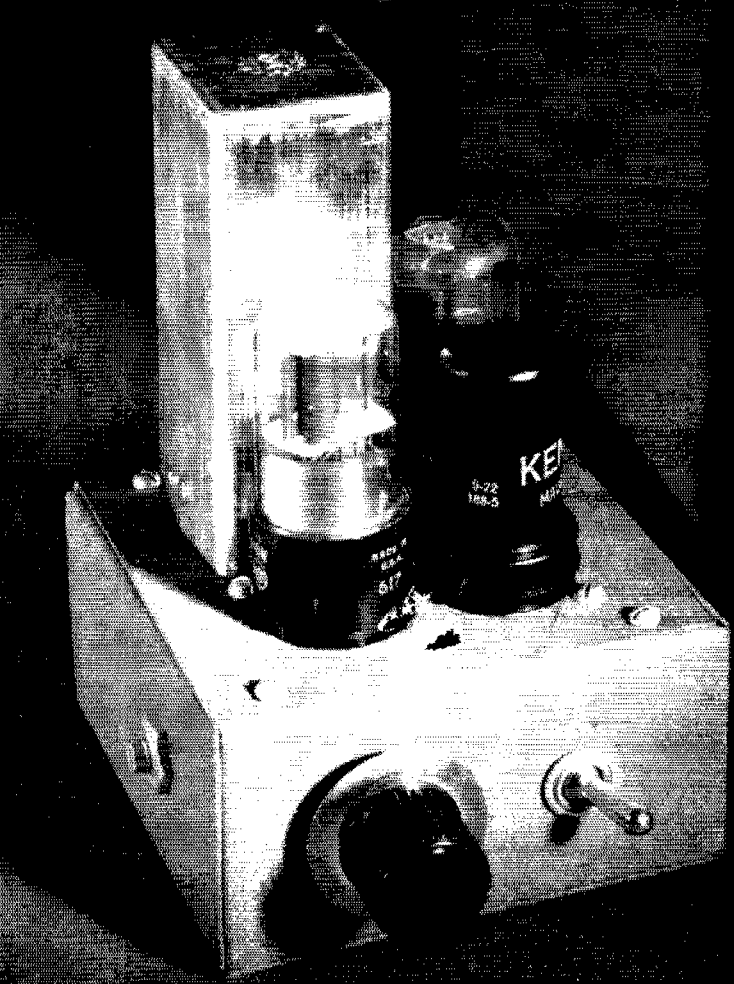
September, 1949
40 Cents

QST

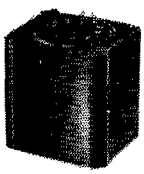
devoted entirely to

amateur radio



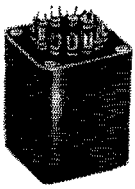
In This Issue — A SIMPLE ADAPTER FOR SINGLE-SIGNAL RECEPTION—

COMPONENTS FOR EVERY APPLICATION



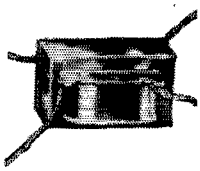
LINEAR STANDARD
High Fidelity Ideal

HIPERM ALLOY
High Fidelity . . . Compact

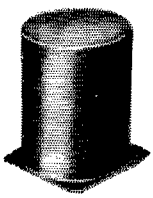


ULTRA COMPACT
Portable . . . High Fidelity

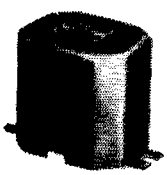
OUNCER
Wide Range . . . 1 ounce



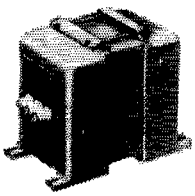
SUB OUNCER
Weight ½ ounce



COMMERCIAL GRADE
Industrial Dependability



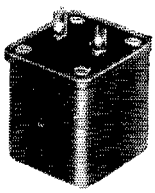
SPECIAL SERIES
Quality for the "Ham"



POWER COMPONENTS
Rugged . . . Dependable

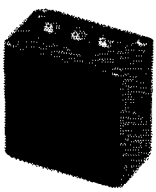
VARITRAN
Voltage Adjustors

MODULATION UNITS
One watt to 100KW

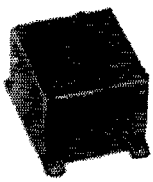


VARIABLE INDUCTOR
Adjust like a Trimmer

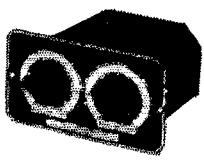
TOROID HIGH Q COILS
Accuracy . . . Stability



TOROID FILTERS
Any type to 300KC

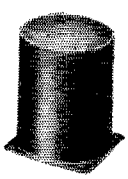


MU-CORE FILTERS
Any type ½ — 10,000 cyc.



EQUALIZERS
Broadcast & Sound

PULSE TRANSFORMERS
For all Services

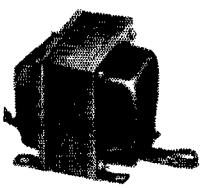


SATURABLE REACTORS
Power or Phase Control

PLUG IN ADAPTER
Impedance Matching

FOSTERITE
Grade 3 JAN Components

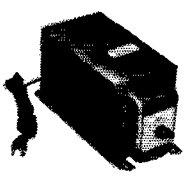
CABLE TYPE
For mike cable line



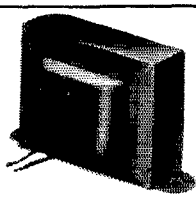
VERTICAL SHELLS
Husky . . . Inexpensive

REPLACEMENT
Universal Mounting

STEP-DOWN
Up to 2500W . . . Stock



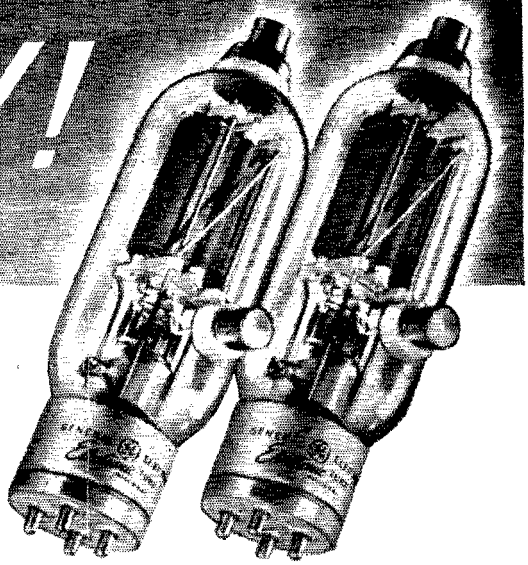
LINE ADJUSTORS
Match any line voltage



CHANNEL FRAME
Simple Low cost

United Transformer Co.

You can't beat this pair for ECONOMY!



	GL-810	GL-8000
Filament voltage	10 v	10 v
Filament current	4.5 amp	4.5 amp
Amplification factor	36	16.5
Max ICAS input, Class C Telephony, per tube	500 w	500 w
Max ICAS input, Class C Telegraphy, per tube	750 w	750 w

TO you triode men, looking for value in the medium-to-high-power class, Types GL-810 and GL-8000 are money in the bank . . . whether you mean to work phone or CW. The cost of either G-E tube is *less than half* that of most other types of equal input. Here's saving!

Both tubes are versatile—will handle each other's assignments. Primarily, however, the GL-810 serves as an audio-frequency amplifier, as witness its need for only—60 v of grid bias when putting out 725 w of audio.

GL-8000 is a natural for r-f service. A pair of these man-size triodes asks for only 16 w of driving power when taking a full kilowatt's input on CW (and this is the CCS maximum, with ICAS top input rated at 1½ kw)!

General Electric quality standards of manufacture clinch the worth of the two tubes. At your G-E tube distributor, learn their favorable price—check it against their high-rating performance. No question but that Types GL-810 and GL-8000 are ham "best buys!" *Electronics Department, General Electric Company, Schenectady 5, New York.*

Series 5 in a listing, by areas, of tube distributors who can supply you with Ham News, G. E.'s bi-monthly magazine:

Asheville, N. C.: Freck Radio and Supply.
Atlanta, Ga.: Concord Radio Corp.; Specialty Distributing Co.
Birmingham, Ala.: Air Engineers, Inc.; J. W. Clary Co.; Forbes Distributing Co.
Charleston, S. C.: Radio Laboratories.
Charlotte, N. C.: Shaw Distributing Co.
Columbia, S. C.: Southeastern Radio Parts Co.
Dothan, Ala.: Signal Radio Supply Co.
Greensboro, N. C.: Johannesen Elec. Co.; Southeastern Radio Supply Co.
Jacksonville, Fla.: Kinkade Radio Supply; Thurow Radio Distributors, Inc.
Lakeland, Fla.: Radio Accessories.
Macon, Ga.: Specialty Distributing Co.
Miami, Fla.: Herman Radio Supply Co.; Thurow Radio Distributors, Inc.
Mobile, Ala.: McGowin-Lyons Hardware Co.; Nelson Radio and Supply.
Orlando, Fla.: Radio Accessories; Thurow Radio Distributors, Inc.
Pensacola, Fla.: Thurow Radio Distributors, Inc.
Raleigh, N. C.: Carolina Radio Equipment Co.; Radio Amateur Center; Southeastern Radio Supply Co.
St. Petersburg, Fla.: Welch Radio Supply Co.
Savannah, Ga.: Specialty Distributing Co.
Spartanburg, S. C.: Noland Co., Inc.
Tallahassee, Fla.: Thurow Radio Distributors, Inc.
Tampa, Fla.: Kinkade Radio Supply; Thurow Radio Distributors, Inc.
Tuscaloosa, Ala.: Allen and Jemison Hardware Co.
W. Palm Beach, Fla.: Thurow Radio Distributors, Inc.
Winston-Salem, N.C.: Dalton-Hege Radio Supply Co.

(List as of June 25, 1949)

ELECTRONIC TUBES OF ALL TYPES FOR THE RADIO AMATEUR

GENERAL ELECTRIC

160-HA5

Meet Your Collins Dealer

These are the authorized Collins Radio Company dealers. Get in touch with the one nearest you. You will find him thoroughly informed about Collins amateur equipment—a good man to deal with.

ALABAMA: BIRMINGHAM—Ack Radio Supply Co., 223 N. 22nd St. **ARIZONA:** PHOENIX—Radio Parts of Arizona, 34-36 W. Madison St. TUCSON—Elliott Electronics, Inc., 418 N. Fourth Ave. **ARKANSAS:** TEXARKANA—Lavender Radio Supply Co., Inc. **CALIFORNIA:** LONG BEACH—Fred S. Dean Co., 969 American Ave. LOS ANGELES—Henry Radio, 11240 W. Olympic Blvd.; Kierulff & Co., 828 W. Olympic Blvd.; Radio Products Sales, Inc., 1501 S. Hill St. OAKLAND—W. D. Brill Co., 10th & Jackson Sts.; Electric Supply Co., 149 12th St. SAN DIEGO—Electronic Equipment Distributors, 1228 Second Ave.; Western Radio & Television Supply Co., 1415 India St. SAN FRANCISCO—San Francisco Radio & Supply Co., 1282-1284 Market St.; Zack Radio Supply Co., 1426 Market St. **COLORADO:** DENVER—Radio Products Sales Co., 1237 16th St. **DISTRICT OF COLUMBIA:** WASHINGTON—Electronic Wholesalers, Inc., 2010 14th St., N.W. **FLORIDA:** HOLLYWOOD—Carl's Radio Shop, 2323 Hollywood Blvd. JACKSONVILLE—Kinkade Radio Supply, 1402 Laura St. TAMPA—Kinkade Radio Supply, 402-04 W. Fortune St. **GEORGIA:** ATLANTA—Specialty Distributing Co., 425 Peachtree St., N.E. MACON—Specialty Distributing Co., 513 Arch St. SAVANNAH—Specialty Distributing Co., 223 E. Broughton St. **ILLINOIS:** CHICAGO—Chicago Radio Apparatus Co., 415 S. Dearborn St.; Montgomery Ward & Co., 618 W. Chicago Ave.; Newark Electric Co., 323 W. Madison St. ROCK ISLAND—Tri-City Radio Supply Co., 1919 Fourth Ave. **INDIANA:** INDIANAPOLIS—Van Sickle Radio Supply Co., 102 S. Pennsylvania St. LAFAYETTE—Lafayette Radio Supply, Inc., 627 Main St. MUNCIE—Radio Supply of Muncie, Inc., 108 N. Walnut St. **IOWA:** COUNCIL BLUFFS—World Radio Laboratories, 744 W. Broadway. DES MOINES—Radio Trade Supply Co., 1224 Grand Ave. **KENTUCKY:** LOUISVILLE—Universal Radio Supply Co., Inc., 533 S. Seventh St. **LOUISIANA:** NEW ORLEANS—Radio Parts, Inc., 807 Howard Ave. **MAINE:** AUBURN—Radio Supply Co., Inc., 28 Cross St. **MARYLAND:** BALTIMORE—Wholesale Radio Parts Co., Inc., 311 W. Baltimore St. **MASSACHUSETTS:** BOSTON—Radio Shack Corp., 167 Washington St. **MICHIGAN:** DETROIT—M. N. Duffy & Co., 2040 Grand River Ave., West. LAURIUM—Northwest Radio of Michigan, 435 Tamarack St. **MINNESOTA:** DULUTH—Lew Bonn Co., 228 E. Superior St.; Northwest Radio, 109 E. First St. MINNEAPOLIS—Lew Bonn Co., 1211 La Salle Ave. ST. PAUL—Lew Bonn Co., 141-147 W. Seventh St.; Hall Electric Co., 386 Minnesota St. **MISSOURI:** BUTLER—Henry Radio, 211 N. Main. ST. LOUIS—Walter Ashe Radio Co., 1125 Pine St. **MONTANA:** BILLINGS—Electronic Supply Co., 214 Eleventh St., West. **NEW HAMPSHIRE:** CONCORD—Evans Radio, 10 Hills Ave. **NEW JERSEY:** CAMDEN—Radio Electric Service Co. of Pa., 513-15 Cooper St. CLIFTON—Eastern Radio Corp., 637 Main Ave. **NEW YORK:** ALBANY—E. E. Taylor Co., 465 Central Ave. AMSTERDAM—Adirondack Radio Supply, P. O. Box 88. JAMAICA—Harrison Radio Corp., 172-31 Hillside Ave. MAMARONECK, LONG ISLAND—High Frequency Equipment & Service Corp., 705 N. Barry Ave. NEW YORK—Harrison Radio Corp., 10 W. Broadway; Harvey Radio Co., Inc., 103 W. 43rd St.; Newark Electric Co., 242-250 W. 55th St. **NORTH CAROLINA:** ASHEVILLE—Freck Radio & Supply Co., Inc., 38 Biltmore Ave. GREENSBORO—Johannesen Electric Co., Inc., 312-14 N. Eugene St. RALEIGH—Radio Amateur Center, 11 E. Hargett St. **NORTH DAKOTA:** FARGO—Fargo Radio Service Co., 515 Third Ave. **OHIO:** CINCINNATI—The Mytronic Co., 121 W. Central Parkway. COLUMBUS—Thompson Radio Supplies, 218 E. Gay St. DAYTON—Srepco, Inc., 135 E. Second St. **OKLAHOMA:** OKLAHOMA CITY—Radio Supply, Inc., 724 N. Hudson St. TULSA—Radio, Inc., 1000 S. Main St. **OREGON:** PORTLAND—Pacific Stationery & Printing Co., 414 S.W. Second Ave.; United Radio Supply Co., 22 N.W. Ninth Ave. **PENNSYLVANIA:** ALLENTOWN—Radio Electric Service Co. of Pa., 1042 Hamilton St. PHILADELPHIA—Radio Electric Service Co. of Pa., N. W. Corner 7th & Arch Sts. PITTSBURGH—Cameradio Co., 963 Liberty Ave. **RHODE ISLAND:** PROVIDENCE—W. H. Edwards Co., 94 Broadway. **TENNESSEE:** CHATTANOOGA—Specialty Distributing Co., 709 Chestnut St. KNOXVILLE—Chemcity Radio & Electric Co., 12 Emory Parkway. MEMPHIS—Bluff City Distributing Co., 905 Union Ave. **TEXAS:** ABILENE—R & R Electronics Co., 1074 N. First. AUSTIN—The Hargis Co., 706 W. Sixth St. CORPUS CHRISTI—Electronic Equipment & Engineering Co., 1310 S. Staples St. DALLAS—Ra-Tel, Incorporated, 2123 Cedar Springs. HOUSTON—R. C. & L. F. Hall, Inc., 1306 Clay St. SAN ANTONIO—Amateur Headquarters & Supply Co., P. O. Box, 5086, Beacon Hill Station. WACO—The Hargis Co., 1305 Austin St. **UTAH:** SALT LAKE CITY—Radio Supply Co., 45 E. Fourth South St. **VIRGINIA:** NORFOLK—Radio Equipment Co., 821 W. 21st St. **WASHINGTON:** BELLINGHAM—Waitkus Supply Co., 110 Grand Ave. EVERETT—Pringle Radio Wholesale Co., 2514 Colby Ave. SEATTLE—Western Electronic Supply Co., 2609 First Ave. SPOKANE—Northwest Electronic Co., North 102 Monroe St. TACOMA—C & G Radio Supply Co., 714 St. Helens St. **WEST VIRGINIA:** CHARLESTON—Chemcity Radio & Electric Co., East Washington St. PARKERSBURG—Randle & Hornbrook, 536 Seventh St.

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QST

SEPTEMBER 1949

VOLUME XXXIII • NUMBER 9

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

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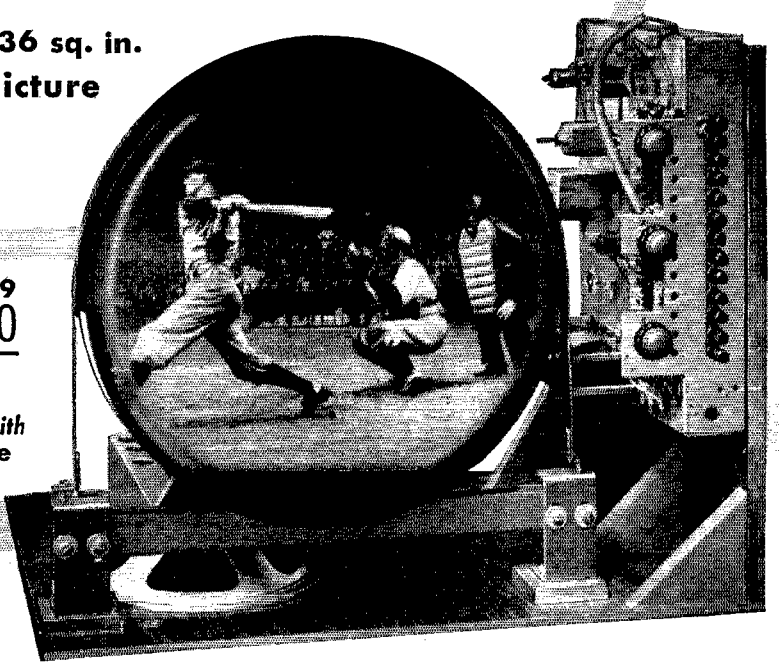
INDEXED BY
INDUSTRIAL ARTS INDEX

—CONTENTS—

New hallicrafters
15-in. Custom Installation TV

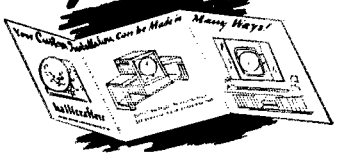
136 sq. in. picture



MODEL T-69
$259.50
complete *with* 15-in. tube

A *new* chassis, specially designed for big picture-tube operation. Completely aligned and tested. Regular RMA 90-day guarantee applies to all parts. See your local parts distributor for details.

Free



Send for folder of original custom-installation designs by Hallicrafters.

Other TV Chassis

Model T-64 with 10-inch Tube.. $179.50

Model T-64 with 12-inch Tube.. $199.50

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the hallicrafters co.

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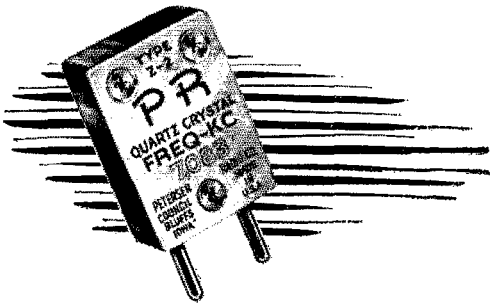

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10 METERS, Type Z-5, $5.00 • 20 METERS, Type Z-3, $3.75 • 40, 80 AND 160 METERS, Type Z-2, $2.75

PR Crystals

Since PR 1934

USE PR AND KNOW WHERE YOU ARE

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

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* are invited to join the ARRL Emergency Corps (ask for Form 7).

