source of TVI when u.h.f. TV gains a foothold) and by isolating the oscillator from the antenna it reduces oscillator instability troubles from swinging feeders and body-capacity effects.

The writer wishes to express appreciation to W2QED, at whose suggestion the project was gotten underway, and particularly to W1PBB, without whose many test transmissions the checking and adjustment of these amplifiers would have been much more difficult.

75-Meter Mobile

(Continued from page 34)

bugs. The 815B is not so good. Type 4-125As and 4-250As are good but need more plate voltage. The Western Electric 701A radar pulse tube is a dream — one tube puts out a kw. with ease — but when you try to clamp-tube the critter you make the night hideous with many kinds of undesirable phenomena such as frequency shift, carrier shift, frequency and phase modulation, etc. I worked on that tube, using various screen and grid voltages, until the official monitoring station at Santa Ana sent me a mild objection in the form of a pink ticket. So I am now using 813s.

And, finally, an ARC-5 transmitter works well if a VR-150 tube is put in the oscillator circuit, in the socket formerly occupied by the

(Continued on page 110)

HAMMY NEW YEAR . . .

. . . *HAPPY*, that is! From UNCLE DAVE!

YOU NAME IT . . . WE'VE GOT IT!

ALL MERCHANDISE LISTED IS IN STOCK FOR IMMEDIATE DELIVERY FOB ALBANY, N. Y.

"Ring Out The OLD"

USED EQUIPMENT

RME70 with DB20 preselector and speaker	$125.00
Hallicrafters HT-9 with coils for 10, 20, 40, 80, 160 and 11 crystals	375.00
National NC-100ASD with speaker	59.50
Hallicrafters S-36 high frequency receiver with speaker	195.00
Bud Variable Frequency Oscillator VFO-21	42.00
RAK-7 Navy receiver 115 V power supply and speaker	60.00
Meissner 150-B Transmitter with full set of coils including 10 meter band with exciter and buffer doubler	325.00
National HRO-5 with power supply, speaker, ABCDEF coils	225.00
Hammarlund SP-400X super-pro with power supply and speaker	325.00
Hammarlund comet pro with coils and speaker	65.00
Millen 90281 power supply, input 115 VAC, output 700 VDC @ 235 ma 6.3 volt at 4 amp	85.00
Millen 90881 RF Power Amplifier	59.50
Hallicrafters SX-43, less speaker	125.00

"Ring In The NEW"

NEW . . . but priced LOW!

Johnson Viking kit less tubes, mike or key	$209.50
Johnson Viking wired and tested less tubes, mike or key	259.50
Sonar SR-9 Receiver, two meter	72.50
Sonar MB-26 transmitter	72.50
Lysco Model 600 Transmaster complete TV1 supressed	143.45
Lysco Mobile Transmaster 75, 20, 10-11 less tubes	29.95
Lysco convertors 10-11, 20, 75 meters with tubes	39.00
Lysco D11 grid dipper	39.95
Millen grid dipper	61.50
Harvey-Wells Bandmaster Deluxe	137.50
Mallory VP-55H Vibropack, input 6 VDC, output 300 VDC @ 200 ma	34.32
Hammarlund HQ-129X with speaker.	214.00
Collins 75A2 receiver with speaker	440.00
RME-50 with speaker	187.50
National HRO-50T1 with speaker and ABCD coils	399.50
National NC-183T with speaker	295.00
National NC-125 with speaker	160.50
National SW-54 with speaker	49.95
Hallicrafters SX-62 less speaker	289.50
Hallicrafters SX-71 less speaker	199.50
Hallicrafters S-76 less speaker	169.50
Hallicrafters S-40B	99.95
Hallicrafters S-77	99.95
Hallicrafters S-53A	79.95

Check With Uncle Dave For

THE BEST HAM BARGAINS IN '52!

Brand new National NC-33	$51.75
Brand new Hallicrafters SR-75 transmitter/receiver	71.50
JT-38 Transmitting keys	.79
7" Pyrex transmitting antenna insulators	1.40
Burgess Jig Saws	12.95

Clarostat 50 watt rheostats 250 ohm each $1.35. Lots of 10 $1.20 each.

Dejur 50 watt rheostats 50 ohm each $1.25. Lots of 10 99c each.

Clarostat 4 watt wire wound 58 series 500 ohm, 3000 ohm and 20000 ohm 45c each. Lots of 10 39c each.

T-17 Hand carbon mike with switch cord and plug $1.95 each.

FORT ORANGE *Radio Distributing Co. INC.*

904 BROADWAY, ALBANY 4, N. Y., U. S. A.

AMATEUR HEADQUARTERS

LONG DISTANCE PHONE: ALBANY 5-1594.....CABLE ADDRESS: "UNCLE DAVE"

crystal. Also, a switch is mounted on the ARC-5 panel so that voltage from the auto receiver can be put on the oscillator, thereby permitting one to zero-beat on a received signal. For 20-meter enthusiasts, it might be pointed out that the 40-meter ARC-5 transmitter can be made to hit 20 by shorting one turn at the bottom of the oscillator coil, removing one or two turns from the top, and spacing the others somewhat. Then take the final coil out and replace it with a standard 20-meter coil, with a couple of turns removed. Eureka! 50 to 75 watts on 20.

It is hoped that the above will serve as stimuli to all electrical entomologists, because you will entertain many new and fascinating varieties of bugs before you are working high-power mobile.

144-Mc. Antenna Coupler

(Continued from page 51)

adjustment by means of a fishline. If the feed impedance of the array is not known it may be necessary to adjust the position of the taps on the coil. The optimum point of attachment is that at which the least returning of C_1 is needed to restore resonance when the antenna is connected to the feed-through terminals.

Several 2-meter operators in the Detroit area have gone over to this method of feed, and improved performance has been observed in the antenna system in every case. If you've a March, 1950, *QST* handy, turn to page 59 for a picture of two of these units in use in the 64-element horizontal-vertical 2-meter array of W3RE, Washington, D. C.

Let's Go High Hat!

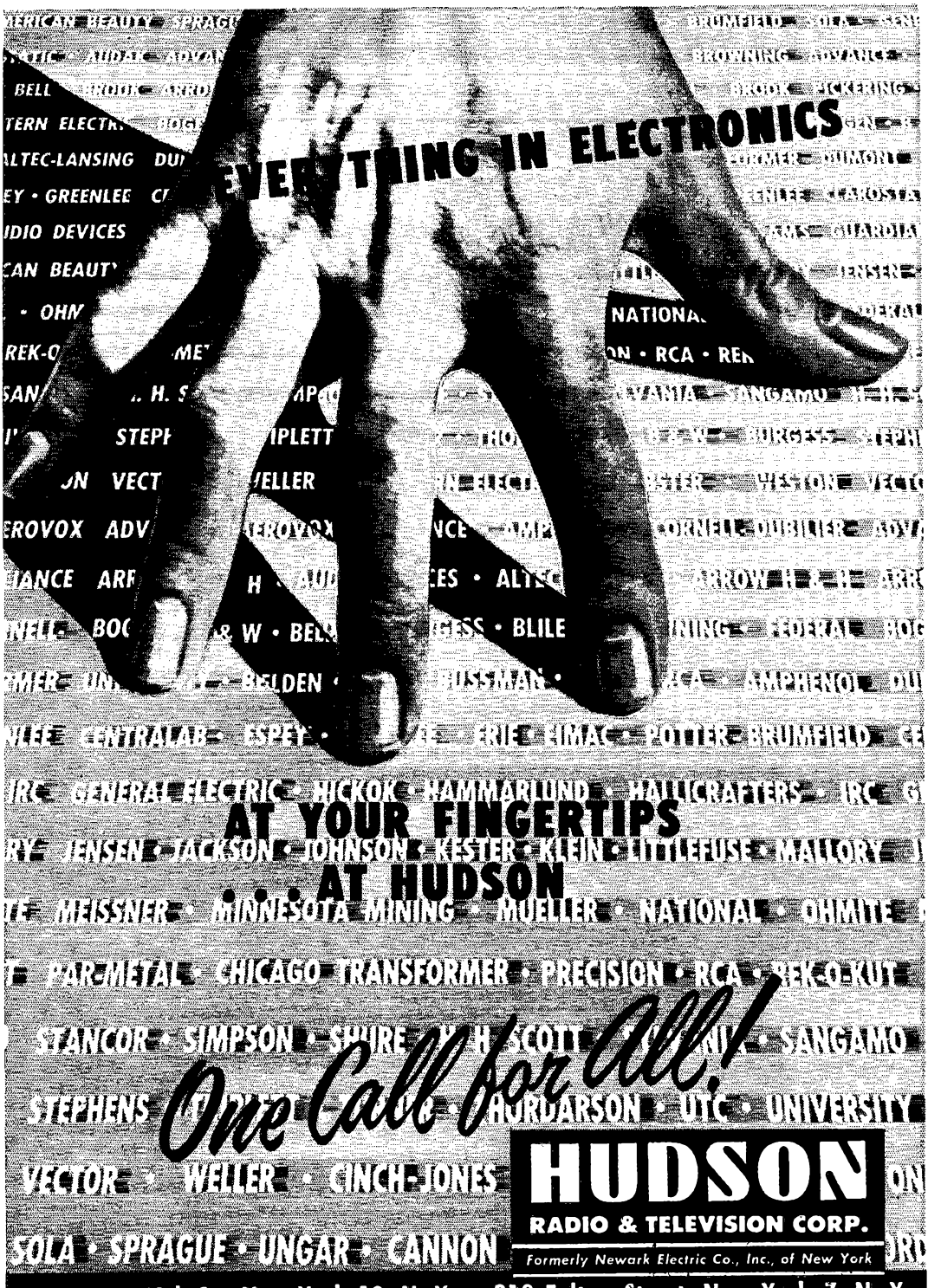
(Continued from page 56)