ATLANTIC DIVISION				
Eastern Pennsylvania	W3BES	Jerry Mathis	623 Crescent Ave.	Glenside Gardens
Maryland-Delaware-D.C.	W3BWT	Eppa W. Darne	132 Tennessee Ave., N.E.	Washington 2, D. C.
Southern New Jersey	W2OXX	G. W. (Bill) Tunnell	22 Wyoming Ave.	Audubon
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Western Pennsylvania	W3KWL	Ernest J. Hlinsky	509 Beechwood Ave.	Farrell
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Tennessee	W4QT	Ward Buhrman	1000 Overlook Ave.	Chattanooga
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N. Y. C. & Long Island	W2OBU	George V. Cooke	88–31 239th St.	Bellerose 6, L. I.
Northern New Jersey	W2ANW	Thomas J. Lydon	190 Mortimer	Rutherford
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Eastern Massachusetts	W1ALP	Frank L. Baker, jr.	91 Atlantic St.	North Quincy 71
Western Massachusetts	W1AZW	Prentiss M. Bailey	62 Dexter St.	Pittsfield
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Vermont	W1NLO	Burtis W. Dean	P. O. Box 81	Burlington
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Montana	W7EGN	Fred B. Tintinger	328 Central	Whitefish
Oregon	W7MQ	J. E. Roden	519 N.W. Ninth	Pendleton
Washington	W7ACF	Clifford Cavanaugh	Route 1	Auburn
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Nevada	W7CX	N. Arthur Sowle	Box 2025	Reno
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Sacramento Valley	W6ZF	Ronald G. Martin	2638 13th St.	Sacramento 14
San Joaquin Valley	W6FKL	Ted R. Souza	3515 Home Ave.	Fresno 4
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South Carolina*	W4ANK	T. H. Wood	Route 6, Box 690	Naval Base
Virginia	W4KFC	Victor C. Clark	Box 73	Annandale
West Virginia	W8JM	Donald B. Morris	303 Home St.	Fairmont
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Colorado	WØIQZ	M. W. Mitchell	1959 Uinta St.	Denver 7
Utah-Wyoming	W7NPU	Alvin M. Phillips	RFD 2	Ogden, Utah
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Western Florida	W4DAO	Luther M. Holt	223 W. Romana St.	Pensacola
Georgia	W4DXI	Clay Griffin	1557 Athens Ave., S.W.	Atlanta
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SOUTHWESTERN DIVISION				
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Arizona	W7MLL	Gladden C. Elliott	39 North Melwood	Tucson
San Diego	W6BWO	Dale S. Bose	12851 E. California St.	Santa Ana
WEST GULF DIVISION				
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Oklahoma	W5AHT/AST	Frank E. Fisher	104 East 11th St.	Pawhuska
Southern Texas	W5BDI	Ammon O. Young	4803 Eli St.	Houston 7
New Mexico	W5SMA	Lawrence R. Walsh	P. O. Box 1663	Los Alamos
MARITIME DIVISION				
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ONTARIO DIVISION				
Ontario	VE3CP	Thomas Hunter, jr.	1920 Ellrose Ave.	Windsor, Ont.
QUEBEC DIVISION				
Quebec	VE2GL	Gordon A. Lynn	c/o Radio Division Montreal Airport	Montreal, P. Q.
VANALTA DIVISION				
Alberta	VE6MJ	Sydney T. Jones	P. O. Box 373	Edmonton, Alta.
British Columbia*	VE7ID	Ralph Norman	8090 Main St.	Vancouver
Yukon	VE8AK	W. R. Williamson	P. O. Box 534	Whitehorse, Y. T.
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Manitoba	VE4AM	A. W. Morley	26 Lennox Ave.	St. Vital
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Manufacturers of Precision Radio and Television Equipment

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 Secretary at the administrative headquarters at West Hartford, Connecticut.

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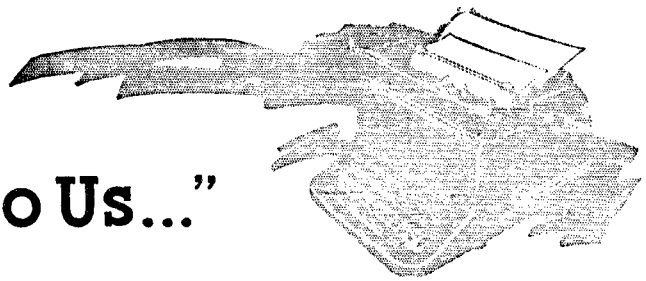

"It Seems to Us..."

A.R.R.L. COMMENTS ON F.C.C. PROPOSALS

When FCC announced its proposed changes in the amateur rules (Docket 9295) it invited all interested parties to file comment. Pursuant to the decision of the League's Board of Directors to register opposition to the Commission's proposal for "a new overall plan or blueprint to provide scope and direction for the immediate and long range development of the service" the League, on July 19th, filed the following written statement and brief.

1631

FEDERAL COMMUNICATIONS COMMISSION

Proposed amendment of Part 12 of the Rules and Regulations (Amateur Radio Service) — Docket 9295

WRITTEN STATEMENT OF COMMENT

On behalf of the American Radio Relay League, Inc.

1. *Appearance*

The American Radio Relay League, Inc., a non-profit national organization of amateur radio station licensees and operators, enters its appearance in this matter pursuant to the provisions of paragraph 11 of the Notice of Proposed Rule Making and submits this, its written statement and brief, as setting forth its comments.

2. *Request for oral argument*

The importance of the proposed rules, the strength of the opposition to them, the novelty of the theories upon which they are based are all such that full oral argument is a prerequisite to a complete and proper resolution of the problems presented. An opportunity for such oral argument is requested.

3. *Preliminary Statement*

We wish to record, first, the appreciation of the League for the interest the Commission has shown in the amateur service as evidenced by the effort obviously expended in preparation of the Notice. This is characteristic of the co-operative and sympathetic attitude which the Commission and its predecessor bodies have exhibited toward the amateur service since our beginning. The Commission and the League have had common objectives as to amateur radio — to provide for and encourage current amateur communication and research activities and the sound growth and maximum strength of amateur radio in the future. The League knows that these motives have actuated the Commission staff in proposing "a new overall plan or blueprint to provide scope and direction for the immediate and long range development of the service." It is the more difficult, therefore, for us to find ourselves obliged to disagree with the basic concept of the interrelated proposals in Docket 9295 and to oppose this concept.

4. *The Opposition of the Board of Directors of the League to the proposed rules*

At its annual meeting in Hartford, Connecticut, May 27-28, 1949, the Board of Directors of the American Radio Relay League gave careful study and consideration to the Commission's proposed rules. It is appropriate here to record that during these deliberations each of the fifteen directors from as many United States divisions (into which the country is divided for our internal administrative purposes), representing the net opinion of its 35,067 U. S. licensed amateur members (figure as of December 31, 1948) — spoke at length on the results of his extensive membership and non-member contacts by mail, by attendance at club meetings and conventions, and over the air. Each had endeavored to obtain the opinion of American amateurs on the Commission's proposals during the approximately thirty days available between the time of the proposals and the time of the Board's meeting. Considering the results, it was the unanimous decision of these elected representatives of the membership (1) to withdraw the proposals of the League then on file with the FCC and (2) to oppose in principle "the overall plan or blueprint to provide scope and direction for the immediate and long range development of the amateur radio service" which the Commission has stated is the basis of its proposals.

5. *Withdrawal of pending requests for regulations*

By a separate communication to the Commission, the League has already withdrawn its proposals originally submitted in May, 1948. It is our purpose now to discuss the second of our Board's actions — the decision to oppose the principle of Government direction and blueprinting of the

future development and scope of the amateur service.

6. *No need for overhaul of regulations*

In its Notice, the Commission states that in its judgment amateur radio needs such an overall plan or blueprint as a result of the general situation in which the amateur service finds itself today. It does not, however, elaborate on this reference nor does it state any other or specific reasons for any overall planning or blueprinting. The League, which has actively represented the amateur service for more than thirty-five years, is unaware of any unusual situation indicating any such need. It is not able to perceive any reasons for the Commission's decision that an unusual situation or need exists. The League, therefore, is unable to comment on these points in the absence of supporting data.

The League, however, is obliged to register its opposition to the new philosophy of providing for Government overall planning, direction and blueprinting of the amateur service, and perforce, its opposition to regulations stemming from such a philosophy.

7. *Opposition to the basic philosophy of the new regulations*

The key to our opposition to this new philosophy of regulation is to be found in the principles of the regulatory system under which amateur radio has heretofore operated. It is our firm belief that the present vigorous state of amateur radio in great measure is a direct result of these principles. It is our conviction that the proposed new philosophy would stifle amateur initiative, circumscribe amateur development, and eventually result in the debilitation of amateur radio as we know it today.

8. *The growth and status of amateur radio*

Amateur radio is one of the oldest of the communications services. From the start it has been allowed comparative freedom from restrictive regulation and freedom from Governmental direction or interference with purely internal activities or with developments within the assigned amateur frequency bands. What we believe to be wise Government policy over the years has permitted amateurs virtually unlimited scope in their experimental activities, and, more importantly, in setting their own objectives. Under this philosophy of regulation, the American amateur has become known as a tireless experimenter, an ingenious and resourceful worker in the radio field. His contributions to the radio art over the course of the years have been noteworthy. Under this philosophy amateur radio in the United States has grown and progressed to its present position in the communication field. From this philosophy there has grown that priceless ingredient which we call the amateur spirit, the urge to devote one's time, one's money and one's energies to the problem for the sheer love of it, one of the most valuable assets this or any other nation could possess. Of this, in our *Presentation for the Amateur Service* before the Commission in September, 1944, we said in part:

> This basic spirit in amateur radio — this heart-interest in the art — has been carried by radio amateurs from their own avocation to all the other fields of radio. . . . There is, we believe, a general appreciation of the amateur spirit in research, in other lines of endeavor as well as radio. In radio it is particularly significant. It derives, we believe, from the very freeness of spirit with which the amateur meets his problems. . . .

And again, in our *Presentation for the Amateur Service* before the Commission in June, 1936, we said:

> . . . in no other field of endeavor has there been such free and untrammeled experimentation, unhampered by traditional prejudices, as has resulted from the amateur tradition in the radio art.

It was not Government direction or planning in accordance with current scientific theories which resulted in this Nation's amateurs being the first to span the Atlantic Ocean on short waves — going even so far as to finance a trip to Europe by one of their number to listen for American amateur signals which Government and commercial radio engineers of the day were sure could not be heard at that distance. As stated by Cornell University's Prof. Ernest Merritt, writing in the January 1932 issue of the *Proceedings of the Institute of Radio Engineers* several years later:

> Presumably most [of the amateurs] were not familiar with the theoretical reasons for believing that work with short waves was not likely to prove successful; at any rate, such knowledge of theory as they had did not deter them from trying experiments which the experienced radio engineer would have regarded as foredoomed to failure.

It was not planning or directed programming of their future which, over a period of two years ending in 1936, drove a few amateur enthusiasts to doubt the conclusions then generally concurred in by Government and commercial radio engineers that the present television wavelengths were endowed with strictly "line-of-sight" properties. Patiently developing their own receiving and transmitting apparatus, antennas and automatic photographic recording equipment, they began receiving signals consistently over 100-mile paths, and eventually succeeded in establishing a relationship between the observed results and temperature conditions of the lower atmosphere which gave the whole radio world an entirely new concept of the way in which such signals are propagated.

It is the League's fear that a program of directed development or a blueprinted future, however well-intentioned, would stifle the enthusiasm, the insatiable curiosity and the tireless energy which resulted in these and a score of other developments.

9. *The danger to further amateur development*

It is with alarm and deep concern, therefore, that we learn that the Commission now proposes to blueprint and direct the future course of amateur radio and to inaugurate a series of new regulations as part of an overall plan "to provide scope and direction for the immediate and long range development of the service," to establish "an integrated and continuously reviewed and revitalized plan for improving operations and techniques." This curtailing of the freedom under which amateurs have progressed throughout their history, this announced intention to replace it with Government direction, would inevitably discourage the very things which have made American amateur radio great. The ardent interest of amateurs in their pursuit of radio could not flourish under Government blueprinting or direction, or in fact under any blueprinting or direc-

tion. Because the amateur spirit derives largely from an intense, personal interest in radio, because the activities of amateurs are purely voluntary, the Nation would, under such a system as is now proposed, most certainly lose the brilliant public-service capabilities and performances of the amateur service. What has made the amateur the invaluable asset he is to this Nation is the precious freedom he enjoys to seek his own objectives by engaging in any type of communications or experimentation he chooses, with only a minimum of internal regulation once he meets those fundamental regulatory requirements which are designed (1) to prevent his interfering with other established services and (2) to insure his compliance with the provisions for amateurs in international regulations to which the United States is a party.

10. *The Commission's authority*

In case it is not already apparent, we wish to make it clear here that it is not our intention to dispute the right of the Commission to make appropriate regulations for the amateur service. We fully recognize that right, as we have over the years during which the body of amateur rules has slowly been created, expanded and modified, as occasion required. Any regulations in addition to those required to meet the two fundamentals enumerated in the previous paragraph, and particularly regulations dealing with the purely internal arrangement of amateur operating activities and experimentation, should be formulated with extreme care. Such regulations should be arrived at only as their need evolves from the experience of the amateur body itself. This has been the basis on which the structure of amateur rules has slowly been brought into being over the years — by recommendations from the majority of the active amateurs of the country, through its representatives. New rules should be enacted only as the desirability of modification of existing rules becomes apparent, or by informal engineering discussions with amateur representatives when the Commission itself perceives a need for modification. We believe that this philosophy of regulation for the amateur service — that of permitting the amateur body to seek its own objectives and to request of the Commission such minimum regulation as will accomplish those objectives — is the only system which offers the Nation the assurance that amateur radio's record of service will be as brilliant in the future as it has been in the past.

11. *The position of the League in amateur affairs*

Since 1914 the amateur body has possessed a mechanism to permit the interchange of ideas on regulatory matters and to establish a position on any particular matter which receives majority support. Thus it is adequately equipped to participate with the Commission in informal engineering discussions. That mechanism is the amateur national association, the American Radio Relay League, and we believe it appropriate to discuss the functioning of that mechanism.

12. *The organization of the League*

The American Radio Relay League is an incorporated non-profit membership society of American amateur radio operators, over 35,000 strong as of December 31, 1948. The League also has on its membership roster some thousands of persons planning to become amateurs and some additional thousands of Canadian and other foreign amateurs — to a total of nearly 60,000 (as of the same date). The control of the League rests in the hands of its American (and Canadian) licensed-amateur membership, classified as Full Members; other members, classified as associate members, have no vote.

For administrative purposes the United States is divided into 15 regional areas termed divisions. Elections are held by the licensed amateur members in the various divisions every two years to choose a director and an alternate director from each division. In Canada, the amateur membership similarly selects a Canadian General Manager and an Alternate Canadian General Manager. Any ten licensed-amateur members of the League in a division may join in nominating candidates for the positions of director and alternate director for that division. The By-laws of the League provide very stringent requirements for eligibility as a director candidate. A candidate must have held an amateur license for a continuous period of at least four years immediately preceding his nomination; he must also have been a member of the League for the same period. Further, the By-laws provide that any person who is engaged in the commercial radio field, or who might otherwise benefit from any selfish influence in the affairs of the League, is ineligible as a candidate. From the various candidates nominated, a director and an alternate director are then elected in each division by secret mail ballot of the licensed-amateur membership in that division. Thus licensed amateur members exercise complete control in the selection of their representatives.

The 15 directors so elected from the United States divisions, plus the Canadian General Manager elected to represent Canadian amateurs, plus the President and Vice-President, constitute the Board of Directors. The members of the Board receive no compensation. They give freely of their own time to fulfill their duties.

13. *The democratic character of League representation*

The By-laws of the League charge the directors with the duty, among others, to "keep themselves informed on conditions and activities in their respective divisions, and on the needs and desires of the League members therein, that they may faithfully and intelligently represent them in the Board of Directors." A director speaks for his members because by their selection of him they have indicated confidence in his leadership and judgment; he speaks for them, moreover, because he is in continuing contact with them — by correspondence, by bulletins, by amateur radio, or by visits to club meetings, conventions, and other gatherings of amateurs. In several of our divisions the directors have set up internal organizations of club councils and representatives from each of the active operating amateur radio networks in their respective divisions, as additional means of gathering amateur sentiment concerning the particular problems of the day.

The Board of Directors of the American Radio Relay League thereby is a common meeting ground where the elected representatives of amateurs all over the country may gather to discuss such problems, to express the opinions of the amateurs and to come to mutual agreement on the best course to follow.

This is the democratic way, in which the majority rules. But in any democratic system there are also, inevitably, minorities — sometimes small, sometimes sizeable.

14. *"Dissident" groups within the League*

There are minority opinions within the membership of the American Radio Relay League. They have always existed. In general, the minority on any question has in the past been willing to abide by the decisions of the majority. At present, however, a few of those amateurs making up the minority are split into two factions and have formed two separate groups. The Commission's Notice of Proposed Rule Making mentions the names of these two amateur groups and terms them "national societies." We fully subscribe to the fundamental of democracy that everyone has a right to be heard, but, we think it will be of interest to the Commission to learn the status of these two groups, in so far as the limited release of data concerning them will permit, for comparisons with similar data which we have furnished earlier in this discussion concerning the League.

The *National Amateur Radio Council* is a non-profit group formed in May of 1948 and subsequently incorporated under the laws of the State of Indiana. It is understood to be governed by a Board of Directors elected by its membership. In a paid advertisement in May of 1949 the Council claimed it had "nearly 2,000 members." An earlier membership list showed that approximately three-fourths of the total membership were licensed amateurs, so a current amateur membership of about 1,500 is indicated. A comparison of this earlier list with ARRL membership records showed that over one-half of the NARC members were also members of the League. The Council was born of dissatisfaction by a minority group with the results of the 1948 meeting of the ARRL Board of Directors as concerns amateur telephony privileges. As is evident from the proposals which the Council separately placed before the Commission in September of 1948, its sentiments are largely to secure increased privileges for the use of radiotelephony within the amateur bands.

The *Society of American Radio Amateurs* is a non-profit group with a post-office box headquarters in Washington, D. C. Its membership, method of operation and control are obscure. Although formed in 1946, it appears to be still operating without a constitution or other articles of association. In January of 1949 a tentative constitution was circulated to the membership providing for the government of the society by an advisory board of ten amateurs, one elected from each FCC amateur call area. To the best of our knowledge, no such elections have been held. There apparently are no dues, no definite terms of membership; to become a "member," a person simply signs a form indicating he is in sympathy with the aims and objectives of the group. According to a recent statement by its secretary, the membership of the society totals about 400. The society urges its followers to retain their membership in ARRL, so presumably a sizeable portion are League members. The Society was born of dissatisfaction with the results of the 1946 meeting of the ARRL Board of Directors as concerns amateur telephony privileges. As is evident from the proposals which this group separately placed before the Commission in September of 1948, one of its aims is to prevent increased privileges for the use of radiotelephony within the amateur bands. It is also understood to lend support to FCC's newly-expressed principle of Government direction and blueprinting of amateur radio. In this connection we note that the policies of this group are established and controlled by a Steering Committee which, at least in January of this year, was composed of six employees of the United States Government in Washington, D. C.

It is important to point out that the combined amateur membership in these two groups — on the order of 2,000 — is less than 6 percent of the U. S. amateur membership of the League. It is also pertinent to note that major objectives of the two groups — as they relate to telephony privileges in the amateur bands — are diametrically opposed. The presentations of these two groups, separately or combined, are on behalf of an absurdly small minority of amateurs. An appreciable portion, and probably more than half, of these few amateurs are also members of the League who, unwilling to accede to the common desires of the majority of the amateurs as determined by the democratic processes of the ARRL Board mechanism, have attempted to circumvent this mechanism by participating in separate pressure groups to achieve ends which are not concurred in by the majority of amateurs.

15. *Specific proposed regulatory provisions in the Notice*

The League does not feel that it is now able to comment on the specific items proposed by the Commission for various regulatory changes. By the present statement the League registers disagreement with, and vigorous opposition to, "a new overall plan or blueprint . . ." proposed by the Commission. The Commission's statement in its Public Notice is that "the proposals herein made, while numerous, are interrelated and constitute an overall plan." Therefore, the League does not feel that it can comment individually on specific items when its position is to oppose the basic concept of such an overall plan of which the specific items are indicated as an integral part.