as close to the antenna base as practical. This coil should be kept in the clear because metal in the immediate field will lower the *Q*. When the antenna is in the rear, the coil can be adjusted by means of a flexible tuning shaft; this allows QSY while the car is in motion. Little or no coax should be used on the antenna side of the rotary inductance for best results.

The antenna system should be tuned so that at the highest frequency used the variable inductance will be near the minimum setting. If the coils have a large number of turns it is advisable to remove all but those needed to tune to the lowest frequency. If different lengths of whips are used for city and country driving, the variable inductance should be sufficient to tune to the low-frequency end of the band when the short antenna is used.

Another method used to QSY consists of having the top section of the whip adjustable in length. A change in length will often make a considerable difference in resonant frequency, and some means of locking the section in place would eliminate the possibility of its shifting when the car is in motion. A refinement would be to mark the whip adjustments in frequency steps. The main disadvantage of this system is

(Continued on page 112)


EVERYTHING IN ELECTRONICS
AT YOUR FINGERTIPS
AT HUDSON
One Call for all!
HUDSON
RADIO & TELEVISION CORP.
Formerly Newark Electric Co., Inc., of New York
48 West 48th St., New York 19, N. Y. • 212 Fulton Street, New York 7, N. Y.
Phone: Circle 6-4060 • Teletype: N. Y. 1-1299
DEPENDABLE SERVICE IS THE FOUNDATION OF OUR BUSINESS

that the antenna cannot be adjusted while car is moving. In installations where a capacity hat is used the frequency may be changed by moving the hat up or down on the antenna, if provision for doing this is made in the mounting.

A crystal-diode type of field-strength meter is valuable to insure proper adjustment when using a series antenna inductor, if no plate indicating meter is visible as in a rear-mounted installation. Lacking this, the rotatable inductor should have a calibrated control.

Further Notes

A fact often overlooked in mobile antenna systems is that improving the efficiency of an antenna for transmission purposes produces similar gains in reception. This increases the operating range and is especially important in mobile-to-mobile contacts. Any series inductance used with the antenna system to allow QSY should be inserted on the antenna side of the change-over relay, giving the receiver maximum efficiency at the transmitting frequency.

A number of articles have recommended the use of the whip as a grounded loop, employing a flat-top section, etc., and in each case these systems have certain merits. The authors have tried many such ideas, but discarded them in favor of the high-*Q* coils and capacity hat because the others were more directional or required modification of the final amplifier.

Small pleasure craft and commercial boats are able to use large high-*Q* coils and capacity hats to realize excellent gains because the limitations of size and weight are not so severe.

The results of tests on several "PT" boats show the desirability of using capacity hats. The boats, transmitter, and antenna installations were identical. The transmitters had 20 watts output, and 20-foot vertical whips loaded by small variable loading coils located in the cabin space. Three of these boats were equipped with capacity hats two feet in diameter, covered with screen and mounted on top of the antenna. These boats and several without the hats cruised together to a port approximately 70 miles distant. Recordings of the signal levels were made, and the results were as follows: at distances of from 5 to 45 miles the boats with capacity hats were always several S-units louder, at 50 miles they still had strong signals while boats without hats were barely readable, and at 60 and 70 miles the boats with capacity hats still had good signals while all the others were completely unreadable.

Similar tests on fishing boats of comparable size have consistently shown almost identical results, and capacity hats have become increasingly popular at West Coast ports.

YL News

(Continued from page 35)

lators, G3ACC and G3YL anticipate good signal reports soon. . . . W3RXV is one of the first YL Novice operators to get her General Class license. . . . W7JWC has been showing visiting hams the city of Seattle from her lovely hilltop home. Among recent visitors was W3OQF, who is touring the country with OM W3MAX and jr. op. . . . Net activity keeps W7HHH busy, although Bea has also managed to work 167 YLs in between nets. . . . An extended QSO with ZE1JE prompted W5JCY to sponsor the YL from Southern Rhodesia in YLRL. . . . W7LCS trusts her new West Seattle QTH will be a lucrative DX location. . . . Considerable interest has been shown in the Novice training program initiated by W3MSU, president of the Washington Radio Club. WRC YLs W3CDQ, W3LSX, W3AKB, and W3MSU are giving code practice regularly. . . . Reserve February 23rd and 24th for the YL-OM Contest. Full details next month.

There is good reason for the bright smiles exhibited by KZ5AC, KZ5PC, and KZ5GQ. Thirteen-year-old Carol Combs, shown at mike, recently became KZ5GQ and thus established the Combs as the first KZ5 all-ham family. Carol is the youngest operator in the Canal Zone and the third member of her family to merit a "first." In July, 1949, a month after Carol's father, Prentiss, received his ticket, her mother, Angela, became the first licensed KZ5 YL. Thus, KZ5AC and KZ5PC were the first husband-and-wife radio team in the Canal Zone.

Y.L.R.L. NETS

(As of December 1st)

Band	*Day*	*Time*	*Frequency*	*NCS*
80 c.w.	Wednesday	9:00 P.M. EST	3610 kc	W9JTX
75 'phone	Monday	8:00 P.M. PST	3900 kc.	W7HHH
75 'phone	Wednesday	9:00 A.M. EST	3900 kc.	W8ATB
40 c.w.	Friday	9:00 P.M PST	7040 kc	W7NOB (15 w.p.m. and slower)
40 c.w.	Tuesday	10:00 P.M. EST	7105 kc.	W3CDQ
20 'phone	Thursday	2:00 P.M. EST	14,240 kc.	W6FEA, W3UUG

W7NOB will listen on Wednesday at 2:00 P.M. PST on 7040 kc. for those who prefer a daytime net.

WWV-WWVH SCHEDULES

FOR the benefit of amateurs and other interested groups, the National Bureau of Standards maintains a service of technical radio broadcasts over WWV, Beltsville, Md., and WWVH, Maui, Territory of Hawaii.

The services from WWV include (1) standard radio frequencies of 2.5, 5, 10, 15, 20, 25, 30 and 35 Mc., (2) time announcements at 5-minute intervals by voice and International Morse code, (3) standard time intervals of 1 second, and 1, 4 and 5 minutes, (4) standard audio frequencies of 440 cycles (the standard musical pitch A above middle C) and 600 cycles, (5) radio propagation disturbance warnings by International Morse code consisting of the letters W, U or N, indicating either warning, unstable conditions, or normal.

The audio frequencies are interrupted at precisely one minute before the hour and are resumed precisely on the hour and each five minutes thereafter. Code announcements are in GCT using the 24-hour system beginning with 0000 at midnight; voice announcements are in EST. The audio frequencies are transmitted alternately: The 600-cycle tone starts precisely on the hour and every 10 minutes thereafter, continuing for 4 minutes; the 440-cycle tone starts precisely five minutes after the hour and every 10 minutes thereafter, continuing for 4 minutes. Each carrier is modulated by a seconds pulse, heard as a faint clock-like tick; the pulse at the beginning of the last second of each minute is omitted.

Answer to **QUIST QUIZ** *on page 44*

Neither one is necessarily right. An improperly-adjusted s.s.b. transmitter (or a.m. or n.f.m. 'phone) can produce signals 20 Kc. from the carrier. However, receiver overload can introduce spurious signals at the receiver, and no a.v.c. system works fast enough to prevent overload at some time or another. B should do his checking with the a.v.c. off and the r.f. gain reduced.

Strays

Pastor Wes Miller, W5QNK, of the Canton, Oklahoma, First Baptist Church, is compiling a list of Baptist "preacher-hams." He desires to hear from amateurs in this category and promises a copy of the completed directory to all who write informing him of their pastorates and call signs.