16. *Suggested Commission action*

It is our request, therefore, that the Commission set aside (or at least defer action on) the proposed regulations set up in the Notice; that it direct the Amateur Section to convene an informal conference of all interested parties; that the purpose of such conference be:

1. To determine in what respects if any, the present provisions of Part 12 of the Rules and Regulations are inadequate or unsatisfactory; and

2. If any defects be found, to recommend appropriate corrections.

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Secretary

Segal, Smith and Hennessey
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Washington 6, D. C.
By PAUL M. SEGAL
Its Attorneys

July 19, 1949

A Simplified Circuit for Audio Image Rejection

Applying Audio Phasing Principles to C.W. Beat-Note Reception

BY GEORGE GRAMMER,* W1DF

• If your receiver lacks the doodads that give the single-signal reception so necessary in crowded c.w. bands, you'll be interested in this "poor man's crystal filter." Audio selectivity — now obtainable simply and at low cost from surplus units or bridge-type circuits — plus audio phasing — a bonus from single-sideband receiving techniques — forms a system that has selectivity characteristics very similar to those of the modern crystal-filter communications receiver.

THE process by which a c.w. signal is made audible or "detected" in the b.f.o. method of reception is equivalent to the action that takes place in the mixer or "first detector" of a superhet receiver. That is, the frequency of the incoming signal is simply converted to a new frequency. In the case of b.f.o. reception the new frequency is in the audio range; in the case of the superhet mixer, it is an "intermediate" frequency. In the superhet we depend on the intermediate-frequency amplifier to supply the necessary selectivity. If the analogy between the superhet mixer and the b.f.o. detector is carried to its logical conclusion, we can equally well depend on the audio amplifier to supply all the selectivity needed in c.w. beat-note reception.

The conclusion is true, up to a certain point. In the frequency-conversion process harmonics may be generated; also, two or more signals present in the converter circuit may mix together to produce undesired beat frequencies. In the superhet mixer these unwanted frequencies are easily filtered out by the i.f. selectivity. In the b.f.o. mixer many of the unwanted frequencies fall in the audio range and thus increase the interference problem. However, they can be reduced to negligible proportions by using a linear detector. This may be a properly-operated frequency-converter tube,[1] or may be the ordinary diode detector having a b.f.o. voltage much stronger than the strongest signal likely to be applied to it.

A more serious problem arises from the fact that signals equally spaced either side of the b.f.o. frequency produce the same beat tone. The standard method of reducing this "audio image" response is the use of sufficient i.f. selectivity preceding the mixer. In the modern communications receiver a crystal filter is the customary means by which the necessary selectivity is secured. Thus "single-signal" reception.

The drawings at A, B and C, Fig. 1, review the situation as it exists in the ordinary receiver. If the r.f. selectivity is low, the desired signal and its audio image produce equal audio outputs with the tuning set off the b.f.o. frequency so that the desired signal produces, say, a 1000-cycle beat note. Fig. 1B shows the effect of increased r.f. selectivity in reducing the amplitude of the image response. If the r.f. selectivity is low but a high

* Technical Director, ARRL.

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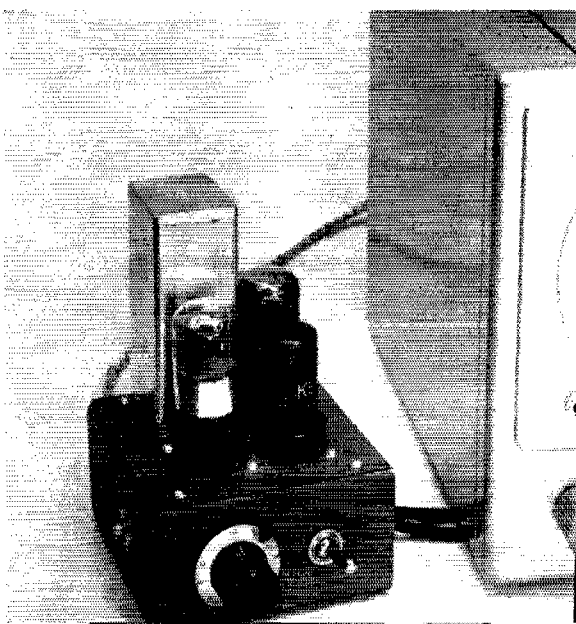
[1] Villard, "Selectivity in S.S.S.C. Reception," *QST*, April, 1948.



The "Phaser" — a device for phasing out a signal on the other side of zero beat in c.w. reception. In combination with audio selectivity it simulates crystal-filter performance, and is an inexpensive aid to selectivity in non-crystal receivers.

The three tubes in the unit are: front left, audio phasing amplifier; front right, b.f.o. amplifier; rear right, detector. The screwdriver control on the left wall is the audio phasing adjustment. The operating controls, on the front wall, are the rejection control and a switch for changing from one side of zero beat to the other.

degree of audio selectivity is used the desired signal and its image again produce equal outputs, even though the selectivity may be very great against other audio tones.

An alternative method of reducing the audio-image response is the use of a special detector with audio phasing networks. [2, 3] This method, combined with audio selectivity, can produce results fully equal to those obtainable with r.f. or i.f. selectivity. The circuits so far described are capable of a high order of performance, but it must be admitted that they are also technically intricate. However, the practical aspects of c.w. reception permit a method of approach that leads to very simple circuits, requires no precision parts or test equipment, and offers no technical difficulties that cannot be surmounted by anyone capable of reading instructions and turning a couple of controls.

[2] Villard and Thompson, "A Detector for Single-Sideband Reception," *QST*, June, 1948.

[3] Norgaard, "Practical Single-Sideband Reception," *QST*, July, 1948.

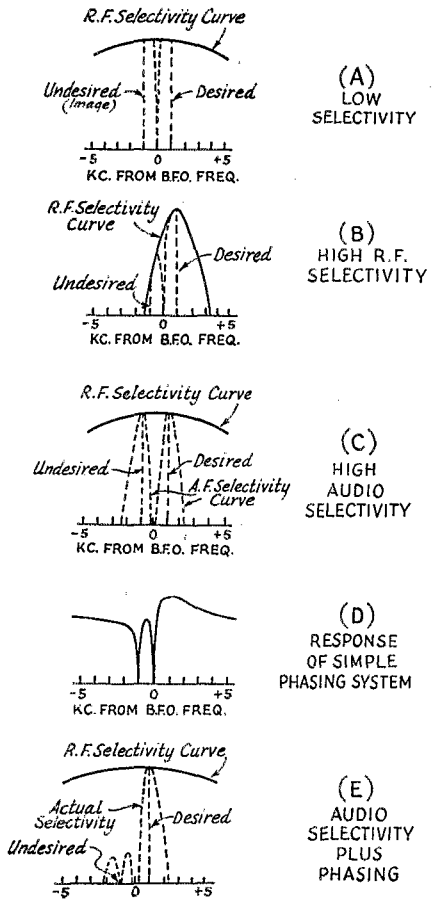


Fig. 1 — **Comparison of r.f. and audio selectivity.**

Principles

The heart of the audio phasing system is the phasing network. The problem is to devise a circuit that will have a constant phase shift of 90 degrees and at the same time have constant attenuation over the audio range. Such a network is a necessity if all frequencies on the other side of zero beat are to be eliminated simultaneously, as should be done in single-sideband 'phone reception.

However, the *simultaneous* elimination of all frequencies on the other side of zero beat is not necessary in c.w. reception. One reason is that there are usually only a few, at the most, signals present on the "other side," so there are only a few definite frequencies present at any given time. A second reason is that all of the unwanted beat notes except the exact audio image of the desired signal can be eliminated or greatly reduced by audio selectivity. Consequently, for c.w. it is possible to use a simple 90-degree phase-shift circuit in which the attenuation varies, and then independently control the amplitude to eliminate a chosen single frequency. Although only one frequency is completely eliminated, other frequencies in the immediate vicinity are considerably attenuated.

Fig. 1D shows the response curve that is obtainable from a simple audio phasing system, using the detection principle outlined in earlier articles. The other side of zero beat is reduced somewhat overall, compared with the desired side. The important point, however, is that there is a complete null at one beat frequency (1000 cycles in the case indicated), so that the response to the audio image is zero. In practice, it is possible to move this null to any desired frequency in the important part of the audio range. The operation is similar to that of the phasing control of a crystal filter but, unlike the filter, the depth of the null does not depend on the selectivity. When the system is properly adjusted the response is zero at the undesired beat note, even if there is no r.f. selectivity at all.

When the phasing system is combined with audio selectivity, the over-all response shown at Fig. 1E is typical. Signals on the other side of zero beat build up somewhat on either side of the null, the extent of this "other side" response depending on the amount of audio selectivity. The general operating characteristics resemble the selectivity obtainable with a crystal filter. However, the method is of interest not particularly as an arrangement for superseding the crystal filter, but as a scheme for approximating filter performance in existing receivers that do not have filters. For that reason simplicity and low cost are paramount considerations in practical circuit design.

Audio selectivity, as such, needs no further discussion here because any of the well-known

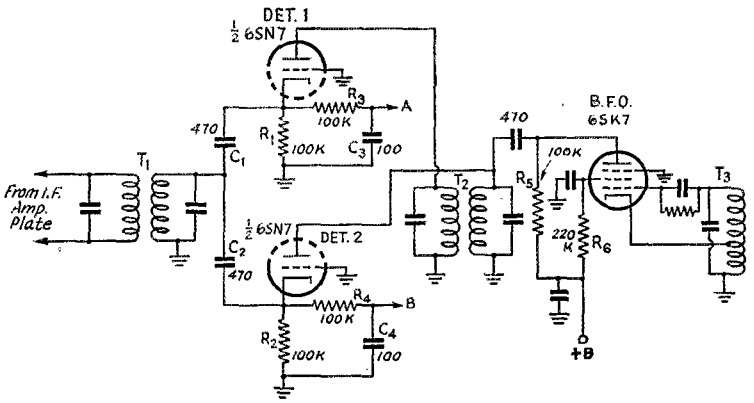


Fig. 2 — Detector-b.f.o. circuit for obtaining audio outputs that differ in phase by 90 degrees. T_1 and T_2 are diode-type i.f. transformers, T_3 the normal b.f.o. transformer.

methods can be used.[4] Neither is it necessary to go into a detailed description of the detection principles utilized, since they have already been covered.[2,3] The requirements, in brief, are these: (1) Two separate detectors or mixers, the signal being applied to both but each having its own b.f.o. voltage. These b.f.o. signals must differ in phase by 90 degrees. (2) A circuit that will shift the phase of the audio output of one detector by 90 degrees. (3) A means for combining the outputs of the two channels so that the desired signal is heard while the audio image is suppressed.

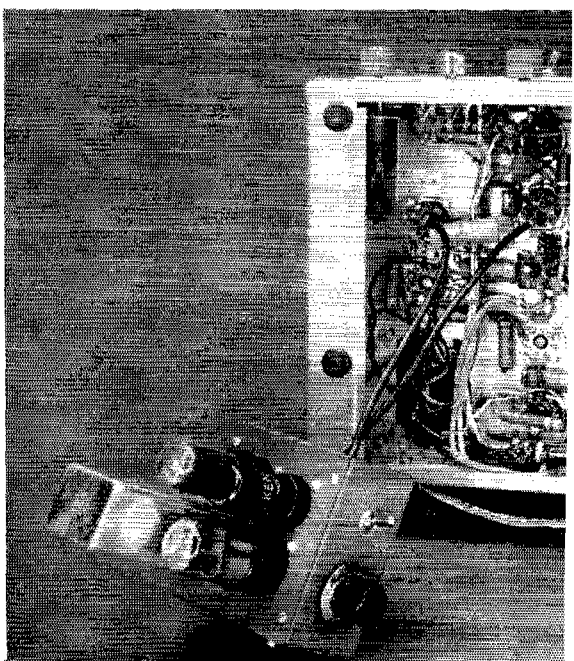
The Detector Circuit

There are probably innumerable detector arrangements that will work satisfactorily. However, not all of them will meet the requirements of this special case, which are (1) simplicity and economy, (2) no adjustments requiring test equipment, (3) ability to operate with the b.f.o. shut off so that ordinary 'phone signals can be received. While this last may seem rather incomprehensible to users of ordinary receivers, it is nevertheless a design problem with some systems. For example, the mixer-tube detector described by W6QYT [1] does not "detect" when the b.f.o. voltage is absent; in fact, preventing such detection was a fundamental objective in the design.

After considerable experimenting with a number of simplified circuits the detector shown in Fig. 2 was found to meet the requirements reasonably well. The two b.f.o. voltages, 90 degrees out of phase because of the inductive coupling between the two resonant circuits of T_2, are applied separately to the plates of the two triodes. The signal voltage from T_1 is applied in parallel to the two cathodes against ground, thus modulating the rectified r.f. current flowing between plate and cathode. R_1 and R_2 are the audio load resistors. It is necessary to use blocking condensers, C_1 and C_2, to prevent short circuiting the load resistors. Since there is considerable r.f. voltage across R_1 and R_2, it is also necessary to use filters, R_3C_3 and R_4C_4, to keep the r.f. out of the audio system. The audio outputs are taken from A and B against ground.

Although none of the values is especially critical, the two filters, R_3C_3 and R_4C_4, should be identical; if they are not, they will not have identical phase shifts at all audio frequencies. Hence the two output voltages will not stay 90 degrees apart. It is desirable to match the resistors and condensers if possible, but commercial

[4] See, e.g., Bennett, "Audio Filters for Eliminating QRM," *QST*, July, 1949; Hanchett, "A Peaked Audio Amplifier for Communication Receivers," *QST*, September, 1948.



How the Phaser is connected to a receiver in a typical case. Short lengths of coax run to the second-detector and beat-oscillator tube sockets. In this instance the audio output lead (shielded) and power wires go to an accessory socket on the receiver. All connections can be made without drilling holes in the receiver by removing the bottom plate as shown.

components appear to be uniform enough for ordinary practical purposes.

When the b.f.o. is shut off the detector circuit becomes a diode affair, using the cathode and grid of each tube. In this case either output, *A* or *B*, may be used. Alternatively, the two may be connected in parallel.

The b.f.o. is an ordinary electron-coupled oscillator with parallel feed through R_5. Parallel feed is used so the plate circuits of the two detectors will be as nearly identical as possible. The b.f.o. constants given will develop ample r.f. voltage at the plates of the detectors, using an oscillator plate supply of 250 volts. The chief requirement is that the b.f.o. voltage should be large compared with the signal voltage; otherwise the value is not critical. The rectified voltage as measured across either C_3 or C_4 with a 20,000-ohm-per-volt meter should be 3 or 4 volts with the constants given. The two rectified voltages do not have to be identical, although they should not be widely different.

As compared with the customary detector-b.f.o. arrangement the only addition here of any consequence, from a cost standpoint, is transformer T_2. T_1 is the regular input transformer that couples the last i.f. amplifier to the detector, and T_3 is the ordinary b.f.o. transformer. T_2 should be an output (diode) transformer, not the interstage type. This is also true of T_1.

Audio Phase Shift

Although a 90-degree phase shift can be obtained from a circuit consisting of nothing more than a resistor and condenser, there are several practical reasons why such an ultrasimple circuit is not satisfactory. A more useful basic arrangement is shown in 3A. Two circuits are used, neither of which has a constant phase shift with frequency, but which together maintain a constant phase *difference* of 90 degrees.

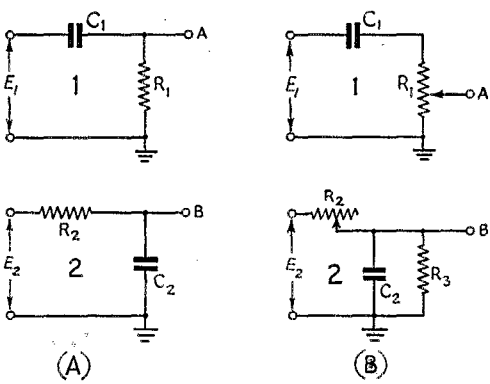


Fig. 3 — Circuits for obtaining an audio phase shift of 90 degrees, constant with frequency, when supplied with input voltages having a fixed phase difference.

The behavior of these circuits when used in conjunction with the appropriate detector is shown by the curves of Fig. 4. The upper curve represents the response to the desired signal and the lower curve the response to an audio image. The horizontal axis is in terms of frequency ratios rather than actual audio frequencies so that the curves apply to any frequency chosen as the most desirable tone for copying. The desired tone is represented by 1 on the horizontal scale, and if it is, for example, 1000 cycles then 0.1 represents 100 cycles and 10 represents 10,000 cycles. At the reference frequency the reactances of C_1 and C_2 must be equal and must equal the resistance of R_1 and R_2, and the applied voltages, E_1 and E_2, also must be equal. Under these conditions the undesired audio image is completely eliminated when the two outputs are properly combined. At any other beat tone which the operator may prefer the ratio of desired signal to its audio image is given by the difference between the two curves of Fig. 4.

Circuit 2 in Fig. 3A cannot be used to drive a tube amplifier without a shunting resistor to provide a d.c. grid return. The shunt resistor introduces a phase shift that can be compensated for by adjusting the value of R_2. Practical circuits are shown in Fig. 3B. Since the outputs of the two circuits vary oppositely with frequency, a potentiometer is used at R_1 for balancing the amplitudes of the image signal outputs of the two circuits. This "rejection control" has relatively little effect on the amplitude of the desired signal. C_1 and C_2 are equal, and their reactance should equal the resistance of R_1 at the preferred audio tone, usually between 500 and 1000 cycles. R_3 should be as large as permissible with the particular amplifier tube used, and at least 10 times the resistance of R_1. R_2 is somewhat larger than R_1, and is variable so that it can be adjusted for exact phasing.

The range of audio frequencies that can be rejected depends on the over-all gain available. The two circuits of Fig. 3B will have equal outputs at the design frequency, but above that frequency the output of No. 1 will increase while that of No. 2 will decrease. Consequently the tap on R_1 must be moved down the resistor to maintain balance. This means that any frequency above the design frequency can be balanced out. Below the design frequency No. 1 has insufficient output for complete balance, because its output is decreasing while No. 2's output is increasing. The rejection range below the design frequency can be extended as far as one likes by tapping Terminal B down on R_3 to reduce the output of No. 2. Rejection will then be possible down to the frequency at which the maximum output of No. 1 is again equal to the output of No. 2. Generally it will suffice to reduce the output of No. 2 to about half the maximum output obtainable. An alternative method is to make R_3 a potentiometer

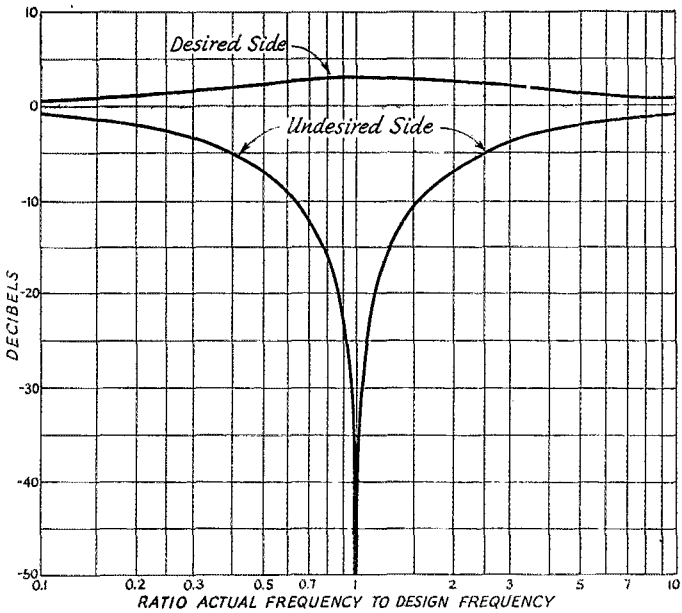


Fig. 4 — Performance of simple phasing network when combined with an appropriate detector circuit. The upper curve shows the response to the desired side of zero beat, the lower curve the response to the undesired side. Frequencies are in terms of ratios to the design center frequency (1 on horizontal scale).

for balancing purposes and use a fixed resistor at R_1. In this case the conditions with respect to balancing at frequencies above or below the reference frequency are reversed.