—...—

Most amateurs owning automobiles are familiar with the miniature license tags with "keys return" facilities which are furnished by the Disabled American Veterans. Now such tags are available with one's call sign included on the same terms as in the past. For yours, drop a request to DAV, Station D, Box 7, Cincinnati 6, Ohio. — *W8ARM*

Correspondence

(Continued from page 59)

checked many s.s.b. signals and the worst signal I heard was only as broad as an a.m. station; that is, I could hear his upper sideband.

Another complaint is that s.s.b. isn't fair. An s.s.b. station running 1 kw. on peaks is equivalent to an 8-kw. a.m. signal. That definitely isn't fair to old-fashioned inefficient a.m., but since it is legal the only remedy is to go on s.s.b. too.

The biggest complaint about s.s.b. is that information is so difficult to get. A book, similar in style to the *Antenna Book*, on s.s.b. would certainly be a valuable contribution on the part of the League.

When the code speed improves and I'm able to pass the license exam I'll be on 75 meters with a big signal.

The meanest complaint about s.s.b. ops is that they are not mentally qualified to operate an s.s.b. station. That complaint is completely erroneous; a few hours of listening to them (their high-brow exchanges on linearity, excitation and many other topics) will prove that the majority of them are engineers with years of experience. Those who do have difficulty are helped in the old tradition of ham radio.

In that radio is a new topic to me I am unable to give too many arguments in favor of s.s.b., but I know that a.m. is as out of date as a spark transmitter.

— *Henry G. Adams, WN8AMR*

Editor, *QST:*

. . . If W1DQ had given any serious thought to QRM of any type he would have ended up intensely concerned over the shortenings of his receiver. The deficiencies of standard commercial receivers in regard to selectivity are best known to those who have built Q5-ers or single-sideband adapters. There is an abundance of good technical material in back issues of *QST*, dealing specifically with QRM in relation to s.s.b. (one written by an eminent research engineer of G. E. Co.); recommended if W1DQ is seriously interested in some facts on this subject. If one s.s.b. station could knock out a whole round table, almost any Novice could understand that such QRM would only get worse if it also had a commensurate carrier and additional sideband (i.e., an a.m. signal). W1DQ would flatter many a.m. operators on 75 meters if he could prove that their signals have only a 10-kc. bandwidth!

W1DQ recommends that all s.s.b. signals confine their operations to some 25-kc. segment of the 'phone band. This suggestion only proves that he is not at all cognizant of s.s.b. activities on the 75-meter band. If he were, he would know that a majority of such operation takes place in the top 5 kc. of the band. Unless he is choosy about which 25 kc. the s.s.b. should be confined to, all he has to do to have his wish is sell the a.m. boys on the idea of moving out of 3950 to 4000 kc.! . . .

— *David O. Mann, W3MBY*

QRM ON W1AW

212 N.W. 17th St.
Richmond, Ind.

Editor, *QST:*

There ought to be a law with suitable penalties for the fellows who operate on or near W1AW frequencies during code-practice hours. . . .

— *V. F. Stephen*

63rd and Oakes
Everett, Wash.

Editor, *QST:*

The signals of W1AW transmitting code practice or bulletins seem to be just so much more QRM to a lot of the fellows on the forty-meter band. It just doesn't seem to be the style to listen before calling. . . .

— *Roger N. Evans, W7MZN*

35 Frederick Avenue
Akron 10, Ohio

Editor, *QST:*

The slow-speed code practice by W1AW on Sundays, Tuesdays, Thursdays, and Saturdays has been really FB for my XYL, who has been sticking to the job regularly for the past few months. I cannot help but do some listening myself to see "what gives" and am astounded at the QRM to be heard on 3555. . . .

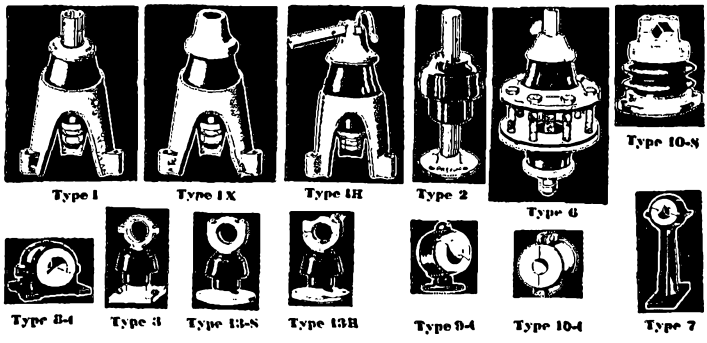
— *James W. Jones, W8RHM*

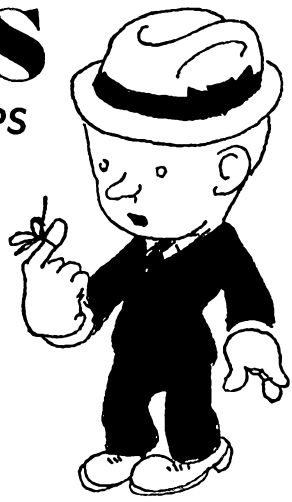
(Continued on page 120)

INSULATORS

BASE .·. STANDOFF .·. MOBILE .·. CLAMPS

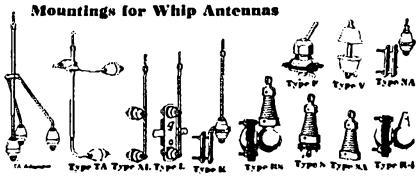
A complete line of sturdy, specially engineered insulators for mounting Antennas and Elements . . . for land stations, mobile or marine installations. You'll find Premax has what you've been looking for.





WRITE FOR THE BULLETIN — OR ASK YOUR JOBBER

Mountings for Whip Antennas



PREMAX PRODUCTS

DIVISION CHISHOLM-RYDER CO., INC.

5202 HIGHLAND AVE., NIAGARA FALLS, N. Y.

RADIO and TELEVISION

Over 30 years N.E. Radio Training Center. Train for all types FCC operators' licenses. Also Radio and Television servicing. FM-AM broadcasting transmitters at school. Send for Catalog Q.

MASS. RADIO SCHOOL

271 Huntington Avenue — Boston 15, Massachusetts

Lic. by Comm. Mass. Dept. Educ.

our finest SPEED KEY

Complete pivot, contact tension and excursion adjustments; live steel vibrator spring, vibrator damping wheel and carefully aligned ¼" silver contacts assure perfect dots throughout speed range. Adjustable paddles for maximum operating comfort.

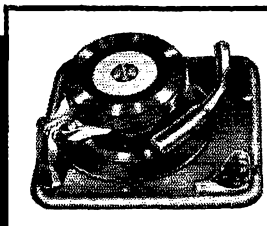
Heavy steel base and all machine parts beautifully chrome plated. Equipped with circuit closing switch; non-slip rubber feet. Weight 4½ lbs.

Catalog No. 114-501
Amateur Net $15.00

E. F. JOHNSON CO.
WASECA, MINNESOTA

$47.50 LIST VALUE

Only **$17.88**



3-SPEED Record Changer

Popular General Instruments Automatic Changer. Plays 7", 10" and 12" records at 33-1/3, 45 and 78 RPM . . . plays them All automatically from One tone arm and permanent long life needle—simply and easily. All adjustments in front. Capacity is (12) 10" or (10) 12" records at 78 or 33-1/3 RPM or (14) 7" 33-1/3 or 45 RPM records. Build new or modernize old record players and radio-phono combinations at less than ½ usual cost. Mounting space required 12 x 12¾", 5½" above, 3" below motor plate. Operates on 105-125 V. 60 cycles AC. Shpg. wt. 19½ lbs.

No. 34A216. Brand New—Fully Guaranteed. While They Last, Special Each..... **$17.88**

Include allowance for postage if shipment by parcel post is desired.

BURSTEIN-APPLEBEE CO.
Dept. S, 1012-14 McGee St.
Kansas City 6, Mo.

I enclose $.....for.....Changers.
☐ Send me FREE your 1952 Catalog No. 521.
Name.....
Address.....
City.....State.....

FREE! BIG 1952 RADIO CATALOG

ATTN.: "NAME WITHHELD"

Crosbyton, Texas

Editor, *QST*:

The letter from the XYL in Virginia makes me boil. There's always some XYL black-balling us XYLs with tickets. She's either too lazy or thick-headed to study for a ticket, so she amuses herself by calling us "strange" women. We XYLs and YLs are used to such and consider the source. Too bad we don't know her OM's call.

I've been a ham since 1935 and hold Class A and like my hobby in spite of being called "strange."

— *Nora L. Ochsner, W5FWS*

45 Loller Road
Hamden 14, Conn.

Editor, *QST*:

For 6½ years I have heartily agreed with everything said by "Name Withheld, Va." in November *QST*.

However the worm has turned, meaning me! My OM, W1NFG, finally persuaded me to try for the Novice. I did it more or less to keep him quiet but the happiness radiating from him ever since has made the whole thing so worthwhile to me, besides which I know I'm going to enjoy ham radio as much for myself as for him.

Furthermore our jr. op, age 3½, shows signs of interest. In time I feel sure we'll be a complete "ham" family.

— *Jane Steele, WN1UKL*

303 West 97th St.
Seattle 7, Wash.

Editor, *QST*:

I was one of the XYLs at the ARRL National Convention, and worked on the various committees with several other XYLs and the "few strange women" who have licenses. We were overwhelmed with work, but there never was a complaint from the gals. We all had so much fun meeting one another, working together, and knowing that we were helping our OMs, and furthering their interests. It was no "vacation," as the lady in Virginia suggests, and we were not there to "keep an eye on the OM" either. I, for one, only saw my OM in the morning when we drove to Convention headquarters, and then in the evening on the way home. I did catch an occasional glimpse of him chewing the rag with other enthusiastic hams, and browsing around among the many excellent and unique exhibits. None of us would have taken that enjoyment away from the fellows for anything.

Of course, there were a few YLs and XYLs there just for the fun of the luncheon, style show, cruises, dance, banquet and breakfasts, but at least they were there, and not pouting at home and begrudging their men the intelligence and relaxation that amateur radio affords.

In the days prior to the Convention, I couldn't help wondering what coöperation would come from the XYLs, since I had heard of so many who disapproved of their husbands' hobby. But on registration morning, the gals showed up in full force. They were all eager to help make the Convention a huge success, and that is exactly what it was.

— *Carrie Johnson, XYL of W7IKT*

14220 Gramatan Avenue
Cleveland 11, Ohio

Editor, *QST*:

Just read letter by "Name Withheld" in November *QST*. Thought she'd like to hear from "strange" species, XYL with ticket. I was bitten by the radio bug in high school. Acquired ticket in '38, Class A in '39, OM (W8OPX) in '42. Funny, don't feel strange!

As for having neither time nor energy for radio, she should try my schedule for a week! Priorities Director in defense plant for 45 hours per week, do housework (when it catches up with me) except breakfast dishes (OM stuck with those), Mama to 4-yr.-old jr. op, secy.-treas. of Westpark Radiops, membership 150 hams. They're all men, but I don't hold it against them (hi!). Ever try swapping yarns with 150 men? More fun than beefing about the high price of meat.

Our rig's in the living room, Zepp feeders on the ceiling, tuner on the wall, just the way I want it — that is, until we build our new rig.

Love OM, love jr. op, love ham radio, having wonderful time, wish she were too.

— *Mary S. Bamberg, W8SBB*

(*Continued on page 122*)

P. O. Box 647
Sarasota, Fla.

Editor, *QST*:

In reply to the XYL who had her name withheld in "Correspondence from Members," November 1951 issue, I wish to say a few words.

I am one of the "strange women" holding a ham license. There are many of us throughout the country who have a sincere interest in ham radio, and those of us who have our own licenses are very proud of our affiliations with ham radio. Some of the gals are not licensed, of course, but those I have talked to at many hamfests and conventions *are* interested in their husbands' hobbies — and what's the matter, my dear, was *your* lack of interest in your husband's hobby the reason you weren't among the "fortunates" attending the convention?

— *Marian Ruffner, W4GTM*

123 8th Avenue, S.W
Aberdeen, S. D.

Editor, *QST*:

I was a bit provoked at the letter in November *QST* from the XYL who remained anonymous. In it she insinuated that any XYL who displayed an interest in ham radio was either crazy or had all the time in the world to spend on it.

I am speaking for myself and the thousands of other women who hold a sincere interest in ham radio. Not only do I do my own cooking, washing, ironing, baking, cleaning, canning and sewing for the family; I have two very active jr. ops, ages 4½ and 1½; but I still find time each day to maintain regular 'phone and c.w. net skeds and still do a little hamming besides.

Ham radio, in my estimation, is the most wonderful hobby in the world. Why? Because it is composed of individuals who wish only to make friends and who in time of stress will drop everything and sit up all night at times to handle traffic. They receive no compensation other than the satisfaction in helping out a fellow human being. Though the QSOs may not make much sense at times, isn't that a lot better than the back-biting and gossip which often takes place at bridge parties? I believe this world would be a far better place to live in if everyone had the spirit and goodwill of radio amateurs.

Moreover, I feel that a wife should display an interest in her OM's hobby, whether it be ham radio or flying a kite. It makes for a happier marriage and creates a closer companionship.

— *Angeline K. Angerhoffer, WØIEI*

329 Walnut Street
Stoughton, Mass.

Editor, *QST*:

Many hamfests have I enjoyed with my husband and always looked forward to the next one. I don't have a radio license and am "only" an XYL, but my husband's friends always make me feel welcome at their conventions. I have never met a ham who wasn't congenial and have often had them say to me that they wished that their wives would go along with them.

Don's rig is welcome in our living room. It's enclosed, very neat, and an added source of entertainment to our guests. I find it a wonderful way to visit with people the world over and chat with other XYLs who recognize the advantage of having this source of communication in their own home.

Of course any hobby can be abused, but I challenge that XYL in November *QST* to attend just one big convention and try to find the other point of view.

— *Eldora G. Hinds, W1FRZ's XYL*

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 noncommercial 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.

QSL's: 100, $1.85 up. Samples 10¢, refunded when ordering. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

SUBSCRIPTIONS. Radio publications a specialty. Earl Meade, Huntley, Montana. W7LCM.

QSL's-SWL's. Mead, WØKXL, 1507 Central Avenue, Kansas City, Kans.

5-Element 2-meter beams. Riverside Tool Co., Box 87, Riverside, Ill.

WANTED: Old radio magazines and catalogs prior to 1921. Send list and prices — or will trade. Vance Phillips, W6GH, Hope Ranch, Santa Barbara, Calif.

QSLS, SWLS. Samples, 10¢. C. Fritz, 1213 Briargate, Joliet, Illinois.

WANTED: March and May 1916 QSTs. 200 copies for sale 1920 to 1951 at 25¢. WØMCX, 1022 N. Rockhill Rd., Rock Hill 19, Mo.

WANTED: Your surplus radio receivers, transmitters, ARC-1, ARC-3, ART-13. We buy anything. What have you? Tom Allen, 562 Atlantic Ave., Brooklyn 17, N. Y.

QSLS! Taprint, Little Rock, Mississippi.

WANTED: Indices to QST volumes 6 to 19, both inclusive. Also "Pink Sheet" one-page supplement to October, 1919 "QST" announcing lifting of transmission ban, and April, 1919 8-page pamphlet entitled "Getting Together Again", mailed to League members before publication of "QST" resumed after World War I. Also complete files, odd lots, or single copies of Southern Edition QST's. Jan. 1936 to Dec. 1939, both inclusive, and Western Edition, years 1936 and 1941. Must have both covers and be in very good condition. Sumner B. Young, WØCO, Route 3, Wayzata, Minn.

WANTED: Radio officers for Merchant Marine. $400 per month or more. Men who hold or who formerly held 1st Cl. 2nd Cl. or TLT radiotelegraph license and 6 months ship radio operating experience. Radio Officers Union, 1440 Broadway, New York, N. Y.

PHONE patch schematics, practical discussion, $1.00. W1MRK, Nichols.

FOR Sale: Millen 98010 HF xmittr, Sonar VFX 680, Gonset 6 meter converter, all in new condition. Will sacrifice all or part for cash. Make offer. I may take you up. Write for details & pix. Joe Roberts, Conway, Arkansas.

QSL and SWL cards. Samples. W1SQF, Minner, Candia, N. H.

REX Bassett, Incorporated can no longer deliver Amateur Crystals because of high volume high priority production for defense of our country. We don't like it any better than you do but we must help lick them first.

WANTED: Bargains in transmitters, receivers, test-equipment and miscellaneous gear. What have you? W5ZZ, 718 N. Broadway, Oklahoma City, Oklahoma.

WANTED: TG-29 telegraph repeater. I-193-A relay test set. W6ITH Moraga, Calif.

WANTED: HF-10-20 converter in good condition. Will trade pair 4/65A's and Hi Impedance bdcst. station microphone. Write for details. W. Rashok, W6JEK, 3933 N. DeGarmo Ave., El Monte, Calif. Phone FO-8-3155.

QSLS: Unk Fred QSLS. Three colors and up. Rainbow map QSLs. Special DX QSLs. Bargain QSLs. Samples rushed, 10¢. Uncle Fred, Box 86, Lynn, Penna.