The outputs of the two circuits can be combined by using a dual triode as shown in Fig. 5, which also suggests practical circuit constants. Each grid connects to one phasing circuit, while the plates are connected in parallel. The outputs from the desired signal are in phase at the grids, so the tube sections act as though they were simply connected in parallel. The outputs from the audio image are 180 degrees out of phase, and so cancel in the plate circuit when their amplitudes are equal. The equal-amplitude condition is attained by adjusting the rejection control.

The resistances in the phasing circuits represent about the optimum values, all things considered. The choice of a reference frequency is important mainly in its effect on the lowest value of audio frequency that can be rejected. Using 350,000 ohms at R_1, the reference frequencies (at which the reactance of C_1 equals 350,000 ohms) are as follows for the various preferred standard values of capacitance:

470 $\mu\mu$fd.	970 cycles
680 $\mu\mu$fd.	670 cycles
820 $\mu\mu$fd.	550 cycles
1000 $\mu\mu$fd.	450 cycles

Select the value that brings the reference frequency nearest to your preference in beat tones.

The d.p.d.t. switch, S in Fig. 5, reverses the phase of the detector outputs and thus selects the side of zero beat on which the desired signal is to be found. It has the same effect as tuning from one side of zero beat to the other on an ordinary receiver.

Alignment of Circuits

For best results the detector and audio circuits must be critically adjusted, but this does not mean that adjustment is difficult. A definite procedure must be followed; otherwise it is pure chance whether the proper settings ever will be reached.

The audio circuit must be aligned first. An audio-frequency signal is necessary, and may conveniently be taken from the 'phone jack of a receiver. Referring to the circuit of Fig. 5, a high-impedance headset may be connected across the output terminals, or these terminals may be connected to the input circuit of any audio amplifier. A variable resistor and condenser are connected to the secondary of an audio transformer, the primary of which goes to the audio source, as shown in Fig. 6, and also connected to the corresponding terminals in Fig. 5. Any audio transformer will be satisfactory. Its purpose is to permit grounding the midpoint of the RC circuit, which cannot be done with the usual receiver

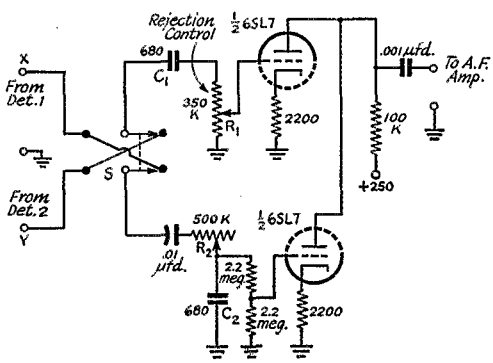


Fig. 5 — Practical phasing network and amplifier. The phase shift is essentially constant over the audio band, and amplitude balance is secured by adjusting the rejection control, R_1.

headphone output jack because one side of the latter is grounded.

Tune in a steady carrier, preferably unmodulated, and set the receiver to give the beat note you customarily use in c.w. reception. R_2, Fig. 5, should be set at about 400,000 ohms. Set R_1 at zero output (arm at ground end) and then snap S back and forth while adjusting R, Fig. 6, until the signal strength is the same in either position of the switch. This ensures that the voltages across C and R are approximately the same.

Next, vary the setting of R_1 until the point is found where the signal strength is minimum. It is unlikely that a complete null will be secured at this stage, but there should be a definite minimum. Now vary the setting of R_2, while rocking R_1 back and forth over a small range, until a complete null is secured. In determining the null point it is possible to become confused by audio harmonics in the signal source, so operate at a signal level low enough to keep distortion at a minimum. The presence of harmonics will be quite evident in going through the null because the tone frequency will suddenly change to a higher pitch (an octave higher, if the distortion is principally second harmonic). Although some harmonic may remain at the null point, the fundamental tone should disappear completely.

When the exact null is found no further adjustment of the audio circuit is necessary. The performance at audio frequencies other than that for which the circuit is aligned can be checked by varying the beat note and setting R_1 for minimum signal at each frequency. The null should be very good at all frequencies above the reference and down to about half the reference frequency. At still lower frequencies there will be some cancellation, but it will not be complete.

To align the detector circuit, connect the detector and audio circuits together and take the audio output from Fig. 5 or a subsequent amplifier, just as in the case of audio circuit alignment. The two circuits of T_2, Fig. 2, should be adjusted to resonance at the b.f.o. frequency. The adjustment is not critical at this point, and the factory settings of the transformer will suffice.

Tune in a signal with the b.f.o. shut off, and center it carefully in the i.f. passband. Then turn on the b.f.o. and adjust its frequency to zero beat with the signal. Next, tune the receiver off slightly to give a suitable beat note and set R_1, Fig. 5, to the point that gave the null for that audio tone in aligning the audio circuit. Now adjust the secondary tuning of T_1, Fig. 2, very carefully while throwing S, Fig. 5, back and forth until the signal shows a definite difference in strength in the two switch positions. Finish up by adjusting both the rejection control (R_1, Fig. 5) and the secondary tuning of T_1 until the beat note disappears in one switch position. Watch out for audio harmonics, just as in the case of audio alignment.

After the null setting is obtained, tune the receiver to the same tone on the other side of zero beat and the signal will be in again at full strength. Then throw S to the other position; it should be possible to bring about a complete null again by readjustment of the rejection control, R_1. The amount of readjustment required will be

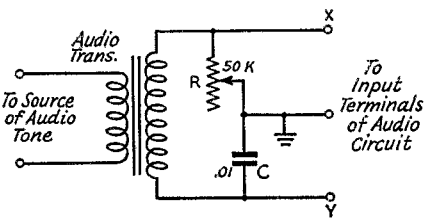
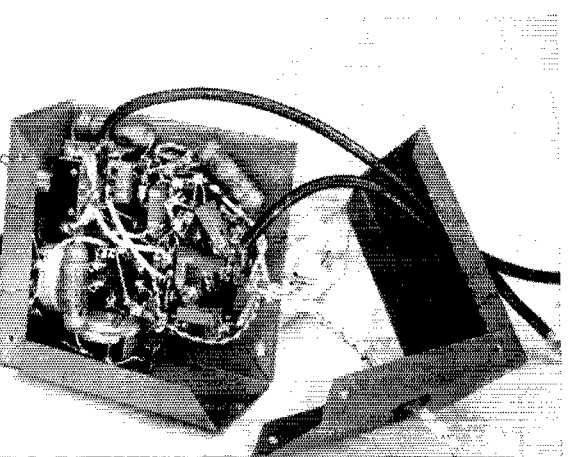


Fig. 6 — Test set-up for aligning a.f. phasing network. Terminals correspond to the input terminals in Fig. 5.

quite small in a properly-operating circuit. If a large change in the setting of R_1 is required when changing from one side of zero beat to the other, or if the null cannot be found at all on one side, try new settings for the tuning of T_2 and repeat the procedure.

The null will not be equally deep on both sides of zero beat unless the phasing is exactly 90 degrees in both the detector and audio circuits. If the audio phasing is slightly off 90 degrees, it will be found that a complete null can be obtained on either side by proper detector alignment, but that the same setting does not hold for both sides. In such a case a recheck of the audio alignment is indicated.

Once the alignment job is done, the b.f.o. should be left severely alone, because a change in



An inside view of the Phaser. Detector socket at upper right, b.f.o. amplifier socket at upper left, audio socket at lower left. The lower coax is the i.f. input cable to the detector, the upper one the input cable to the b.f.o. amplifier. The detector output circuits terminate on a lug strip near the center of the unit, from which point two wires connect to the d.p.d.t. switch; these connections can easily be removed for audio alignment.

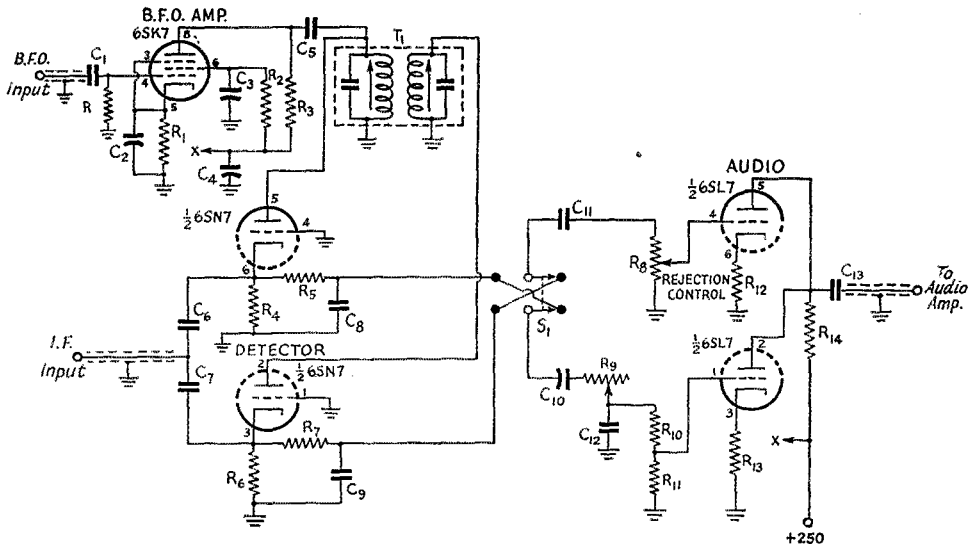


Fig. 7 — Adapter circuit for use with receiver having 456-kc. intermediate frequency. For other intermediate frequencies, use an appropriate transformer at T_1.

C_1, C_8, C_9 — 100-$\mu\mu$fd. mica.
C_2, C_3, C_4, C_{10} — 0.01-μfd. paper.
C_5, C_6, C_7 — 470-$\mu\mu$fd. mica.
C_{11}, C_{12} — 680-$\mu\mu$fd. mica (see text for discussion of values).
C_{13} — 0.001-μfd. mica.
R_1 — 1000 ohms, ½ watt.
R_2 — 0.22 megohm, ½ watt.
R, R_3, R_4, R_5, R_6, R_7, R_{14} — 0.1 megohm, ½ watt.
R_8 — 0.35-megohm volume control (IRC D13-132).
R_9 — 0.5-megohm volume control.
R_{10}, R_{11} — 2.2 megohms, ½ watt.
R_{12}, R_{13} — 2200 ohms, ½ watt.
T_1 — 456-kc. diode transformer (Millen 64453).

the b.f.o. frequency will upset the r.f. phasing.

The ordinary two-stage 456-kc. i.f. amplifier has enough selectivity to give some single-signal effect when the incoming signal is tuned at the center of the passband and the beat oscillator is offset to give the desired beat frequency. This characteristic can be used to advantage. Instead of setting the b.f.o. to zero beat as described in the alignment procedure, tune the signal in "on the nose" with the b.f.o. off and then set the b.f.o. frequency to your favorite tone on the side you use. Then proceed as described. This will enhance the single-signal effect when operating on your customary side of zero beat. However, should you throw the switch to listen on the other side, the selectivity will not be as good. It is a worth-while method if you habitually listen to the same side of zero beat, but not recommended if you shift frequently from one side to the other.

An Application

The easiest way to use the phasing method is in the form of an adapter that can be applied to an existing receiver, and a suitable circuit diagram is given in Fig. 7. Comparing Fig. 7 with Figs. 2 and 5 will show that the former is essentially a combination of the latter two, but with T_1 and T_3 of Fig. 2 omitted. These are not needed in the adapter because they are already present in the receiver itself.

It is necessary to remove the regular detector tube from the communications receiver and to make two connections to the receiver's i.f. circuits, one for taking out the signal and the other for taking out b.f.o. voltage to drive the b.f.o. amplifier stage.

These connections can be made through short lengths of RG-59/U coax. The signal cable is connected to the hot side of the receiver's i.f. output transformer. In the average case, this side of the i.f. transformer goes to a 6H6 plate, and the connection can conveniently be made to the 6H6 socket. The b.f.o. connection can be made to the grid of the b.f.o. tube in the receiver, again at the tube socket. The outside conductors of both cables should be grounded at the tube sockets. Because the cables add a small amount of capacitance across both circuits, some realignment will be required of both the last i.f. transformer secondary and the b.f.o.

It is also necessary to feed audio from the adapter back into the receiver's audio amplifier. In the National NC-57 receiver which we used with the unit shown in the photographs this was simple because of the accessory socket, which provides an audio input terminal. In receivers that do not have such a "phono" input, it will be necessary to run the adapter audio output lead directly to the first audio stage.

(Continued on page 100)

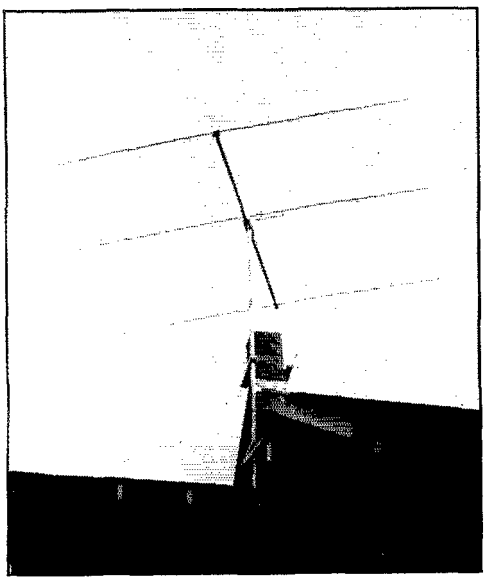
The "Gamma" Match

Matching Coaxial Line to the 3-Element Beam

BY H. H. WASHBURN,* W3MTE

THE purpose of this article is to describe what appears to be the simplest method of feeding a homemade plumber's-delight beam with RG-8/U. Since the investigation covered the general matching and switching problems involved in a single-ended 40-watt transmitter and a 300-ohm input commercial receiver, the system used is described in full.

The problem here was a common one; with the low power, I had never been able to work out of town on ten, even though a variety of fixed antennas were tried. In desperation, I had built a



No, this isn't a half-completed "T"-match antenna. It is the 29-Mc. "Gamma (Γ) match" antenna at W3MTE.

3-element beam of surplus aluminum. I wanted to feed it with RG-8/U because of the supposed shielding properties of the line, the weatherproof features, the fact that its losses are so low (in the charts), and because I had 200 feet of it in the cellar. I did not want to cut the driven element for mechanical reasons, so a "T"-match was built and tried. No soap — W3MTE's contacts were still purely local, with the added trouble that I had to rotate the beam.

The resistor-bridge standing wavemeter described on page 483 of the 1949 *Handbook* (Fig. 16-39) was built and calibrated, as well as a sensitive wavemeter along the lines of the one described on page 465 of the same book. The matching and balancing systems for coaxial line described in the new *Antenna Handbook* were studied and several coax stubs were made up. An entire Sunday afternoon was spent in trying them out and in attempting to find a decent setting for the "T"-match, with W3MTE perched on the chimney and W3LFF throwing the switches and reading the s.w.r. meter.

With any type of balancing section, the s.w.r. stayed between 5:1 and 6:1. Adjustment of the "T"-match caused only minor variations in the s.w.r. Discarding the balancing section brought the s.w.r. down to 4:1, but no setting of the "T"-match was very good. The outside of the coax was hot with r.f., the second harmonic could be picked up all around the operating room on the wavemeter, and I still couldn't work out of town.

The Gamma Match

It was reasoned that if the outside of the coax was to be cold, it should be connected to the center of the driven element, and so it was duly connected to the aluminum boom. It was also reasoned that if we started from the center (minimum impedance) and started looking toward one end (very high impedance) we should find a 52-ohm point at which we could connect the center conductor of the coax for the best possible match. Half the "T"-match was removed. I figured the driven element was already a resonant, balanced affair with its midpoint grounded. *Let it be its own balancing device.* This was ten-meter 'phone, not radar. The inner conductor of the coax would be free to swing positive and negative, driving the antenna along with it. The outer conductor, screwed to the boom, would be cold and the coax would function properly.

Again the s.w.r. meter was set up. In ten minutes, by moving the one remaining sliding strap, the s.w.r. was 1.75:1. Using a flexible wire antenna on the wavemeter, it took three tight turns around the coax to get a half-scale reading on the 0–1 meter, indicating very little r.f. on the outside of the line.

The next problem was matching the transmitter to the line. An r.f. ammeter was available and, at the suggestion of W3ONV, the system shown in Fig. 1 was tried and worked the first

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time. When the antenna series condenser is adjusted to tune out the reactance of the coupling coil, transmitter loading is maximum. Varying the coupling changes only the transmitter loading, and it is not necessary to retune the plate tank, although it can be peaked up just a little bit. The r.f. ammeter (surplus — four bucks) could be dispensed with, because at resonance the final will load properly only when the series condenser is set correctly. The ammeter is merely a nice visible indication that the soup is getting to the antenna. It also is a good check on the setting of the series condenser. A check with the wavemeter, equipped with a six-foot antenna, showed no detectable r.f. within three feet of the transmitter.

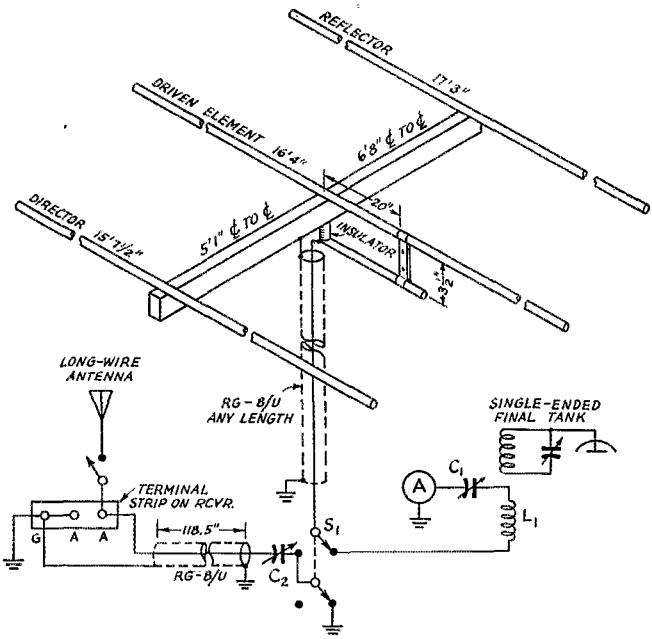


Fig. 1 — Dimensions of the 29-Mc. "Gamma-match" beam at W3MTE, showing the method of matching the receiver and send-receive switching.

C_1 — 150-$\mu\mu$fd. variable.
C_2 — 140-$\mu\mu$fd. midget variable.
L_1 — 5 turns, close-wound, same diameter as final tank.
S_1 — D.p.d.t. ceramic wafer-type switch.
A — 0–2 r.f. ammeter. (Not essential — see text.)

Coupling to the Receiver

On the NC-57 receiver, I had always used a long-wire antenna fastened to a neighbor's chimney. The instruction book said the input impedance of the receiver was 300 ohms. Hopefully, the coax from the beam antenna was attached to the NC-57. Presto! signals which had been S9 on the long wire dropped to S6 or worse, with the beam trained on the distant station. Having had trouble enough recently, I was reluctant to construct a preamplifier, R9-er, or any other gadget requiring tubes and power supply.

W3NIJ was consulted about a matching section of the now very satisfactory RG-8/U. He made a few calculations on a Smith chart [1] and suggested a piece of coax cut to 118.5 inches, with a series capacitor of 52 $\mu\mu$fd. The thing seems to work better with an estimated 80–90 $\mu\mu$fd., but I used a 140 $\mu\mu$fd. variable, so the higher capacity was no problem. It is not necessary to adjust this condenser when tuning over the band, but weak signals can be built up by peaking on them.

Signals that were S6 on the long wire became S9+ when the beam was connected and aimed properly. That is a total gain of six S points (estimated), attributable entirely to proper matching of the receiver input to the coax coming down from the beam. It is quite something to pick up a weak station, start turning the beam, and then have to jump for the r.f. and audio gain controls to keep the receiver from howling and jumping off the table.

The beam is no good for receiving except on ten meters, but I don't disconnect it for other bands. I just hook on the long wire by means of a toggle switch. The rig is in the living room, and thus must provide broadcast programs as well as rag-chewing on ten.

Send-Receive Switching

There still remained the problem of switching the line leading down from the beam from the transmitter to the receiver. A coax relay was considered. An inspection of the rig showed that I only needed to switch the inner conductor of the coax from one side of the antenna coupling coil to one side of the receiving series condenser and back again. The lead in each case was only a couple of inches long. Since coax was not being switched, why use a coax relay?

I use a ceramic wafer switch. Extra contacts on the wafer switch can be used to turn on the carrier and mute the receiver. I use one set to ground the receiver input when transmitting.