HAVE new mobile 75 meter Deluxe AM xmttrs and new 6 volt Carter 400 volt Dynamotors and assorted choice tubes and equipment for swap or sale. Want new xmittg. and special-purpose tubes and/or equipment. B. N. Gensler, W2LNI, 136 Liberty St., NYC 6, N. Y.

SELL or swap: Eico VTM, 425 'scope, signal generator almost new, Hallicrafters S-37, HT-17 xmitter for small transmitter 160 through 10 with VFO fone cw and/or highest offer. All good order. My time limited. Will make deal on parts transformers, tubes, etc. Makings for 150-watt 807 rig. Write card. Wait for reply. W3PFA, 608 Green St., Norristown, Penna.

FOR Sale: RME-45 with speaker, good condition, $75. I-106A WE 100-160 Mc. indicator, $28.50; WE 255A Polar Relay with connector, original carton, $25. WE215 relay, used, $17.50; Weston 695 output meter, $22.50. Semel, W2SHE, 111-55, 77th Ave., Forest Hills, L. I., N. Y.

FOR Sale: 1½ K.W. transformer, 110-220 to 1100-2200. $25.00. W1HRR, Taconic, Conn.

SALE: Mobile, all-band xmitter, used less than 10 hours. Owner too busy to use. TBS50C and Radiart Vibrapack; Lysco VFO and Vibrapack; Gonset Tri-band; E-V 210 mike; MM 75-10 ant and base; cables, coax and hardware ready to transplant to your car. A. W. Woods, M.D., 411 Woodward Building, Birmingham 3, Ala.

SELL: *QST* 1943–1950, Radio News, 1944–1950, complete sets, in new condition. Best offer. Hallicrafters S-40A, first $55.00 takes it. Theodore Ferus, 48 Hawthorne St., Lowell, Mass.

FOR Sale: Chicago or vicinity: 250 w. 10-meter 'phone xmitter with tubes and mike: T40s final, fully metered, 6 ft. steel cabinet, 5 pwr supplies. Cost $300 new. Will take $100. W9HCF, 17068 Wood St., Hazelcrest, Ill.

NEW 3-element wide-spaced 20-mtr. beam, complete with 60 ft. armored coax feedline, matching stub, and mounting fittings. Never used. $89 prepaid. Parsons, W5LGG, 1204 Pasadena, Austin, Texas.

WANTED: Code practice sender, tapes, used. Alex Calder, Absecon, N. J.

WANTED: New or used Collins 70E-8A VFO unit. W9WHN, 424 E. 3rd, Lockport, Ill.

WANTED: AN/APR5. Prefer oscillator only but will take complete unit. L. R. Krahe, 363 E. 75th St., Chicago 19, Ill.

REQUIRE following fill-ins to complete file: May, June, July 1916 *QST*, US Govt. Prtg. Office Call Books; Commercial Stations, 1922 Amateur Stations 1926. Large size Radio Amateur Call Book Winter (W) Spring (SP) Summer (SU) Fall (F) issues: 1951 W, Su, F; 1950 Su; 1949 Sp, Su; 1948, F; 1945 All; 1942 Su, F; 1936 All; 1935 Sp; 1934 Sp, Su, F; 1933 W, F; 1932 All; 1931 F; 1930 Sp; 1929 W; 1927 All; 1926 All; 1925 W, F; 1924 W, Su, F; 1923 Su, F; 1922 Sp, Su, F. All earlier. Willits, W1PN, Box 26, Hyannis, Mass.

WANTED: Equipment for grinding quartz crystals. D. F. Williams, Box 915, Bartlesville, Okla.

SELL or trade for small 10-meter transmitter Amertran 3140 VCT, 1½ Kw. output 110/120 V. 60C primary. Also 1940–50 QST complete. W2PVP, Bainbridge, New York, 52 No. Main.

SELL HRO-7 power supply, loudspeaker, coils and NBFM unit, $185; pair Eimac 4-125A tubes and sockets, never used, $35. Amphenol-Mims beam 20 and 10 rotator and direction indicator, 20 and 10 Gordon adjustable elements, $199. E. F. O'Brien, 86–10 34th Ave., Jackson Heights 72, L. I., N. Y.

FOR Sale: Std. parts for 1 kilo. final including 2300 volt bridge rectifier, B&W H.D.V.I. coils, bias supply, neutralizing condenser, choke, dials, milliammeters, panels, chassis. W4CA.

FOR Sale: Rider's 'Chanalyst', $50 F.o.b. Complete set Rider's Manuals, 20 volumes, $115. F.o.b. 40 meters, ARC-5 receiver, transmitter, 500 volt and 200 volt power supplies, 3 units, converted, ready to go. $25.00 F.o.b W2RTM, 443 Saratoga Rd., Scotia 2, N. Y.

GRID Dip, $10; 10-meter crystal converter, $8. W6RET, 550 So. "G" Oxnad, Calif.

SELL: QST, 1941–50, including 3 binders. Perfect condx. One issue missing. Weight 60 lbs. Best offer plus postage. A. Simon, 1422 Ocean Park Blvd., Santa Monica, Calif.

OVERSTOCKED on surplus 304TLs? Will trade pair of unused 100THs for four or more 304TLs. W6NVH, 341 Nova Lane, Palo Alto, Calif.

WANT Radio News special edition May 1946 thru July 1949. R. T. Kroll, W8WUC, 1306 Forest, Ann Arbor, Mich.

NC-183 like new, with FM adapter, $195. Uses any PM speaker. W9KJF, 5899 N. Delaware St., Indianapolis 20, Ind.

WANTED S-meter for Hallicrafters S40A. J. E. Brinkmann, jr., 7634 Euclid, Chicago, Ill.

WANT: SCR-284A (BC-654A) ART-13, TCS and their dynamotors, cables, control units, accessories, parts. RA-34 rectifier, BC-348, BCO312, BC-342, BC-221. Test Equipment. Arrow Appliance, 525 Union, Lynn, Mass.

COMPLETE Deluxe low power station with outstanding performance record, consisting of Collins 310B3 transmitter with antenna relay and 4-tube custom-built keyer plus all coils for 10 thru 80. All-chrome jewelled Vibroplex speedkey, HRO-7 recvr with all coils, power supply, and spkr, and two antennas. All in perfect condx and unconditionally guaranteed, for $395 cash. Reason: no time to operate. G. M. Clark, W2JBL, 22 Mulford Pl., Hempstead, N. Y.

SELL: complete ham station. All commercial equipment: 150W all-band fone/cw xmittr, HQ-129X recvr, VHF152A, Panadaptor, BC453 Q5'er, BC221, freq. meter, Meissner VFO, Ant. Tuner, Workshop 3 el., 10 meter beam, rotator, selsyns, control panel, cable, coax, D104 mike, Vibroplex, R9'er, complete 420 Mc. Transceiver, spare parts, tubes, etc. The buy of a lifetime and in like-new condx. All for $500. Pick up or will deliver 150 miles from Philly. W3CLP, 1332 Kynlyn Dr., Wilmington, Delaware. Phone Holly Oak 8–1587.

WANTED: Teletype 1/40th HP synchronous motor. Also want TG-29 telegraph repeater. I-193-A relay test set. W6ITH, Moraga, Calif. SCR-211T freq. meter gtd. Good condx Instr. Bk., less batteries. $50. F.o.b. W4LMU, Box 99, Blacksburg, Va.

FOR Sale: Hickok 610A sweep Gen. and 505A 'scope. Bargain! Each item like brand new, used less than ten times by owner. Orig. cartons and sales slip. Want $140 and $120 or deal for Collins 32V2 or 75A2. Wm. Smith, W2WVU, 115 Eastern Ave., Bellmore, L. I., N. Y.

TRADE 16 mm Eastman magazine camera, case, 25 mm 50 mm, lenses for good communications receiver. W4BIR.

WANT Harvey-Wells Bandmaster deluxe or Lettine 240 xmittr, also reasonably priced recvr. Blum, 2661 Dibblee Ave., Columbus 4, Ohio.

HRO-50R black for rack mount. Excellent condx. Best offer over $270. Other bargains. W3FKQ or P. O. Box 2713, Baltimore 25, Md. W1JR on Mockingbird Hill fall house cleaning. Good surplus tubes and gear. No junk. C. C. Richelieu, 125 Dyer St., Gardner, Mass.

SELL complete Novice station. S38B receiver, 1 tube xmitter, May *QST*, power supply, June *QST*. Best offer. Roger Kapp, W2EEL, 111-09 76th Road, Forest Hills, L. I., N. Y.

WANTED: Technical manuals for SCR-296, 545, 547, 602; AN/TPS-1, 2. Phillip Leavitt, 21 East 82nd St., N. Y. 28, N. Y.