(Continued on page 102)

[1] A form of transmission-line circle diagram. See Smith, "An Improved Transmission Line Calculator," *Electronics*, Jan., 1944. Also Kelley, "Solving Feeder Problems Graphically," *QST*, Sept., 1946.

450 Watts on V.H.F.

Efficient Operation at 50 and 144 Mc.

BY C. VERNON CHAMBERS,* W1JEQ

• By taking full advantage of the properties of v.h.f. tetrodes, this transmitter is made to operate on 50 and 144 Mc. with nearly equal efficiency. It incorporates all the features needed for pleasant and effective use of these popular bands, and provides all the power you'll probably ever want or need. It will work well at any power level from 100 to 500 watts.

A HIGH-POWERED transmitter for use on our two most-popular v.h.f. bands presents some knotty design problems. It is not always easy to develop satisfactory drive for the higher band, and an efficient band-changing system for a 144-Mc. amplifier calls for something better than the ordinary plug-in coil arrangement. These two factors were prime considerations when this all-tetrode rig for 50 and 144 Mc. was designed.

The exciter has separate output stages for the two bands, eliminating the necessity for driving the final stage with a frequency multiplier on the higher one. Efficient operation of the final stage is attained with a novel form of tank circuit that avoids the use of a plug-in coil for 144 Mc. As a result, the transmitter has practically the same over-all efficiency as would be obtainable if it were designed for either band alone.

The Exciter Circuit

Though the two units were intended for use together as a complete 450-watt transmitter, as shown in the composite photograph, the exciter portion may be used as a low-powered transmitter by itself. As an exciter it has the virtue of providing uniform drive for the final on both bands. Other points of interest include quick band changing, crystal switching, VFO-input provision, low power consumption, and freedom from critical adjustments.

The circuit diagram of the exciter is given in Fig. 1. The 6AR5 Tri-tet oscillator employs a fixed-tuned cathode circuit, C_8L_3. The plate circuit, C_1L_4, tunes 24 to 27 Mc., the oscillator tripling when 8-Mc. crystals are used and quadrupling with 6-Mc. crystals. Five crystals are provided for by the switching circuit, and a sixth position of the switch connects the 6AR5 grid to a tuned circuit, C_5L_1, which is in turn link coupled to the VFO input jack, J_1. Switch S_{2A} grounds the cathode of the oscillator tube when VFO input is used. The second 6AR5 is a frequency doubler with its output link coupled to an 832A amplifier-tripler circuit.

As a straight-through amplifier at 50 Mc., the 832A uses a low-value grid resistor, R_5, cut into the circuit by switch S_{3A}. A high-resistance grid-leak, R_6, is picked up by S_{3A} when the tube is operated as a frequency tripler to 144 Mc. Tube and circuit capacitance resonate the grid coil, L_8, at approximately 49 Mc. Jacks J_2 and J_3 permit metering of the grid and the cathode currents with J_3 also serving as the keying jack for c.w. work at 50 Mc. The plate circuit uses plug-in coils with the output link coupled to the final by means of L_{10} in the 50-Mc. coil. At 144 Mc., output is capacity coupled to the 2-meter output stage by condensers C_{15} and C_{16}. The 144-Mc. stage, also an 832A, has grid and cathode

* Technical Assistant, *QST*.

A complete 450-watt v.h.f. transmitter.

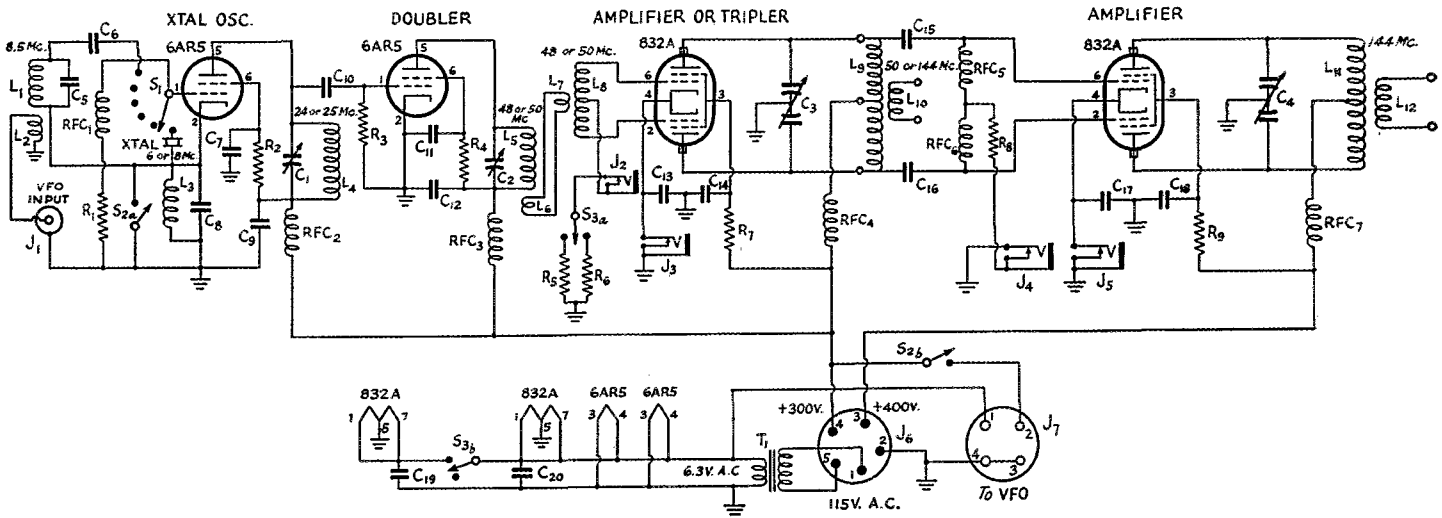
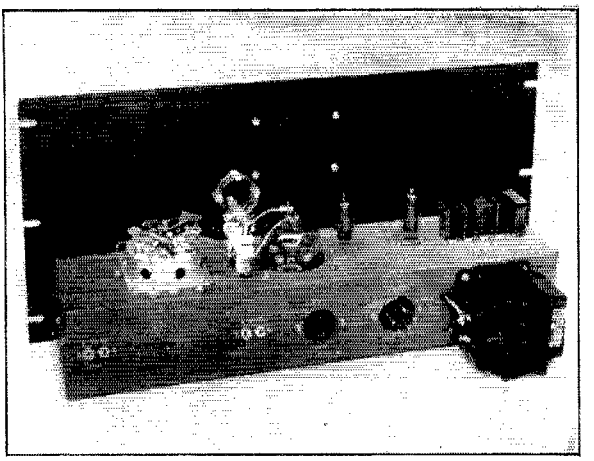


Fig. 1 — Circuit diagram of the 50–144 Mc. exciter.

C_1, C_2 — 25-$\mu\mu$fd. variable (Millen 20025).
C_3, C_4 — 25-$\mu\mu$fd.-per-section split stator (Bud LC 1661).
C_5 — 22-$\mu\mu$fd. midget mica.
C_6, C_{10} — 100-$\mu\mu$fd. midget mica.
C_7, C_9, C_{12} — 0.0047-μfd. mica.
C_8 — 68-$\mu\mu$fd. mica.
C_{11}, C_{13}, C_{14}, C_{20} — 470-$\mu\mu$fd. midget mica.
C_{15}, C_{16} — 10-$\mu\mu$fd. midget mica.
C_{17}, C_{18}, C_{19} — 500-$\mu\mu$fd. button-type by-pass.
R_1 — 0.12 megohm, ½ watt.
R_2 — 15,000 ohms, 1 watt.
R_3 — 47,000 ohms, ½ watt.
R_4 — 22,000 ohms, 1 watt.
R_5, R_8 — 22,000 ohms, ½ watt.
R_6 — 0.1 megohm, ½ watt.
R_7, R_9 — 25,000 ohms, 10 watts.
L_1 — 18 turns No. 24 enam., ⅜ inch long, 1-inch diam.
L_2 — 4 turns No. 24 enam., close-wound at ground end o L_1.
L_3 — 14 turns No. 20 tinned, ⅞ inch long, ⅝-inch diam.
L_4 — 10 turns No. 20 tinned, ⅝ inch long, ⅝-inch diam.
L_5 — 5 turns No. 20 tinned, 5/16 inch long, ⅝-inch diam.
NOTE: B & W Miniductor No. 3007 used for L_3, L_4 and L_5.
L_6, L_7 — Two-turn coupling links.
L_8 — 18 turns, No. 20 enam., ⅝ inch long, ½-inch diam.
L_9 — 50 Mc.: 4 turns No. 20 enam., ¾ inch long, 1¼-inch diam. National type AR-16-10C with 2 turns removed from each end.
— 144 Mc.: 4 turns No. 14 tinned, ⅞ inch long, ¼-inch diam.
L_{10} — 50-Mc. output link: 2 turns No. 20 enam., wound around L_9.
L_{11} — 4 turns No. 12 tinned, ⅝-inch diam., wound in two sections with two turns each side of center tap and a ⅜-inch space at center, turns spaced wire diam.
L_{12} — 144-Mc. output link: 2 turns No. 14 tinned, ½-inch diam., turns spaced wire diam.
J_1 — Coaxial-cable connector.
J_2, J_3, J_4, J_5 — Closed-circuit jacks.
J_6 — 5-prong male plug.
J_7 — 4-prong female receptacle.
RFC_1 — 2.5-mh. r.f. choke.
RCF_2, RCF_3, RCF_4 — 7-μh. r.f. choke (Ohmite Z-50).
RFC_5, RFC_6, RFC_7 — 1.8-μh. r.f. choke (Ohmite Z-144).
S_1 — 8-position selector switch (Amphenol 36-1).
S_{2A}, S_{2B} — D.p.s.t. toggle switch.
S_{3A}, S_{3B} — D.p.d.t. toggle switch.
T_1 — Filament transformer: 6.3 volts a.c., 6 amp.; see text.



A rear view of the 50- and 144-Mc. exciter. Across the top of the chassis, from right to left, are the crystal sockets, the oscillator and doubler tubes, the 832A amplifier-tripler and its plate coil, and the inverted 144-Mc. amplifier stage. Crystal sockets, used as r.f. output terminals, are mounted on the rear wall of the chassis along with the power plugs and the filament transformer.

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jacks as in the previous stage. It is made active by applying heater voltage through S_{3B}.

Power wiring for the unit is shown in the lower section of Fig. 1. Power for the exciter is fed through a 5-prong male receptacle. A 4-prong female receptacle permits taking out heater and plate voltages for an external VFO. Changing from VFO to crystal operation is done by means of the crystal switch and $S_{2A,B}$.

Higher plate voltage is applied to the 144-Mc. amplifier than is used with the other three circuits, making the output on 144 Mc. comparable with that of the 50-Mc. amplifier.

Construction

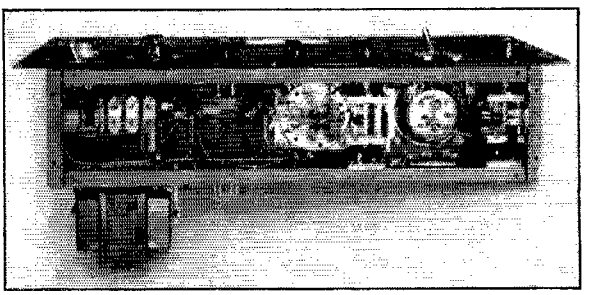
The components for the exciter are mounted on a metal chassis measuring 3 by 5 by 17 inches. The aluminum rack panel, 1/8 by 8¾ by 19 inches in size, is held in place by the mounting nuts of the various controls.

Plate tuning condensers for the oscillator and the doubler circuits are mounted on the front wall of the chassis. These two controls are hot with +300 volts and must be insulated from the chassis. Bakelite tuning knobs without metal dial plates protect the operator. The wiring at this end of the rig should follow the usual rules of good practice for the lower frequencies.

The amplifier-tripler circuit, located at the left center of the chassis as seen from the rear view, has its plate coil mounted on a National type XB-16 socket. Shield braid is used for the connections between the coil socket and the 832A plate caps, while Twin-Lead is wired between the output link and the output terminals. The tube is submounted on a Johnson shielded socket, type 122-101, and the plate tuning condenser, C_3, is mounted to the left of the tube socket on an aluminum bracket.

The 144-Mc. amplifier has the shielded tube socket mounted in an inverted position. The grid chokes, RFC_5 and RFC_6, are mounted between the socket terminals and a tie-point strip which is in turn mounted on the metal part of the socket along with the button-type by-pass condensers. The coupling condensers, C_{15} and C_{16}, are between the tube socket and the amplifier-tripler plate coil socket. Millen No. 32150 through-bushings, set in the chassis to left and the rear of the tube socket, pass d.c. and heater leads for the 832A.

The bottom view of the exciter shows the plate tuning condenser, C_4, mounted on the end wall of the chassis just below the 2-terminal tie-point strip which supports the output link,



Bottom view of the v.h.f. exciter. The VFO input coil is at the left end of the chassis. Plate coils for the oscillator, the doubler and the 144-Mc. amplifier circuits are mounted on the tuning condensers. The grid coil for the amplifier-tripler stage is mounted on the tube-socket terminals.

L_{12}. A heavy copper strip is used as the ground lead for the rotor of the tuning condenser. The screen-dropping resistor is mounted on a tie-point strip located on the rear wall of the chassis.

Exciter Power Supply

Power-supply requirements for the exciter will depend on how the unit is operated. If it is to serve as a low-power transmitter, the supply need deliver only 300 volts at approximately 175 ma. For exciter service, two supplies are recommended — one delivering 300 volts at 125 ma. and one furnishing 400 volts at 100 ma., the latter to be used on the second 832A. The fila-

TABLE I

Crystal	*Oscillator*	*Doubler*	*Amplifier-Tripler*	*Amplifier*
6250	25	50	50	—
6750	27	54	54	—
8333.4	25	50	50	—
9000	27	54	54	—
6000	24	48	144	144
6166.6	24.6	49.3	148	148
8000	24	48	144	144
8222.2	24.6	49.3	148	148

NOTE: Crystal frequencies in kc.; other frequencies in Mc.

ment transformer must deliver 6.3 volts at 4 amp. in either case.

If operation with a VFO not having its own supply is contemplated, then the power-supply capabilities should be increased to meet the extra requirements. We have been using the "V.H.F. Man's VFO[1]" and this unit increases the heater load by 2 amp. and the plate-current drain by approximately 60 ma.

Testing

Performance of the oscillator and the doubler circuits should be checked first. This is done with one or more crystals in place, with the plate and screen voltages removed from the 832A amplifier-tripler, with the 144-Mc. amplifier turned off and with a low-range milliammeter plugged in J_2. The oscillator cathode switch should be opened. Table I will assist in the selection of a crystal for the desired output frequency, and shows the frequencies to which the various circuits should be tuned. With plate voltage applied and with the doubler tuned to resonance, the grid current of the 832A should be approximately 7 ma. when an 8-Mc. crystal is used. Grid current will be 5 or 6 ma. with a 6-Mc. crystal. Total cathode current for the two 6AR5s should be 50 ma. Normal screen voltage for the oscillator and the doubler tubes is about 230 and 200 volts, respectively.

The 832A may now be tested at 50 Mc. This requires a 100-ma. meter in the cathode circuit and a 10-watt lamp coupled to the output terminals. When the plate circuit is tuned to resonance, the grid current should stay up around 5 ma., the cathode current should dip to about 65 ma., and the lamp should indicate an output of 6 to 8 watts. A screen potential of 160 volts is correct with the amplifier loaded. The plate current should rise noticeably and the grid current fall to zero when excitation is removed. This last test must be one of short duration.

To check the 144-Mc. stage, plug in the 2-meter coil at L_9 and apply the heater voltage through S_{3B}. Grid current for the amplifier will be around 3.5 ma. A recheck of the tripler should show a grid current of 1 ma. and a cathode current of 55 to 60 ma.

With a 400-volt supply connected to the amplifier and with the dummy load across the 144-Mc. output terminals, 6 to 8 watts output should be obtained with an 832A cathode current of approximately 65 ma. Grid current should be 3 ma. and the screen voltage should measure 170 volts. A short test for self-oscillation should be made by removing the excitation.

The general method of tuning does not change when a VFO is used as the frequency-control unit. However, it is important that the oscillator cathode switch be closed; otherwise the oscillator circuit will take off on its own.

It is recommended that an indicating wavemeter be used to check the proper tuning adjustments, particularly those associated with 144-Mc. operation. There are numerous out-of-band harmonics from the low-frequency crystals and the high order of frequency multiplication necessary to build up to 144 Mc. Be careful to choose the proper harmonics in the first two stages.

The Power Amplifier

Anyone who has tried to adapt any sort of plug-in coil system to use in a high-powered transmitter for 144-Mc. knows the weaknesses of such arrangements. The lead inductance and parallel capacitance inherent in the best jack bars and

[1] "A.V.H.F. Man's VFO," Chambers, December, 1948, *QST*.

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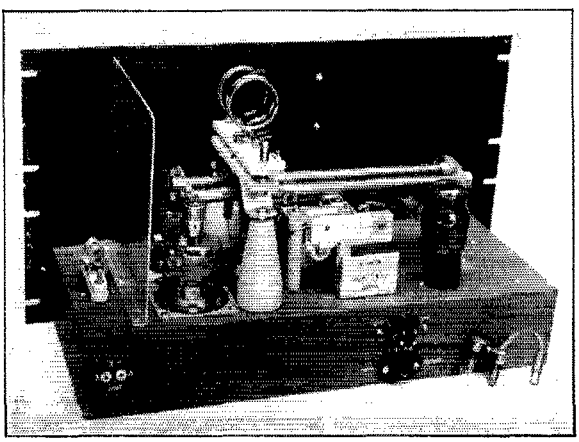


Rear view of the p.p. 4-65A amplifier, showing the two-band tank circuit set up for 50-Mc. operation. R.f. input terminals are on the rear wall to the left and receptacles for the power leads are to the right. The 144-Mc. output terminals are on a bracket to the left of the protective tube. The 50-Mc. output terminal is mounted directly on the XB-15 socket for the plate coil. A plug-in shorting bar, used across the plate lines at 144-Mc., is shown in the foreground.

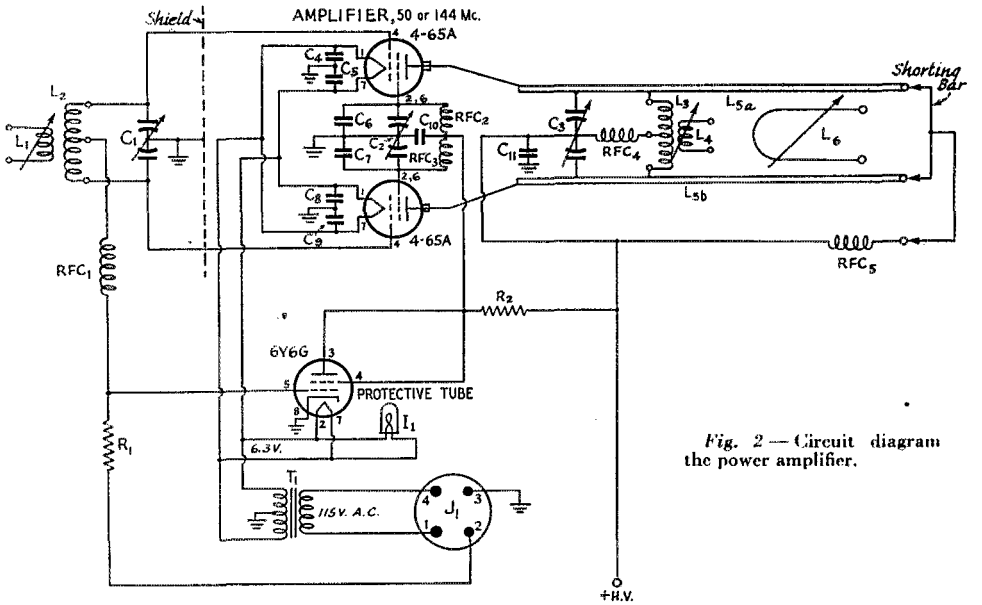


Fig. 2 — Circuit diagram the power amplifier.