SELL cheap or swap, A-1 condition, T-14C/TRC-1, R-19B/TRC-1, TRC-1 Handset, RME-45A with NBFM, two 450TL, 575A, 810, 812, 803, one 250TH, 100TH, 836, Four 872A, 24G. Want SX-28, S-38, power transformer, Preselector, mobile equipment, W9QCJ, 4629 N. Elkhart Ave., Milwaukee, Wis.

TOP cash for APR-4 units and parts; microwave test equipment, ARC-1, ARC-3, ART-13, etc.; TS-34 and other "TS-"; good quality laboratory equipment; manuals, tubes, meters and parts. Will also trade TV, SX-28, VTVM, Astronomical telescope, etc. Littell, Farhills Box 26, Dayton 9, Ohio.

SELL: 60 watt 80-40 meter cw xmitter: $18. W2WZB, 40 Arthur pl, Red Bank, N. J.

GLOBE King transmitter for sale. Complete with coils for 10, 20, 40 and 80 meter bands. This transmitter has been used very little and looks just like new. Will deliver personally if not more than 250 miles. Will accept TBS-50C as part payment or what have you. Robt. A. Hickey, W1PFT, (MARS AF1PFT) 51 Gallivan Blvd., Dorchester 24, Mass. Tel. BL 8-6333.

SELL: VHF-152A like new, $75. CRV-46151 aircraft rcvr covers 1.9-9.5 Mc. inc. broadcast band complete conversion plans, $30. SCR-522 converted for 2 mtrs, needs 400 volt xfrmer otherwise complete rcvr/xmittr, $50. 40 meter station BC-458 and BC-455, both use 6 v. tubes power supplies for each, ribbon dipole antenna, key, operating, $50. W5RY, R. H. Sneed, 643 Eagle Ave., Jackson, Miss.

NEW crystals for all commercial services at economical prices; also regrinding or replacement crystals for Broadcast, Link, Motorola, G-E and other commercial types. Over 16 years of satisfaction and fast service! Edison Electronic Co., Temple, Texas. Phone 3-3901.

OSCILLOSCOPE Supreme model, 546 3-in., $25. Andrew Thompson, W4GGD, Cochran, Ga.

FIRST $65 takes WRL Trotter, 40, 20, 10 coils, xtals, mike, antenna relay. Ed Sewell, Waldo, Arkansas.

SELL or trade: SCR522, 2 meter xtals, 2 meter 5 element Elincor beam, 832A. W2VOT.

WANTED: RA-34 rectifier, ART-13 sets, dynamotors, cables, etc. TCS sets, dynamotors, cables, remote control, loading coil. SCR-284, BC-654, PE-103, PE-104, GN-45, BC-221, BC-348, BC-312, BC-342. Test equipment, cash or trade. T. Clark Howard, W1AFN, 46 Mt. Vernon, Boston 8, Mass.

BARGAINS: New and reconditioned Collins, National, Hallicrafters, Hammarlund, RME, Millen, Gonset, others. Reconditions S-38, $29; S53, $49; S40A, $69; SX43, $119; SX41, $149; SX42, $199; NC57, $69; NC173, $139; NC183, $199; HR05TA1, $159; HQ129X, $139; HF-10-20, VHF152A, RME84, RME-45, SX-25, SX-62, HR07, HR050, SP400X, Collins 75A1, others. Shipped on approval. Terms. List free. Henry Radio, Butler, Mo.

WANTED at reasonable prices: S36A receiver, SA3 or PCA2, T200 Panadaptor; sell SCR-522R. McGregor, 7049 Western Avenue, Washington, D. C.

WANT: Good recorder. Sell: 779B, 129X, Meissner VFO, barbells, accordian. Write: W61WR.

ELIMINATE TVI. Shield your rig. 26 gauge heavy plated bright steel. Perforated 75 #53 holes per inch. Easily cut forms & soldered. Sheets 29" x 23", 2 for $3; five for $6 postpaid. Sample dime in stamps. Republic Television, Inc., Dumont, N. J.

SUPER PRO 400X spare parts, power transformer, input and output power chokes, resistor strips, input and output audio transformers all five I.F. transformers, "S" meter, and UTC-LS-19 and LS-55. All in original cartons, new or like new. Submit your offer. WJRSB, 15 Churchill Road, Pittsburgh 35, Penna.

TRADE or sale: TA12 xmitter, 150 watts, one knob bandswitching, modified, VFO 80-40-20, xtal 10; NC-57 rcvr in excellent condition. Trade for a NC173, NC183 or HQ-129X or sell for best offer over $200. W3RGN, 1208 Regester Ave., Baltimore, Md.

FOR Sale: two power supplies: 115V 60 cycle, 2250 VDC at 500 Ma, $65. 1500 VDC at 500 Ma, $50.00. New components. W4SHF, James W. Craig, jr., 332 Henry Clay Boulevard, Lexington 5, Kentucky.

FOR Sale: Complete mobile rig consisting of Harvey Wells TBS50D, Gonset Tri-band converter, Gonset noise clipper, Dynamotor, Chrysler 60 Amp. generator, 6V DC Advance co-ax relay, Premax 75 meter antenna, $325.00 value. Only $250.00. W2ZRV, 141 A 22nd Street, Brooklyn 32, New York.

WANTED: Marconi, DeForest, Wireless Specialty Apparatus, Collins "Wireless Telegraphy", Wireless Age, Tuning Coils, loose couplers, crystal detectors, early hand keys, Clapp-Eastham receiving apparatus, spark apparatus, *QST* Binders. When answering, please describe these items fully and asking price. L. Rizoli, W1AAT, 100 Bayview Ave., Salem, Mass.

MODERN Station for sale: All Collins equipment except Panoramic adapter, 310-B exciter, complete; 75-A receiver with plated crystals, 30-J transmitter complete with coils and crystals for 10-20-40-80-160 meter bands, RBU-2 3" tube Panoramic adapter connected to receiver. Exciter new, never used, in cabinet to match 75-A. Receiver and Panadapter used approximately 5 hours, and the adapter new when purchased. Some spare tubes. $1500 for everything, F.o.b. Cedar Rapids, Ia. 3000 cycle filter included but not installed. Will only sell complete unless there are sales for each unit individually. Everything strictly new condition. WØNLE, 2209 Blake Boulevard, Cedar Rapids, Iowa.

FOR Sale or trade: G-E tube tester. B&W TVL xmitting coils. H.V. power supply parts. Send for list. W. O. Anderson, W6UQG, Rt. 2, Box 1749, Oxnard, Calif.

WANTED: *QST* for December, 1915; January, February, March, April, May, June, July, November, 1916, with covers. Have December, 1915; January, December, 1916; October, 1919 without covers. Will sell or trade if good copies can be obtained. Merrill L. Swan, W6AEE, Bin M, Pasadena, Calif.

QSLS? SWLS? Modernistics? Novices? Cartoons? Rainbow-maps? QSL samples, 10¢, Sakkers, W8DED Holland, Mich.

SELL: RC-103A ILS receiver w/antenna, cables, indicator, hardware, etc., new. BC-733D w/dynamotor. Best offer. Gene Pfeiffer, W7JKR, 522 Hollins Ave., Helena, Mont.

WANTED: Power pack for FBXA. Prefer National type 5887 or 5897. L. L. Martin, W5SPS, Box 67, Goodfellow AFB, San Angelo, Texas.

GUARANTEED to be satisfactory reconditioned used equipment: NC-46, $59.50; Gonset 6-10-11-15 converter (AC model), $49.50; S-20R, $39.50; Comet-Pro $35.00; 92101 R9'er with ten meter coils, $15.00; Breting 49AX, $59.50; excellent HRO-5TA1, $175.00; HT-17, $45.00; Stancor 60P modified for 160-10 operation, all coils, $99.50; others. Write for latest list to Carl Evans, W1BFT, Evans Radio, P. O. Box 312, 10 Hills Ave., Concord, New Hampshire.

FOR Sale or trade on low powered transmitter, Meissner FXM modulator with tubes, used one hour. Sell set code records, hamfest prize. W8AXR, W. E. Kell, 424 W. 4th St., East Liverpool, Ohio.

BARGAINS: Extra special! Motorola P-69-13 Mobile receivers, $29.50; Globe King, $315.00; HT9, $199.00; SP400X, $249.00; HRO7, $199.00; Collins 32MA, $99.50; Collins 75A1, $295.00; HTO-5T, $175.00; Hallicrafters S-47, $109.00; RME-45, $99.00; Meissner EX Shifter; S-40A, $69.50; VHF 152A, $69.00; HF-10-20, $59.00; SX-24, $69.00; Globe Trotter $79.50; Meissner Signal calibrators, $24.95; MB611 mobile transmitter, $29.00; 90800 exciter, $29.50, XE10, $14.95, and many others. Large stock of trade-ins. Free trial. Terms financed by Leo, W9GFQ. Write for catalog and the best deal to World Radio Laboratories, 740-44 West Broadway, Council Bluffs, Iowa.