C_1 — 6-$\mu\mu$fd.-per-section variable (Millen 21906D).
C_2 — 50-$\mu\mu$fd.-per-section (Bud LC 1662).
C_3 — 35-$\mu\mu$fd.-per-section with high-voltage coupling; see text for information on removing plates. (National TMH-35D).
C_4, C_5, C_8, C_9 — 470-$\mu\mu$fd. midget mica.
C_6, C_7 — 0.0022-μfd. mica.
C_{10} — 0.001-μfd. mica.
C_{11} — 470-$\mu\mu$fd. 5000-volt mica.
R_1 — 5000 ohms, 10 watts.
R_2 — 30,000-ohm 200-watt adjustable: two 100-watt resistors in series.
L_1 — 50 Mc.: 5 turns No. 24 tinned, ½-inch diam., turns spaced wire diam.
— 144 Mc.: 1 turn No. 14 wire, hairpin shape, 1½ inches long, ⅝-inch diam. at open end.
L_2 — 50 Mc.: 6 turns each section, No. 20 tinned, ½-inch diam. (B & W Miniductor No. 3007). Space sections 9/16 inch apart.
— 144 Mc.: Same as 144-Mc. L_1.
NOTE: L_1 and L_2 mounted on National type PB-16 plugs.
L_3 — 4 turns of ⅛-inch o.d. copper tubing, 1⅝-inch diam., wound in two sections with two turns each side of center tap and a ¾-inch space at center, turns spaced ⅛ inch.
L_4 — 3 turns No. 12 enam., 1⅝-inch diam., turns spaced wire diam.
L_{5A}, L_{5B} — ⅛-inch o.d. copper tubing, 10½ inches long, spaced 1⅛ inches on centers.
L_6 — 1 turn of ⅛-inch copper tubing, hairpin shape, 3 inches long, 1¼-inch diam. at open end.
I_1 — 6.3-volt pilot-lamp assembly.
J_1 — 4-prong male receptacle.
RFC_1 — 1-μh. r.f. choke.
RFC_2, RFC_3, RFC_4 — 7-μh. r.f. choke (Ohmite Z-50).
RFC_5 — 1.8-μh. r.f. choke (Ohmite Z-144).
T_1 — Filament transformer: 6.3 volts a.c., 8 amp.

coil bases leave almost nothing for the coil itself, with the result that efficient operation is all but impossible. The 144-Mc. tank circuit used here leaves little to be desired; it is practically as effective as if it were designed for one-band operation. When the amplifier is used on 144 Mc. the plate circuit operates as a conventional tuned quarter-wave line. In changing to 50 Mc. it is merely necessary to remove the shorting bar, change the grid coil, and plug the 50-Mc. coil assembly into the jack bar. Individual antenna coupling adjustments are used, the one for 144 Mc. being adjustable from the front panel.

The circuit diagram of the push-pull amplifier is given in Fig. 2. Excitation for the amplifier is link coupled to a conventional split-stator grid circuit. A 6Y6G protective tube holds the plate dissipation to a safe level when the excitation is removed. The tubes require no neutralization at 50 Mc. At this frequency the screen grids are bypassed by condensers C_6 and C_7. Shielding to prevent external coupling between the grid and the plate circuit is provided for by a partition.

Screen-lead inductance will cause the amplifier to be unstable at 144 Mc. unless preventive measures are taken. Series tuning the screen circuit with condenser C_2 is most effective, since it puts the screens at actual ground potential. Plate neutralization was tried but was discarded because of the capacitance added in the grid circuit by the neutralizing arrangement.

Construction

The 3 × 7 × 17-inch chassis and the 10½ × 19-inch panel are held together by the pilot-lamp assembly and three shaft bearings. The latter are for the 144-Mc. output link and the tuning condensers for the screen and grid circuits. The lamp

jewel and the three control knobs may be seen from left to right in the front view of the complete transmitter.

The rear view of the amplifier shows the grid coil mounted on a National type XB-16 socket to the left of the shield partition. An XB-15 socket is mounted on three-inch stand-off insulators between the 4-65A tubes and the plate tuning condenser. The condenser is mounted on 2½-inch insulators in an inverted position. The minimum capacitance of the plate condenser was reduced by removing two stator and two rotor plates from each section. A feed-through insulator for the high-voltage d.c. lead is mounted directly below the plate-coil socket.

The 144-Mc. lines are supported by the tuning condenser and a piece of ¼-inch polystyrene. Plate clips for 9/16-inch caps are reduced in diameter and used for contact with the rods at the tube and condenser positions. The condenser should have the clips bolted to the left-hand stator terminals as seen from the rear view. This will allow the condenser shaft to be centered on the panel and the connection to the lines will be at a point four inches in from the plate ends. Shield braid, ½ inch wide, is used between the clips at the open ends of the lines and the heat-radiating caps of the tubes.

Aluminum plates equipped with panel bearings for the control shaft of the 144-Mc. output link are mounted on the front and the rear frames of the plate tuning condenser. The swinging link is made by twisting the open ends of the loop around a 5-inch length of ¼-inch polystyrene rod. The turns around the rod should be shorted out by soldering, and since this operation softens the rod, the link and rod will be firmly joined together. A piece of ⅛-inch polystyrene cemented across the closed end of the loop prevents accidental contact with the plate lines. A Millen type 38602 Quartz Q washer at the rear of the shaft and a home-made pulley[2] at the front prevent the control shaft from slipping out of the bearings.

The grid tuning condenser is mounted on an aluminum bracket and the screen condenser is supported by metal posts as shown in the bottom view. Copper strip is used for joining the two screen prongs of each tube socket and for connection to the two variable condensers. Each tube has the mica bypass condensers and a section of the variable screen condenser returned to a common point on the socket. The 0.001-μfd. by-pass for the screen-circuit r.f. chokes is returned to ground in between the two sockets. The pulley and cord for the swinging link are at the front of the chassis.

[2] "Multiple-Circuit Tuners from Grid to Feeder," Chambers, June, 1949, *QST*, p. 27.

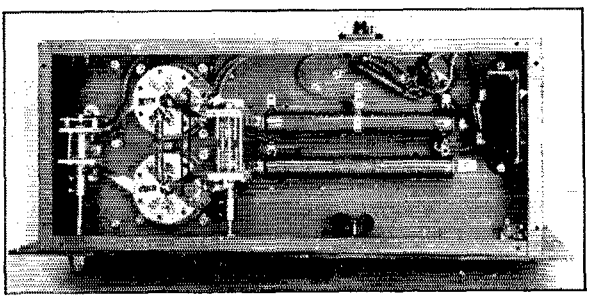
Power Supply

Data sheets for the 4-65A list typical operating conditions for a push-pull circuit with d.c. inputs ranging from 140 to 540 watts. Although the amplifier described may be operated at full input for c.w. work, it is recommended that the input be kept to 400 watts or less when plate modulation is used. This value includes the power taken by the screen grids. For all-round operation a power-supply output of 1000 to 1500 volts at approximately 350 ma. is recommended. Higher voltages may be used but forced-air cooling of the tubes may be required.

Testing

At 50 Mc. the amplifier can be tested in the same way as any low-frequency amplifier. The usual test for self-oscillation may be made first. This is done with the filament and plate voltage applied, with the excitation removed and with the protective tube in place. Proper operation is indicated by the absence of grid current as the grid and the plate tuning condensers are rotated. The protective tube should limit the d.c. input to no more than the maximum plate-dissipation rating. The limiting effect will be determined by the supply voltage, but total input should be well below 150 ma. at 1500 volts or less.

With the unit described earlier furnishing excitation, the grid current for the amplifier should be approximately 35 ma. before the high voltage is turned on. A 300-watt lamp coupled to L_4 may be used as a dummy load for the power-output test. The full-load cathode currents to be expected with different values of plate voltage may be found in the 4-65A data sheets. A cathode current of 320 ma. is correct for operation with a 1000-volt supply, and 310 ma. is correct with 1500 volts on the plates. The grid current should be at least 25 ma. and the screen potential should be about 250 volts when the amplifier is fully loaded.



A bottom view of the power amplifier. Tuning condensers for the grid and screen circuits are to the left and right of the shielded tube sockets. The filament transformer is at the upper right-hand end of the chassis. The two large resistors drop the voltage to the 4-65A screens.

(*Continued on page 102*)

Happenings of the Month

F.C.C. PROPOSALS

On July 19th the Headquarters, through General Counsel Segal and in line with instructions of the ARRL Board of Directors, filed comments on the FCC proposals for changes in the amateur regulations. See the editorial pages in this issue for the complete text. On the same date FCC extended the closing date for filing, which had been July 20th, to August 22nd. For the record we report to members that, in further accord with the Board's instructions, the ARRL's 1948 recommendations for changes in the amateur rules have been withdrawn.

At the invitation of Commissioner Sterling, on July 22nd representatives of the League, and of the National Amateur Radio Council and the Society of American Radio Amateurs, met informally with the Commissioners and the amateur section of their staff to discuss the matter of the FCC proposals. Keynote of the meeting was an evident desire of all parties to reach a common understanding in the best interests of amateur radio. It must be recorded here, for the information of League members, that representatives of SARA expressed full support of the principle of Government planning and direction for the amateur service; NARC expressed itself as quite willing to accept that principle. As has been reported in *QST*, the position of the League as established by our Board is to oppose any such Government planning for the amateur service.

At the meeting there was agreement to the idea of an informal engineering conference (which the League had requested in its filing) to discuss the matter at greater length. On July 27th the Commission designated October 10th as the day on which such an informal conference will be held at its offices in Washington. The League has filed notice of intention to appear, but at the same time has reiterated its stand in opposition to any philosophy of regulation based on Government planning or direction.

F.C.C. CONTINUES N.F.M. AUTHORIZATION

The band segments 3850–3900 and 14,200–14,250 kc. (for Class A) as well as 28,500–29,000 and 51,000–52,500 kc. (for all classes) have been available for narrow-band frequency or phase modulation use on a temporary experimental basis until July 31, 1949. Considering it desirable to retain these privileges until final disposition of its current proposals in Docket 9295, FCC has extended them until July 31, 1950, or until further action by the Commission.

ELECTION NOTICE

To All Full Members of the American Radio Relay League residing in the Dominion of Canada, and in the Atlantic, Dakota, Delta, Great Lakes, Midwest, Pacific and Southeastern Divisions:

An election is about to be held in Canada and in the above-mentioned divisions to choose both a director and an alternate director (in Canada, a Canadian General Manager and his alternate) for the 1950–1951 term. These elections constitute an important part of the machinery of self-government of ARRL. They provide the constitutional opportunity for members to put the direction of their association in the hands of representatives of their own choosing. The election procedures are specified in the By-Laws. A copy of the Constitution & By-Laws will be mailed to any member upon request.

Nomination is by petition, which must reach the Headquarters by September 20th. Nominating petitions are hereby solicited. Ten or more Full Members of the League residing in any one of the above-named divisions may join in nominating any eligible Full Member residing in that division as a candidate for director therefrom, or as a candidate for alternate director therefrom. No person may simultaneously be a candidate for both offices. Inasmuch as all the powers of the director are transferred to the alternate in the event of the director's death or inability to perform his duties, it is of as great importance to name a candidate for alternate as it is for director. The following form for nomination is suggested:

Executive Committee
The American Radio Relay League
West Hartford 7, Conn.

We, the undersigned Full Members of the ARRL residing in the.....Division (or in the Dominion of Canada), hereby nominate..... ..... of....., as a candidate for director (or Canadian General Manager); and we also nominate....., of....., as a candidate for alternate director (or alternate Canadian General Manager); from this division for the 1950–1951 term.

(Signatures and addresses)

The signers must be Full Members in good standing. The nominee must be a Full Member and must have been both a member of the League and a licensed radio amateur operator for a continuous term of at least four years immediately preceding receipt by the Secretary of his petition of nomination, except that a lapse of not to exceed ninety days in the renewal of the operator's license and a lapse of not to exceed thirty days in the renewal of membership in the League, at any expiration of either during the four-year period, will not disqualify the candidate; provided

(Continued on page 104)

A 1950 VFO Exciter

Some Ideas for Construction and Keying

BY BYRON GOODMAN,* W1DX

• This is a description of a VFO unit that you probably won't duplicate. But before you decide that it has nothing for you, run through the article and file away some of the ideas. They may come in useful later on.

At first glance this VFO exciter looks like a pretty fancy gadget to give only 15 to 20 watts output on all bands from 3.5 to 28 Mc. (including 21 but not 27 Mc.). Perhaps it is but, being an extremist on some points, we had some pretty fancy requirements to meet. The thing is handy enough, requiring only the changing of one plug-in coil and the turning of a switch to get on any band, but there is an extra tube and a relay on the chassis that are used only for keying, and they don't add any power or bands.

A number of ideas for switchable or plug-in oscillator coils were kicked around and finally discarded in favor of just two oscillator tank circuits. One was to be on 160 meters, for covering the 80- and 40-meter bands, and the other was to be on 7 Mc., to cover the 14-, 21- and 28-Mc. bands. To obtain a decent tuning rate, the 7-Mc. oscillator circuit was cut to just cover the 14-Mc. band, which thus leaves out some of the 28-Mc. band and all of the 11-meter assignment. To include these would require a third oscillator circuit, or a sacrifice in tuning rate, and so they were left out. However, before the next DX Contest comes around we may use a larger padding condenser across the tuning condenser, which will allow the 27-Mc. band to be reached by a little finagling.

All frequency multiplying is done in the oscillator stage (the lowest possible level), and there are several tuned circuits between the oscillator stage and the output amplifier. So far, a block diagram of the VFO would look like Fig. 1. While it may already seem to be taking on an equine appearance, the thing isn't too bad if the three sets of "tuned circuits" are all made fixed-tuned and compact. By running the first and second buffer stages Class A, good isolation for the oscillator is obtained, no new harmonics are generated, and the undesired harmonics generated in the oscillator plate circuit are pretty well attenuated.

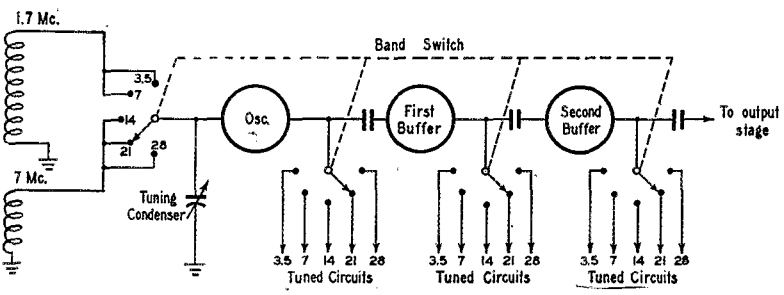


Fig. 1 — A block diagram of the exciter up to the output stage. All frequency multiplying is done in the oscillator stage.

One has only to play around a little with the Clapp oscillator circuit to sell himself on it, so there was no hesitation about using it here. Actually, it is a natural for the thing, because it is just about the only oscillator circuit that can be switched with no worries about the quality of the switch affecting the stability of the circuit. "Hey, go slow," you say. Well, look at Fig. 2. By using two separate tuning condensers, C_1 and C_2, and switching across the large (0.001 μfd.) condensers

* Asst. Technical Editor, *QST*.

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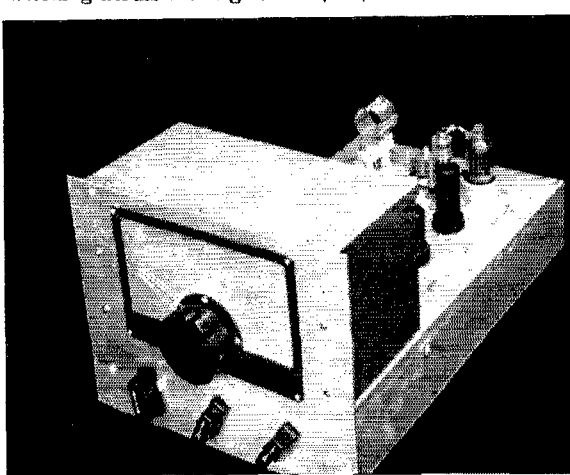

This 5-band VFO exciter unit has a 2E26 in the output stage and delivers 15 to 20 watts.

of the tuned circuits, the switches are practically out of the circuit. Further, the switch can be mounted a considerable distance from the circuits, by running the leads to the switch in small coaxial line. This keeps the oscillator tube away from the tuned circuits, thus reducing any frequency drift that might be caused by the tube heat raising the temperature of the tuned circuit. It is a dodge that can be applied to any Clapp oscillator, switched or not.

What Tubes To Use?

With these few points settled, the next step was to select the right tubes for the various jobs. A logical tube for the output stage might be the 807. However, we decided on the 2E26 because it is small, can be run at the 25 or 30 watts input that was wanted, and seems to be less prone to parasitic oscillations than its larger cousin. If some kind tube manufacturer ever brings out an 807 with short leads, it will be the logical tube for this unit, but we played it safe for the present and used the 2E26. It was probably just good luck, but there was no trouble at all with parasitics. For the second buffer, the 6AG7 was selected, and 6AC7s were used for the oscillator and first buffer jobs. While this may look like a terrific amount of over-all gain, remember that these tubes work into broad-band (loaded) circuits, with some stagger tuning to give uniform excitation over the range, so the over-all gain is not too high.

It was decided early in the game that the 2E26 would not be driven hard, as one little step in holding down the harmonics, and somewhere between Class B and Class C operation would be accepted as satisfactory. With no excitation, just enough fixed bias was to be used on the 2E26 to reduce the plate current to a safe level, to help out a little on power-supply regulation and to maintain the keying characteristic.[1]

Where To Key?

If you like chirpy keying, we advise you to key the oscillator — any oscillator. To avoid chirps and clicks with oscillator keying requires, first, an oscillator that has *no* frequency change with voltage change and, second, a transmitter that is all linear amplifiers or close to it. We don't say an oscillator that is completely insensitive to voltage changes can't be built — we just say we've never seen or heard one. To avoid clicks, some lag must be inserted in the keying circuit, and this means that the voltage is changing on the oscillator while it is delivering output during

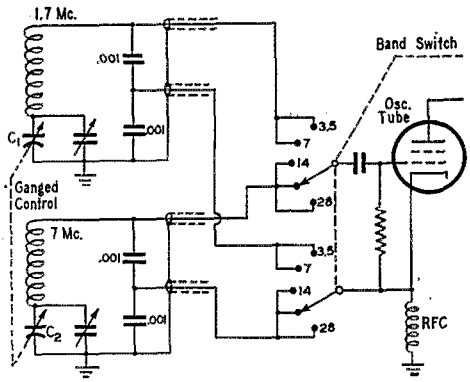

Fig. 2 — Details of the oscillator switching. The leads from the 0.001-μfd. condensers in the tuned circuits are run to the switch through coaxial line, allowing the tube to be mounted well away from the tuned circuits.

the "make" and "break" periods. Any frequency change shows up as a chirp. If you don't put enough lag in the circuit, you have key clicks that you can't get rid of, no matter what you do later on. Most operators put up with the chirp, but we like to have a signal that sounds like a keyed amplifier, with no chirps. But we also like to have break-in available! That leads us to the circuit described in *QST* some time back.[2] This was a tube keyer that could be connected in an amplifier cathode circuit and, together with a fast relay and one tube, turns the oscillator on fast before the character is formed and turns the oscillator off after the character is formed. At high speeds the oscillator only goes off between words, but this still permits good break-in operation.

In this VFO, the keyer tube of the earlier cir-

[1] Carter, "Reducing Key Clicks," *QST*, March, 1949.
[2] Goodman, "Improved Break-In Keying," *QST*, March, 1948.

A rear view of the exciter. The 6SN7 and the Millisec relay (in metal tube envelope) to the right of the VR tube are used in the keying circuit. The linear condenser standing alongside the 2E26 furnishes a short return path for harmonics.

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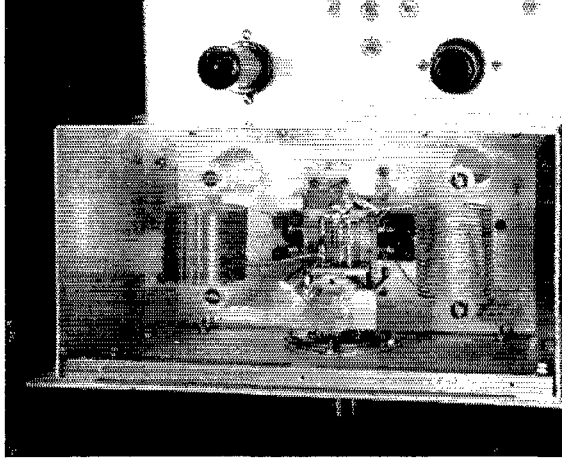


The two oscillator tuning circuits are mounted inside the shield can.

cuit was eliminated by using grid-block keying. The second buffer tube was keyed instead of the first buffer to insure better isolation of the oscillator. The 2E26 grid could have been keyed, or even the grid of some subsequent amplifier, but we used it where we did because the 6AG7 is running at low signal and low bias, and a 105-volt negative power supply handles it easily. At a higher level, a higher-voltage supply might be required.