866A Kit, two tubes, sockets, trans. $6.98. Crystals ham band 3525, 3655, 3700, 3735, 3825, 3980,3995 Kilocycles, $1.25; 4 for $5.00. Sell your surplus tubes and equipment. Free Tabogram "TAB", 109 Liberty Street, New York 6, N. Y.

SELL: Transmitter, phone/c.w., Parallel 807's, with BC459, TVI filters, shielded cabinet. Will trade for photographic equipment. W9YVZ, 10815 Central Park Avenue, Chicago 43, Illinois.

COLLINS 32V-2 and associated 500 watt phone transmitter for sale. 32V-2 serves as RF and AF driver for big rig, or can be used as straight transmitter by operating only one switch. 500 watt transmitter housed in deluxe 66" enclosed cabinet; has PP HF-200-s in final modulated by 805's; individual power supplies for final and modulator; bias supply; low impedance antenna tuner for coax line; relays: line contactor, time delay, plate, overload; five 3" meters. Price complete $975. W9NHF.

SALE: W.R.L. Globe King, new condition, factory built to run 450 watts phone; coils for 80-40-20-10. May be heard any day. Price $325. W8DXH, Floyd Davis, Grayling, Michigan.

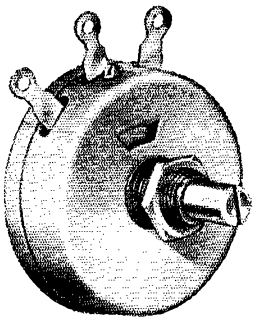
SELL: BC-610, in top condition, factory converted, for 10. All coils: $480. Osborne, W6WSM, 1124 65th Ave., Oakland, Calif.

SELL: NC-173, DB20, 100 Kc. QS'er. In excellent condition, $179. W2CR, 412 Humboldt St., Rochester 10, N. Y.

SWAP: Gonset 110 volt 2-6-10 converter for Mobile Gonset Tri-band and/or noise limiter. Bill Adams, W6ANN, 6405 Corsini Pl., San Pedro, California.

Index of Advertisers

MALLORY HAM BULLETIN



Type "M" 4 Watts

For every amateur or professional application...

MALLORY

Wire Wound Controls

The year after year continued preference for Mallory wire-wound controls, in amateur handbook and magazine "how to build it" articles, is a wonderful testimonial to the technical skill and ability of Mallory engineering. Continued amateur patronage, plus enthusiastic acceptance by professional users, has made the production of small wire-wound controls at Mallory a highly controlled and uniform process.

The manufacture of high quality wire-wound controls has been a specialty at Mallory almost as long as such controls have been used by radiomen. As a result, practically every style and resistance value needed for amateur or professional application will be found listed in the latest Mallory catalog. There is a style or value for use in just about every circuit around the ham shack—"S" meter circuits, bias control in the cathode of RF, IF, and modulator tubes, excitation level adjustment in crystal oscillators, "T" and "L" attenuators, and all sorts of test equipment circuits, to mention only a few.

For your information and possible help the next time you require a wire-wound control, a few of those available in the latest Mallory catalog are listed and described below.

"C" TYPE 2 WATT WIRE-WOUND—This control is one of the smallest capable of dissipating a full 2 watts. It measures only 1⅛" in diameter, and as a result it is a handy control for many bias, "S" meter, and other low voltage applications where physical size is a factor. It features a grounded rotor arm, screw driver slotted shaft, and a full 266° of electrical rotation. Resistance values from 6 to 15,000 ohms are available.

"R" TYPE 2 WATT WIRE-WOUND—The "R" control has many amateur applications. Its 1500 volt AC insulation between shaft and resistance element, and its dust proof phenolic case, make this control safe for amateur circuits where high potentials may be encountered. The shaft is a thumb knurled and screw driver slotted stub ¼" in diameter to which a special 3" extension shaft may be added when desired. The "R" control is made in resistances from 20 to 5000 ohms.

"M" TYPE 4 WATT WIRE-WOUND—This control is the old stand-by used by more amateurs than any other made. Wherever variable resistors of 4 watts or less are required, the "M" control should be the logical choice. With resistance values of 0.5 to 70,000 ohms available it is universally acceptable for voltage division, bias control and test instrument circuits of all kinds.

"E" TYPE 7 WATT WIRE-WOUND—The 7 watt "E" control fills the gap between the low power "C", "R", and "M" controls, and the higher power and more expensive units of 25 watts. This control is particularly well suited for use in screen grid and similar circuits where voltage division or adjustment is desired. Nine resistances are available from 5,000 to 150,000 ohms.

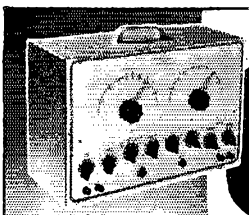
In addition, the Mallory catalog lists a variety of resistance values in "T" and "L" pads. Center-tapped wire-wound controls and units with tapered windings for special service are all available through your nearest Mallory Distributor. See him today for Mallory wire-wounds, power resistors, carbon controls and those other Mallory components you need to keep your equipment in good operating condition.

In the meantime, watch for the announcement of new Mallory power controls from 25 to 500 watts.

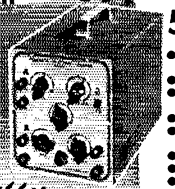
P. R. MALLORY & CO., Inc.
INDIANAPOLIS 6 INDIANA

P.R. MALLORY & CO. Inc.
MALLORY

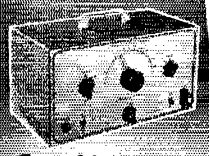
New 1952 HEATHKITS



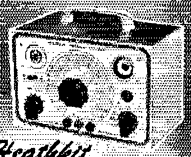
Heathkit TELEVISION GEN. KIT $39.50



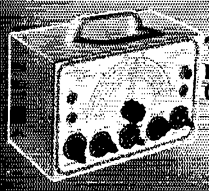
Heathkit ELECTRONIC SWITCH KIT $19.50



Heathkit AUDIO GEN. KIT $34.50

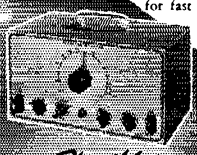


Heathkit CONDENSER CHECKER KIT $19.50



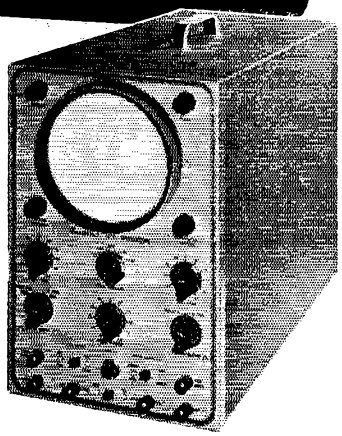
Heathkit R. F. SIGNAL GEN. KIT $19.50

Heathkit A.C. VOLTMETER KIT $29.50



Heathkit SQUARE WAVE GEN. KIT $29.50

Heathkit 5" OSCILLOSCOPE KIT



- New "spot shape" control for spot adjustment — to give really sharp focusing.
- A total of ten tubes including CR tube and five miniatures.
- Cascaded vertical amplifiers followed by phase splitter and balanced push-pull deflection amplifiers.
- Greatly reduced retrace time.
- Step attenuated — frequency compensated — cathode follower vertical input.
- Low impedance vertical gain control for minimum distortion.
- New mounting of phase splitter and deflection amplifier tubes near CR tube base.
- Greatly simplified wiring layout.
- Increased frequency response — useful to 5 MC.
- Tremendous sensitivity .03 RMS per inch Vertical .6V RMS per inch Hor.
- Dual control in vernier sweep frequency circuit — smoother acting.
- Positive or negative peak internal synchronization.
- Multivibrator type Wide Range Sweep Generator.

A brand new 1952 Heathkit Oscilloscope Kit with a multitude of outstanding features and really excellent performance. A scope you'll truly like and certainly want to own.

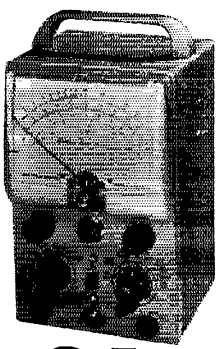
The kit is complete with all parts including all tubes, power transformer, punched and formed chassis, etc. Detailed instruction manual makes assembly simple and clear — contains step-by-step instructions, pictorials, diagrams, schematic, circuit description and uses of scope. A truly outstanding value.