To say that we're happy we included this circuit is a marvel of understatement, because keying the oscillator by itself, with enough lag to eliminate clicks down to where they aren't objectionable, gives a chirp that shouldn't happen to a sparrow. It may be that by suitable juggling of the constants in the oscillator circuit we could have reduced this chirp, but we don't believe they could ever have been eliminated, at least to the point where we would have been happy. As the rig stands, no one can tell the difference between the break-in keying and amplifier keying with the oscillator running continuously, simply because there is no practical difference. We're using break-in with an oscillator that chirps when keyed, and yet the signal has no chirp — you can't ask for much more than that.

To digress a minute, we know that there are three other approaches to this "amplifier-type break-in keying." One is to use a continuously-running oscillator that is well-shielded and on a low frequency, another is to use a conversion exciter and key the mixer, and the third is to locate the continuously-running oscillator and keyed amplifier a considerable distance from the receiver. The first two should be capable of every bit as good performance as the unit being described — they just don't happen to appeal to the writer — and the third involves financial and housing facilities that are beyond the writer — and a few others. All we want to put across right now is that you have to lower your standards of keying if you key the oscillator for break-in work, particularly at the higher frequencies. If you are one of those with a "chirpless, clickless" keyed oscillator, just listen to it with a low beat note at 28 Mc. If you can honestly say it has no chirps or clicks, then you have something. But compare it with clickless amplifier keying before you decide that it has no chirp.

Electrically, that's about all there is to the circuit. A linear condenser is used from the 2E26 plate to ground, to furnish a short return path for harmonics, and small resistors are used in series with the grids of the oscillator and output tubes, to discourage parasitics. Various extra by-pass condensers that crop up in the circuit were included because it was found that some harmonic energy was getting out on the power and control leads, and will undoubtedly vary with the construction. The complete circuit is shown in Fig. 3.

The switch, S_1, permits tuning the VFO to the frequency you want without putting a signal on the air. The 100-ohm resistor, R_{18}, is recommended by the relay manufacturer when the relay works in a circuit that is not purely resistive, and R_{17} is included just in case the drop through 100 ohms shifts the oscillator frequency appreciably. Terminals are provided in series with the relay winding for connection to a similar relay that shorts the receiver input and decreases the gain of the receiver, as described in the earlier article. As the proud owner of two of these relays the writer could afford to do this — most operators would mount the relay at the receiver, as described in the earlier article.[2]

If the exciter were built for 'phone work only, the 6SN7 control tube and the high-speed relay could be eliminated, of course.

Construction

Only general good practice was followed in the construction of the VFO, and no particular pains were taken to build it "like a battleship." However, it turned out to be rather insensitive to vibration and shows only the slightest trace of microphonics, and then only under rather severe conditions. Even so, it is set on a rubber kneeling pad on the operating table.

The unit is built on a $10 \times 17 \times 3$ aluminum chassis, which is not very rigid by itself. However, an $8\frac{3}{4} \times 11$ panel of $\frac{1}{8}$-inch dural, braced by the $5 \times 5\frac{1}{2} \times 10$ aluminum box surrounding the oscillator tuning section, adds strength and rigidity to the assembly, as does the chassis bottom plate. The oscillator tuning section determines the frequency — the effect of the tube is practically eliminated in the Clapp circuit — and everything

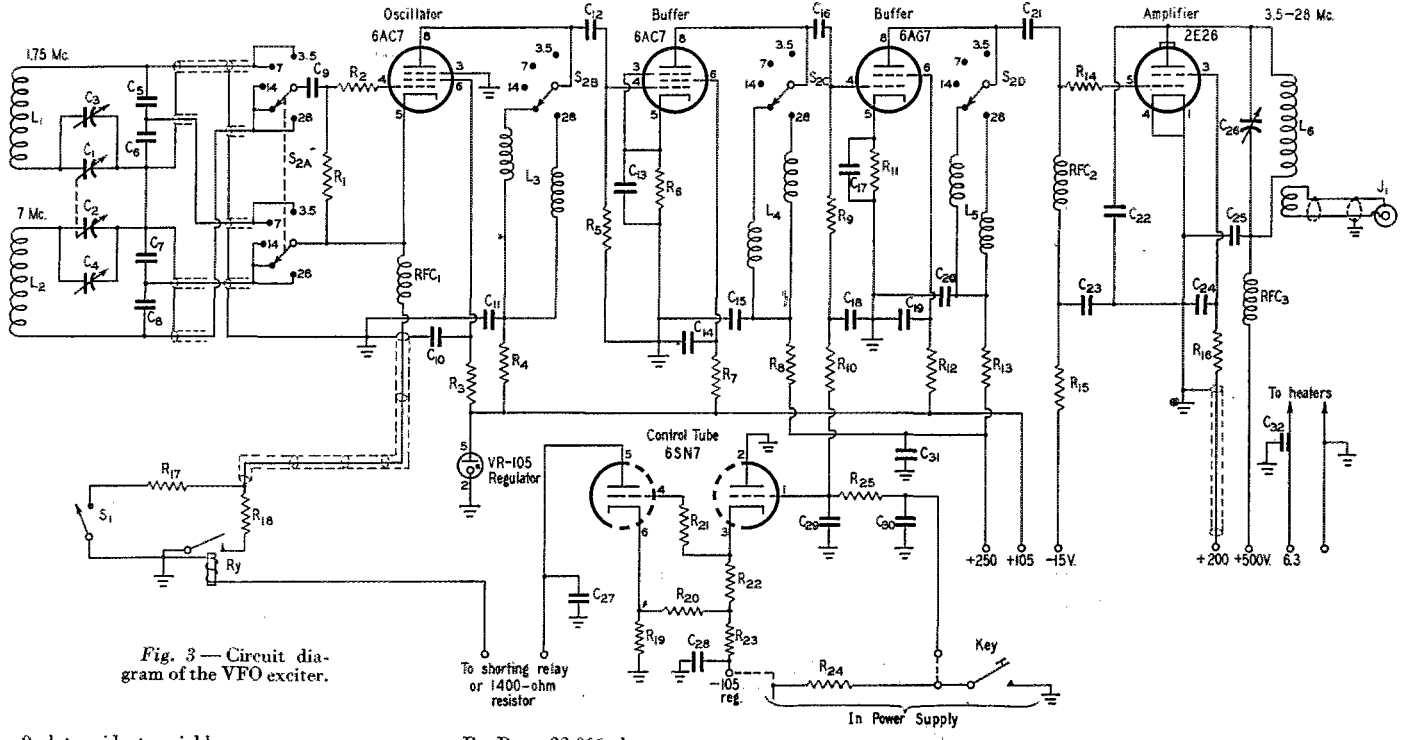


Fig. 3 — Circuit diagram of the VFO exciter.

C_1 — 9-plate midget variable.
C_2 — 2-plate midget variable.
C_1 and C_2 made by cutting down a Millen 21100.
C_3 — 50-$\mu\mu$fd. midget (Millen 26050).
C_4 — 100-$\mu\mu$fd. midget (Millen 26100).
C_5, C_6, C_7, C_8, C_{10} — 0.001-μfd. mica.
C_9, C_{12}, C_{16}, C_{21} — 100-$\mu\mu$fd. mica.
C_{11}, C_{13}, C_{14}, C_{15}, C_{17}, C_{18}, C_{19}, C_{20}, C_{23}, C_{24} — 680-$\mu\mu$fd. mica.
C_{22} — Linear condenser. See text.
C_{25} — 0.001-μfd. 1200-volt mica.
C_{26} — 100-$\mu\mu$fd. variable (Millen 22100).
C_{27}, C_{28}, C_{30}, C_{31} — 470-$\mu\mu$fd. mica.
C_{29} — 0.025-μfd. paper, 600 volts.
C_{32} — 0.1 μfd., 250 volts, special (Sprague "Hypass").
R_1 — 0.1 megohm.
R_2, R_{14} — 47 ohms, ½ watt.
R_3, R_7, R_{12}, R_{15} — 2200 ohms.
R_4, R_8, R_{10}, R_{11}, R_{13}, R_{16} — 330 ohms.
R_5, R_9 — 22,000 ohms.
R_6 — 680 ohms, ½ watt.
R_{17}, R_{18} — 100 ohms, ½ watt.
R_{19} — 17,500 ohms, 10 watts, wire-wound.
R_{20} — 3300 ohms.
R_{21}, R_{22} — 1.0 megohm.
R_{23} — 1500 ohms.
R_{24} — 3.3 megohms (in power supply).
R_{25} — 10,000 ohms.
All resistors composition and 1-watt unless otherwise specified.
L_1 — 75 μh. (National AR 16-160C, with 8 turns and center link removed).
L_2 — 9 μh. (Millen 43041, with one turn removed and used for leads).
L_3, L_4, L_5 — 3.5 Mc.: CTC LS3-1 Mc. with 95 turns removed.
— 7 Mc.: CTC LS3-5 Mc. with 16 turns removed.
— 14 Mc.: CTC LS3-10 Mc. with 4 turns removed.
— 21 Mc.: CTC LS3-10 Mc. with 11 turns removed.
— 28 Mc.: CTC LS3-10 Mc. with 14 turns removed.
L_6 — 3.5 Mc.: National AR16-40E shunted by 33-$\mu\mu$fd. mica, 4-turn link added.
— 7 Mc.: National AR16-20E.
— 14 Mc.: National AR16-20E, 7 turns removed.
— 21 Mc.: National AR16-10E, 4 turns removed.
— 28 Mc.: National AR16-6E, turns pushed together and 2-turn link added.
J_1 — Output cable fitting (Amphenol 83-1R).
RFC_1, RFC_3 — 2.5-mh. r.f. choke.
RFC_2 — 750-μh. r.f. choke (National R-33).
Ry — Fast relay (Stevens-Arnold "Millisec," 18 volts, 1400 ohms).
S_1 — S.p.s.t. switch.
S_2 — 4-section switch. Each section 2-pole, 5-position.

is tied down fairly well within the shield box. The coils are regular low-power transmitting coils mounted on heavy cone insulators, the tuning condenser is a double-bearing affair, and all leads are made with No. 12 or 14 wire. The tuning condenser was made by cutting a few stator plates out of a single-section condenser, to give a dual condenser of unequal-capacity sections. Two small end brackets that mount the tuning condenser to the chassis also support the padding condensers and the terminal boards that mount the large 0.001-μfd. condensers. The coaxial lines from these 0.001-μfd. condensers run out through rubber grommets, and the only chassis grounds in the oscillator circuits are back at the oscillator tube socket. We reasoned that it would be easier to keep the thing stable if the r.f. didn't wander all over the chassis looking for a way to get back to the oscillator tube. The tuning-condenser rotor is connected to the outer conductor of these coaxial lines and grounds only at the oscillator socket, not within the oscillator compartment. The tuning dial is, of course, insulated from the condenser shaft.

The remainder of the unit is built along the usual lines, with the possible exception of the output stage. At first, bandswitching of the output stage was considered, but we couldn't work out a simple clean-cut way and so had to settle for plug-in coils. The tuning condenser is mounted above the chassis, with the shaft projecting through a clearance hole. A large bakelite pulley on the shaft takes the string drive for controlling the condenser from the front of the panel. The panel control was made from the usual panel shaft assembly, with the string running over two small bakelite idler pulleys. Using string instead of a long extension shaft eliminates one possible source of over-all feed-back and takes up practically no room under the chassis. The two leads from the output plate coil go to the tuning condenser above the chassis, and the ground return from the tuning condenser runs through a ceramic bushing (Millen 32150) in the chassis to the plate blocking condenser. Here again we reasoned that it was better to know where the ground return path was than to depend upon the currents finding their way back to the cathode through multiple paths.

The linear condenser, C_{22}, was made from a length of $\frac{5}{8}$-inch diameter copper tubing soldered to a small copper base plate. The inner conductor is supported by a National PRF-1 coil form, which slides over the tubing to a force fit after a little judicious use of steel wool on the end of the tubing. The inner conductor is a piece of $\frac{3}{8}$-inch diameter dural rod, tapped at one end and rounded at the other. Anyone unfamiliar with these condensers can refer to page 21 of the April, 1949, issue of *QST* for a cross-sectional sketch of a similar one. The two cathode pins of the 2E26 are grounded through short copper straps.

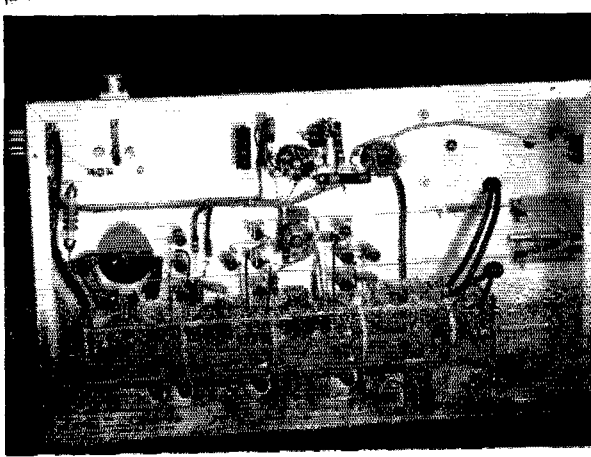
The band-change switch, S_2, is an extra-long one made from normal sections and parts, except for the shaft extension. Since the maximum length available is about 9 inches, we fashioned a longer one from a narrow slice of sheet dural. Although it is a little weaker than we like, it serves the purpose adequately.

Alignment

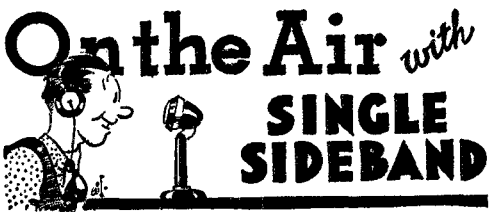
After the tuning range of the oscillator circuit is checked, the exciter is aligned on any band by switching to that band and setting the tuning dial in the center of the range. The fixed-tuned coils are all peaked for this frequency (as indicated by grid current measured across R_{15}, with screen and plate voltage off the 2E26). Then swing the tuning control to one end of the tuning range and repeak L_4, and then shoot down to the other end and peak L_3 on that frequency. Now as you tune across the range the grid current will vary somewhat (unless you're very lucky), but with a little judicious juggling you can get the grid current to vary not more than 1½-to-1 over the range. The grid current required is only 2 or 3 ma., and it's easy to get on the low-frequency ranges. At 28 Mc. you may have to squeeze a little, by peaking the thing for the c.w. (or 'phone) range only, and the excitation will be down compared with that obtainable on the other bands. This is one of those sad facts of life, but you can still get 12 or 15 watts output from the 2E26.

The final coils at L_6 are tailored to resonate at the low-frequency end of each band with C_{26} set at about 90 per cent of maximum. Yes, this is higher C than we're used to using at the higher frequencies, but it doesn't hurt the efficiency noticeably and it makes the thing very easy to load.

And there's the story. The gadget is ambitious for an inexperienced amateur to tackle, because the accent has been more on ideas than on details. However, it's a cinch for anyone who has built himself a few multitude gadgets and understands what the circuits are doing, and we think the reward for the work is more than adequate.



Removing the bottom plate shows the details of the string drive on the output tuning condenser and the arrangement of the components underneath the chassis.



The purpose of this column is to report schedules and operating times of active single-sideband stations, describe operating experiences and sometimes the gear in use, and possibly discuss some of the practical operating problems and suggested solutions. Contributions from active single-sideband stations will be welcomed.

THAT description in last month's *QST* by **W2UNJ** of a simple single-sideband exciter should trigger a few more into their first experience with the stuff. It produced many favorable comments of the "Gosh, that looks simple enough for me to build" variety. Better look it up, if you missed it the first time around.

We can point with pride to single-sideband stations in every call area, now that **W4OLL** is active. "Shy," who is ex-W3SHY and ex-W8SHY, uses a homemade filter rig patterned somewhat after that of WØTQK, except that miniature tubes are used throughout up to the 807 stage. First work was done with the 807 working directly into the antenna on 75, but he now kicks a 100TH to about 250 watts peak. A Super-Pro receiver, with an LM-15 for carrier reinsertion, and a 'scope for continuous monitoring of peaks and carrier suppression, round out the station. Quoting Shy: "I have had more interest aroused by single sideband than by any other single item in my dozen years in ham radio. I do know that my 250 watts will wade right through the roughest QRM when you have an experienced operator at the other end. My few duplex contacts with W3ASW and W2VVC have proved that."

Speaking of those two 75-meter pioneers in the game, **W3ASW** and **W2VVC** completed their 100th solid duplex QSO back in June. Under severe conditions they occasionally had to revert to the old monologue technique, but that was necessary not more than half a dozen times. They are still working on the problem of reducing the residual stand-by noise (amplified thermal noise and carrier) to the point where their duplexing can be done on frequencies close together. This looks like one of those problems hams may not be able to lick (without going to voice-controlled techniques of some sort), but this writer isn't going to be dumb enough to predict that no one will come up with the answer. Ham radio has made liars out of prophets too many times in the past!

In the DX line, **KH6PP** is adding a 300-watt amplifier to his rig, and Gene should soon become

(Continued on page 104)

A.R.R.L. QSL BUREAU

As a service to American and Canadian amateurs, ARRL maintains a QSL Bureau to make it easy for you to get your cards from foreign stations. Here is how it works: When you work a DX ham, you ask him to QSL via ARRL, then send a stamped, self-addressed stationer's size No. 10 envelope to the QSL manager for your call area, whose address is listed below. When he has an envelope full of cards for you, he drops it in the mail. Upon its receipt, you should immediately send another such envelope so that the QSL manager always has at least one on file for you. If you are one of those rare individuals who doesn't give a hang about the cards, be a good fellow and send along an envelope anyhow. It will help your QSL manager, who performs all the work incident to the bureau on a voluntary basis, to keep his files in order.

If you've had a different call before, send an envelope to the manager for that call area; all cards are routed to the *home district* as shown in the call. Maybe some of the thousands of uncalled-for cards are for you, even though it may have been a year or more since you've used a previously-held call.

Best bet on handling cards *for* foreign amateurs is to send them to appropriate bureaus as listed on page 50, June *QST*.

W1, K1 — Frederick W. Reynolds, W1JNX, 83 Needham St., Dedham, Mass.
W2, K2 — Henry W. Yahnel, W2SN, Lake Ave., Helmetta, N. J.
W3, K3 — Jesse Bieberman, W3KT, Box 34, Philadelphia, Pa.
W4, K4 — Johnny Dortch, W4DDF, 1611 East Cahal Ave., Nashville, Tenn.
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 — Frank E. Pratt, W7DXZ, 50235 Ferry St., Tacoma, Wash.
W8, K8 — William B. Davis, W8JNF, 4228 W. 217th St., Cleveland 16, Ohio
W9, K9 — John F. Schneider, W9CFT, 311 W. Ross Ave., Wausau, Wis.
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, 3291 5 St., North, Lethbridge, Alta.
VE7 — H. R. Hough, VE7HR, 1785 Emerson St., Victoria, B. C.
VE8 — Jack Spall, VE8AS, P. O. Box 268, Whitehorse, Y. T.
KP4 — E. W. Mayer, KP4KD, P. O. Box 1061, San Juan, P. R.
KZ5 — C.Z.A.R.A., Box 407, Balboa, Canal Zone
KH6 — Andy H. Fuchikami, KH6BA, 2543 Namauu Dr., Honolulu, T. H.
KL7 — J. W. McKinley, KL7CK, Box 1533, Juneau, Alaska

The Fourth Inter-American–Region 2 Radio Conferences

BY A. L. BUDLONG,* W1BUD

THE Fourth Inter-American Radio Conference was held in Washington, D. C., beginning April 25, 1949, and was concluded 11 weeks later on July 9th, with the formal signing of the documents. Running concurrent with it was the Region 2 Conference provided for under the Atlantic City regulations; the distinction is that whereas the Inter-American Conferences are restricted to the American Republics, Region 2 under Atlantic City also includes foreign possessions, such as the French and British and Dutch colonial possessions, and Greenland. Except for the addition of representatives of these Region 2 nations whenever the conference was in session as a Region 2 affair, the casual bystander would have found himself somewhat confused to know which was which, since the same people were involved in any event and it was only a question of which hat they had on at the time; it may be recorded that the confusion extended at times to the conferees! In all, nearly 200 government representatives and industry observers were in attendance at one time or another on behalf of 10 of the American republics plus the colonies of the United Kingdom in this region, Denmark, France, and the Netherlands West Indies and Surinam.