MODEL 0-7

SHIPPING WT. 24 LBS.

$43.50

Heathkit VACUUM TUBE VOLTMETER KIT



- New styling — formd case for beauty.
- New truly compact size — Cabinet 4⅛" deep x 4-1/16" wide x 7⅜" high.
- Quality Simpson 200 microamp meter.
- New ohms battery holding clamp and spring clip — assurance of good electrical contact.
- Highest quality precision resistors in multiplier circuit.
- Calibrates on both AC and DC for maximum accuracy.
- Terrific coverage — Reads from ½V to 1000V AC, ½V to 1000V DC, and .1 to over 1 billion ohms resistance.
- Large, clearly marked meter scales indicate ohms, AC Volts, DC Volts, and DB — has zero set mark for FM alignment.
- New styling presents attractive and professional appearance.

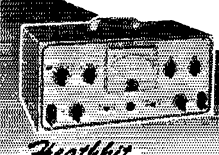
The 1952 Model Heathkit Vacuum Tube Voltmeter! Newly designed cabinet combines style and beauty with compactness. Greatly reduced size to occupy a minimum of space on your work-bench. Covers a tremendous range of measurements and is easy to use. Uses only quality components including 1% precision resistors in multiplier circuit for greatest accuracy. Simpson 200 microamp meter with easy to read scales for fast and sure readings.

All parts come right with kit, and complete instruction manual makes assembly a cinch.

MODEL V-5

SHIPPING WT. 5 LBS.

$24.50



Heathkit INTERMODULATION ANALYZER KIT $39.50

Heathkit AUDIO FREQ. METER KIT $34.50

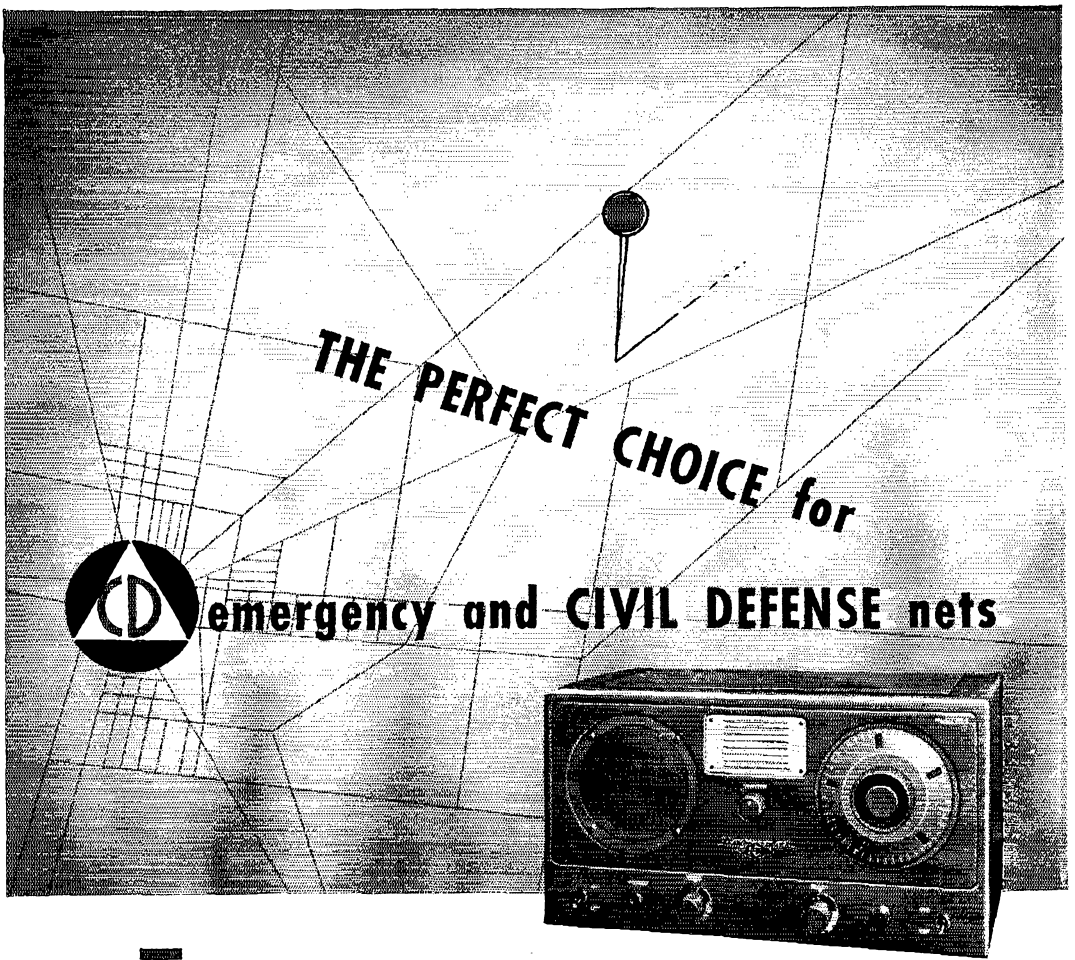
YOU SAVE BY ORDERING DIRECT FROM MANUFACTURER

EXPORT AGENT
ROCKE INTERNATIONAL CORP.
13 E. 40th ST.
NEW YORK CITY (16)
CABLE ARLAB N.Y.

The HEATH COMPANY

BENTON HARBOR 9, MICHIGAN

PRINTED IN U. S. A.
RUMFORD PRESS
CONCORD, N. H.



The most versatile and widest range receiver in the VHF field!

The HFS is the *only* moderate-priced receiver covering the entire VHF spectrum from 27 mcs. to 250 mcs. in 6 bands. Receives AM, FM and CW with exceptional selectivity and sensitivity. Can be used as either fixed or portable receiver, operating from a standard power supply, 6-volt vibrator-type supply *or* a combination of "B" and storage batteries.

Can be used as a complete receiver or a converter for any receiver tuning to 10.7 mcs.

In range, versatility, price and performance, the HFS stands alone in the VHF field!

AVAILABLE FOR IMMEDIATE DELIVERY

$274.00* (incl. all coils)

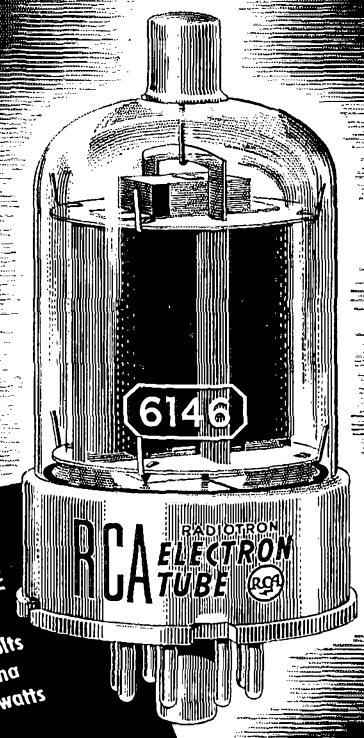
POWER SUPPLY, **$22.43***

*Slightly higher west of the Rockies.

National

NATIONAL COMPANY, INC.

NEW!
RCA-6146



MAXIMUM ICAS* RATINGS

	Below 60 Mc	At 150 Mc
CW		
Plate voltage	750	435 volts
Plate current	150	150 ma
Plate input	90	65 watts
Phone		
Plate voltage	600	350 volts
Plate current	125	125 ma
Plate input	67.5	48 watts

*Intermittent Commercial and Amateur Service

The Fountainhead of Modern Tube Development is RCA

Another RCA advance in Beam Power Tube design

Here's a power tube that will outperform anything in its class. Rated to 175 Mc—only a trifle larger than a 2E26—the new RCA-6146 beam power tube is tailor-made for the amateur 2-meter band.

Rated at a heater voltage of 6.3 volts and current of 1.25 amperes, the RCA-6146 can deliver a CW output (ICAS) of approximately 69 watts at frequencies up to 60 Mc. At 150 Mc, the CW output (ICAS) is approximately 35 watts or better. An RCA-5763 or an RCA-2E26 is an excellent driver for this trim powerhouse.

It goes without saying that the new RCA-6146 incorporates all of the advantages of RCA beam power design . . . including the economy of a low-voltage power supply, and multi-band operation without the requirements of neutralization.

You'll want the full story on this new tube for amateur services. So, ask your local **RCA Tube Distributor** for the technical data bulletin or, write RCA, Commercial Engineering, Section AM48, Harrison, New Jersey.

To get all the tube power, performance, and life you pay for . . . buy genuine RCA tubes in the familiar red-black-and-white cartons from your local RCA Tube Distributor.

RADIO CORPORATION of AMERICA

ELECTRON TUBES — **HARRISON, N.J.**