As always seems to be the case at Inter-American conferences, there was a thick sprinkling of amateurs among the official delegations; we had them on the delegations of Argentina, Bolivia, Brazil, Canada, Colombia, Costa Rica, Cuba, Dominican Republic, El Salvador, Nicaragua, Venezuela, and of course the United States of America. As usual, the League was present to represent United States amateur interests, again being the only exclusively-amateur representatives in attendance; with the exception of a few days for necessary attendance at the League's Board meeting the latter part of May the writer was in daily attendance throughout the entire time of the conference, and for much of the time Senior Assistant Secretary Huntoon was also present. We simply moved down bag and baggage, set up housekeeping in a small apartment which we rented "for the duration." Daily contact with League Headquarters in West Hartford was arranged via a teletype machine we had in our apartment in Washington; thus we were in touch with Hartford day or night not only in connection with conference progress but in connection with general League matters as well.

As explained in earlier issues of *QST*,[1] this conference is another one of a series of American regional radio conferences held within the framework of the International (Atlantic City) Convention which provides for such affairs; its principal purpose in this case was to revise the regional regulations set up at Santiago in 1940, including revision of the Santiago Regional Allocation Table. It should be explained here that in certain parts of the frequency spectrum the na-

[1] E.g., p. 27, March, 1949.

ARRL was host at a dinner-party June 16th for amateurs on visiting delegations to the conference. *Seated, l. to r.*, H. Melani, HK3CM, chief, Radio Department, Colombian Air Force; Juan A. Autelli, LU9AL, chief of telecommunications, Argentina; A. L. Budlong, W1BUD, ARRL secretary; Ernesto Tro Cabrera, CO2DA, radio communications inspector, Cuba; Guillermo Enrique Wenzel, YV5CB, ministry of communications, Venezuela; E. L. Battey, W4IA, ARRL Roanoke Division director. *Standing, l. to r.*, Julio J. Etulain, LU3AF, chief, monitoring stations, Argentina; Arnoldo Vargas V., TI2AW, radio engineer, Costa Rica; Rafael Arias, ministry of communications, Mexico; Capt. Francisco J. Medal, YN1AM, radio inspector, Nicaragua; Egidio H. Luraschi, LU7EX, technical inspector, Argentina; Charles J. Acton, VE3AC, chief of frequency allocations and licenses, Canada; Arturo R. Andrade, YS2AM, telecommunications adviser, El Salvador; Guillermo Morales L., CO2GM, general inspector of radio, Cuba; John Huntoon, W1LVQ, ARRL assistant secretary; A. L. McIntosh, W3ZM, chief, frequency allocation and treaty division, FCC; Gerald Gross, W3GG-HB9IA, secretary, International Telecommunications Union.

* Managing Secretary, ARRL.

tions of the world take the attitude that the propagation characteristics are such that a worldwide agreement on service allocation is not required, but that instead various regions of the world should be left free to settle on these specific allocations for that region alone. So far as we amateurs are concerned, the 3500–4000 kilocycle band is within these regional allocations; Atlantic City, for instance, indicates that band as being available for either amateur, fixed or mobile services,[2] just as have all the international allocation tables since 1927. The Regional Conference then decides which of these services gets how much of the band. In addition to regional allocation matters, the regional conference also deals with such minor regulatory revisions as may be deemed advisable.

Perhaps it's time now to cut across lots and tell what this conference did as regards us amateurs; after that, we can give the story of how it came about. Turning first to the nonallocation aspects, the new regulations of the Inter-American documents carry an Article 8 entitled "Amateurs" which reads as follows:

A. General

§1. Amateur stations shall not render a broadcasting service.

§2. The American countries shall make every effort to limit the operations of their amateur stations to the purposes envisaged by the Atlantic City Radio Regulations, and to prevent them from invading the spheres of activity that properly belong to other radio services.

§3. Nevertheless, in cases of emergency, amateur stations may temporarily carry out other services of a limited character, in accordance with the internal regulations of each country.

B. Amateur Third-Party Messages

§4. The American countries, with the purpose of further improving their close and friendly relations, and when their internal legislation permits, agree to authorize amateur stations in their respective countries and possessions to exchange internationally messages emanating from third parties; provided, however, that such messages shall be of such character that would not normally be sent by any other existing means of telecommunication, and on which no compensation may be directly or indirectly paid.

We won't go into any involved comment on this Article and its provisions except to say that they represent what we in the United States wanted. Actually, this Article brings together in one place in the regulations an assortment of provisions that were contained in previous documents partly in the regulations and partly in appended recommendations, cleans them up from an editorial standpoint, but does nothing to change their intent. It should be recorded here that one provision in Santiago which recommended that a special grade of license be required for operation on 14-megacycle 'phone was deleted in line with the United States recommendation to that effect; not that we contemplate any action here on Class A, but merely that we believe each nation should be free to make its own decision on such a point.

[2] *QST*, Nov., 1947, p. 33.

Now for the allocation table. In it, our 80-meter band is shown as follows:

Frequency Band and Bandwidth kc/s	*Allocation to Services*	*Notes*
3500–4000 (500)	Amateur	Fixed and mobile services, except aeronautical mobile (R), will be allowed provided they do not cause harmful interference to the amateur service.

That is the allocation table as it appears for both the Inter-American countries and Region 2. However, you may remember that back in May *QST*, when we were writing about this conference just in advance of opening, we mentioned that advance indications were that some of the other countries in this region might want to allocate this band to other than amateurs (especially since amateurs of a number of South American countries don't have any particular interest in operating in the band anyway). This turned out to be the case, and while the table reads as shown, the final documents contain reservations to it on the part of Argentina, Brazil, Cuba, France, Mexico and the Colonies of Great Britain, all of whom felt that their national interests would not permit them to go along with an exclusive amateur allocation. The text of these reservations follows:

For the ARGENTINE REPUBLIC

The Argentine Republic does not accept the portion of the table of frequency allocations covering the band 3500 to 4000 kc/s, contained in Article 1 of this Agreement, because it is in conflict with the provisions of Articles 4 and 5 of the Radio Regulations (Atlantic City, 1947).

Consequently, it reserves the right to apply the band of 3500–4000 kc/s in the form established by Article 5 of the above-mentioned Regulations, so that no priority is conceded as between the amateur, fixed and mobile, except aeronautical mobile (R) services.

For BRAZIL

The Brazilian Administration, in view of its necessities, reserves the right to use the band of frequencies between 3500 and 4000 kc/s in accordance with the provisions of Article 5 of the Atlantic City Radio Regulations, which do not establish any priority in regard to that band.

For CUBA

The Delegation of Cuba does not agree to the preference granted to amateurs in the entire 3500–4000 kc/s band, which thereby nullifies the assignments approved in the Radio Regulations of Atlantic City (1947) for fixed and mobile services in this band.

Our country therefore reserves the right to continue using the said band for its amateur, fixed and mobile services without giving preference to any one of those services.

For FRANCE

In signing the present instrument, France reserves the right to accept or not to accept the part of the Table of Frequency Allocations (Appendix 3) concerning the 3500–4000 kc/s frequency band, where a priority for the amateur services is established which is in conflict with the provisions of Article 5 of Chapter III of the Atlantic City Radio Regulations, in which the 3500–4000 kc/s frequency band is expressly assigned to the following services: Amateur, fixed and mobile, except aeronautical mobile (R).

For MEXICO

Mexico reserves the right to utilize the 3500 to 4000

kc/s band according to the terms established in the Atlantic City Radio Regulations for Region 2.

For the COLONIES OF THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND IN REGION 2.

The Delegation of the Colonies of the United Kingdom of Great Britain and Northern Ireland in Region 2 reserves its position with respect to the allocation of the frequencies between 3500 and 4000 kc/s to the amateur service and considers that in the subdivision 3750 to 4000 kc/s, there should be no priority for the amateur service and any protection from interference should not be unilateral but that protection to the fixed and mobile services should also be established.

In effect, what these countries are saying is that they can't agree to the allocation the way it appears in the table and that they feel that they must reserve the right to put either amateur, fixed or mobile stations in the band so far as they are concerned. Now, this may seem like a reasonably simple matter of the countries concerned attaching such statements to the final documents before they signed them. Actually, the story behind them is the story of what turned out to be the biggest problem before the entire conference, the story of one of the most grueling and difficult struggles and by long odds the toughest individual allocations problem we have faced in any conference in the past decade. The complete story of the amateur matter involves untold hours of argument and special committee meetings, full committee meetings and plenary sessions on the part of dozens of delegates, page on page of minutes, innumerable special meetings of the United States Delegation, lunches, dinners, canceled week-end plans on the part of U. S. government and industry people in order to pitch in and help us, changes in conference schedules, confidential advisory reports at critical times from the League's representatives in Washington to the directors, midnight oil, teletypewriter exchanges by the hour, conferences with General Counsel Segal in Washington and long-distance consultations with the League's President and Vice-President — and cocktails, coffee and aspirin. Briefly, the story is as follows:

When the conference opened on April 25th, the only proposal for 3500–4000 kilocycles was that of the United States, which proposed to allocate it exclusively to amateurs, as heretofore, in this region. In theory, any of the countries attending the conference having comments on the United States proposals, or counterproposals, was supposed to file them with the Secretariat within a few days. Nothing was filed on our 80-meter band, however, so it looked like fairly clear sailing. However, when Committee 4, which had the Inter-American Allocations Table under its wing, got down to this band on May 4th, we ran head-on into a most serious development when a group of countries and colonies in the Caribbean area, primarily, ganged up on us. It started when the delegate of the Netherlands West Indies read a paper to the effect that amateurs had a total of 3500 kc. in the medium and high-frequency parts of the spectrum, 13 Mc. in the v.h.f. portion, four bands to a total of 475 Mc. in the u.h.f. and four bands to a total of 975 in the s.h.f., that amateurs are thus far better off than some of the most essential services such as aeronautical fixed, which have vital need for more channels than are currently available to them in this region, and that it was his opinion that most of our 80-meter band should be made available to the fixed service, with amateurs restricted to not more than 100 kc.! He was immediately supported by the representative of the British West Indies, who suggested that the frequencies for amateurs be 3550–3650; the French delegate supported, and in quick succession so did Venezuela, Dominica, and Guatemala. Zowie!

At this point, the U. S. spokesman, Mr. McIntosh (W3ZM), vice-chairman of the U. S. Delegation and chief of the FCC's Frequency Allocation and Treaty Division, made a masterly

A. L. McIntosh, W3ZM
Vice-Chairman,
Delegation of the U.S.A.

presentation on behalf of the United States, arguing the absolute need for the entire 500 kc. for amateur use in this country, pointing out that our domestic system of its organized networks, emergency nets, etc., was in this band and stressing the traditional allocation of the band exclusively to the amateur service in this hemisphere. Uruguay gave us strong backing, as did Canada, but a total of some eight countries expressed support of the N.W.I.-B.W.I. position and we had a bad situation on our hands. Eventually, however, it was agreed that those countries who had a point of view other than that represented by the U. S.-Canada-Uruguay position should have a special meeting and come up with something concrete on paper for Committee discussion, whereupon the meeting adjourned.

The special group met on May 5th, the following day, and produced a document which, in effect, split the 80-meter band in half; it gave all three services (amateur, fixed and mobile) use of the band in this hemisphere but gave amateurs

priority in 3500–3750 kilocycles and the fixed and mobile services priority in 3750–4000 kilocycles; the report was signed by Brazil, Cuba, Honduras, Guatemala, Nicaragua, El Salvador, Panama, the Dominican Republic, Venezuela, N.W.I., B.W.I. and France.

This was a lot better than 100 kc., but obviously was still completely unacceptable to the United States. So, on May 10th when this special report came up for discussion in the main committee, there was a pretty free-for-all time of it. Eventually, however, after Captain Francisco J. Medal (YN1AM), the chairman of the special committee, pointed out that a number of those who had signed it had requested that it be reconsidered, it was voted to send the special report back for reconsideration and to enlarge the group to include any other countries who might be interested. So, on May 11th, we had another special meeting on this matter alone, participated in by nearly everybody at the conference. It was a long, hot and difficult session lasting all day, but eventually it was agreed to withdraw the proposals just outlined and agreement was had to list 3500–4000 as amateur — but with a note which would specify that low-power fixed and mobile operation would be permitted on a noninterference basis for the fixed and mobile services between 3750–4000 kc. (acceptable to the United States since it simply put into different words a privilege which has been available for years). Cuba and Argentina indicated that they would have to abstain from expressing any opinion on this proposal while they wired back home for instructions.

After this, work went ahead on a variety of other matters until June 13th, when the final report of Committee 4 came up for approval, still with the language just outlined so far as 3500–4000 was concerned. When it came to getting final committee approval on that amateur allocation, however, Argentina read a statement which was the same reservation which appears in the final documents. Brazil also entered her reservation at this time as did Cuba, France, Mexico and the British West Indies. The Netherlands West Indies delegate did not enter a reservation but did make a statement which he asked to be attached to the report, which indicated his feeling that the allocation to amateur was not a proper one.

Thus the report of Committee 4 was sent up for final approval of the conference by a full plenary meeting of all delegations. The first opportunity for this came on June 20th, the 7th such plenary meeting during the course of the conference; one of the items for this meeting was the approval of the Committee 4 report. When it came to this report, its chairman, Mr. Arboleda of Colombia (an unusually capable and experienced radio conference expert), asked that consideration of the item of the report dealing with the 3500–4000 kc. band be deferred until last, since continued efforts to eliminate the reservations were still in progress. Subsequently, an unofficial working group was proposed, to go off to one side and meet to see if some solution could be found which would permit elimination of the reservations; this group met under circumstances indicating there was evident desire on the part of everyone to reach a unanimous agreement. However, since it turned out that most of those who had indicated reservations would have to cable back home to their governments for further instructions, it was not possible to come to a solution on the subject and so it was agreed tentatively to approve the report of the Committee with the reservations in it, for the time being. In this process, the United States proposed a revision of the wording in the "note" column to the form in which it finally appears, in an effort to help solve the difficulty (this action had no adverse effect on us amateurs in the United States). It did indeed have some perceptible effect immediately, since with the change the delegate from the Netherlands West Indies indicated he was thereupon able to withdraw his earlier statement from the record, and did so.

A week later, on June 27th, the 8th plenary meeting was held. Committee 4 Chairman Arboleda, noting that no solutions still appeared possible, suggested going ahead with final approval of the report of Committee 4 with the reservations as shown, but with the statement that the door was still left open for possible removal of the reservations if any country found itself able to do so. Immediately following the statement by Mr. Arboleda, the Argentina delegate said he had received instructions which indicated a proposal by her to split the 80-meter band in half, amateurs to have priority from 3500–3750 and the fixed and mobile services priority from 3750–4000. Argentina further stated that if the conference agreed to the suggestion of Mr. Arboleda, Argentina would want to raise the question of an interpretation of the legality of the amateur allocation as it was proposed. But, following this statement by Argentina, the conference finally approved Committee 4's report with the amateur band listed as shown above, and with the reservations included.

For all practical purposes, this concluded the matter except in the very improbable event that some one of the "reserving" countries would still find it possible to take some action to remove its reservation. However, Argentina was still to be reckoned with in the matter of her questioning the legality of the whole business and on July 1st, at the 9th plenary meeting, that country made a determined and detailed case for the legality of the allocation under the Atlantic City provisions for special arrangements, contending that special arrangements (such as this regional allocation) were proper only if all countries party to it were unanimous in agreeing on what was being done.

pointing out that the reservations indicated the agreement was not unanimous, and winding up by requesting the plenary assembly to rule that the 3500–4000 allocation in the table was illegal! Forewarned, the United States and other countries were prepared for this turn of events, and eventually through a series of parliamentary moves which are too involved to go into here, Argentina was voted down. With this action, the show was over, so far as the amateur band was concerned.

This, then, is what we will have when the Inter-American regulations go into effect. At this point it seems important to point out that, except in the case of Argentina, the reserving countries are principally interested in more clearly legalizing their present low-power nonamateur operations in our band; the reservations are not an announcement of intention of a mass invasion of our 80-meter territory. In the case of Argentina, it is principally a matter of reserving so that space for fixed service will be available in case the Provisional Frequency Board (now attempting to fit in all the fixed circuits of the world under the Atlantic City regulations) is not able to provide Argentina with what she requires in the way of channels in the Atlantic City fixed-service band. Looking at the results objectively, and particularly in the light of our preconference knowledge of the sentiments of certain countries toward the amateur bands and the declaration of those sentiments in conference meetings, it seems to us that the outcome is to be regarded as satisfactory, from our standpoint. Some of the American countries honestly do not feel they can go along with an exclusive amateur allocation, especially since their amateurs generally don't make use of the band and since it seems ridiculous to them to have 500 kilocycles of unused frequencies when they are, for the most part, so located that they neither get interference from our amateurs nor would cause any to us with the low-power services they want to use — and have been using, in most cases, for years. Certainly, the allocation as shown, even with the reservations, is preferable to the alternative of an allocation which would show the band available to all three services, and with *our* taking a reservation on behalf of the United States!

In this recountal of the highlights of the progress of this matter throughout the conference, it has been utterly impossible to credit the long hours of hard work put in by all our friends, both in this country and elsewhere. Let the reader be assured, however, that such coöperative effort did indeed exist — many of our friends in many delegations throughout the Americas worked untiringly on behalf of the amateur service in this matter. Similarly, we make grateful acknowledgment here to the sterling support we got from every member of the U. S. delegation, government and industry alike. Many of these people gave up their plans for needed week-end rests and devoted themselves to hours of special activity with delegates of other countries to help us out. We owe them all a great debt. It is impossible to mention them all by name, but certainly all will be in agreement in recognizing especially the outstanding work performed in this and all other allocations matters by the United States spokesman, Mr. A. L. McIntosh. Grateful as we must be to him for the tremendous effort he made in our behalf, we can also take pride in the fact that this man's outstanding performance on all allocations matters throughout the conference was the performance of one of our own kind, an American radio amateur.

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The effective date of the Inter-American–Region 2 regulations (except the allocation table) will be April 1, 1950, if five ratifications have been received by that time; otherwise, they will be effective 30 days after the deposit of the fifth ratification. The same effective date applies to the allocation table if the new international frequency list now being prepared at Geneva is in effect by that time; if it is not yet in effect, certain portions of the Inter-American allocation table, including our 3500–4000 kc. band, will have to await international approval of the new frequency list.

The next Inter-American Conference is scheduled to be held in Montevideo, Uruguay, following the Buenos Aires international world radio conference in 1952.

COMING A.R.R.L. CONVENTIONS

August 26th–27th–28th — West Gulf Division, Dallas
September 3rd–4th–5th — Maritime Division, Halifax
September 17th — New Hampshire State, Manchester
October 7th–9th — Hudson Division, New York City
October 8th–9th — Midwest Division, Omaha
October 29th–30th — Pacific Division, Reno

FEED-BACK

With humble apologies, we hasten to correct the diagram of the "Simplified Electronic Key" appearing in the Hints and Kinks section of June *QST* (p. 124). A connection should have been shown between Pin 8 of the 117NGT and the relay arm shown at the top of the diagram.

An essential ground was omitted from the schematic diagram of the noise generator described in our August issue. Connecting the junction of C_4 and C_5 to the junction of C_1, C_2 and C_3 would do it.

I.A.R.U. News

ENGLAND

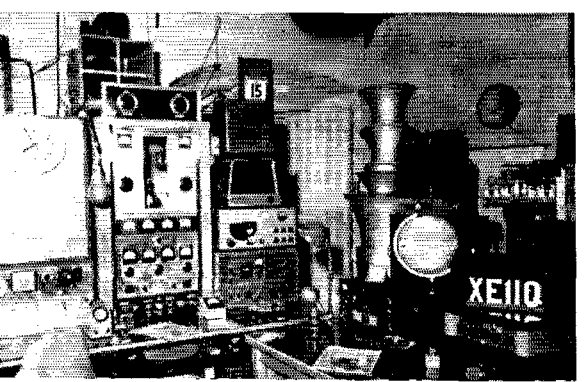
In order to arrive at a subdivision of the amateur bands which will guarantee the most effective and enjoyable use of those bands by the greatest number, the Council of the *Radio Society of Great Britain* is advocating the following *voluntary* band plan:

3500–3600	— telegraphy only
3600–3635	— telephony only
3685–3800	— telephony only
7000–7050	— telegraphy only
7050–7300	— telegraphy and telephony
14,000–14,150	— telegraphy only
14,150–14,400	— telegraphy and telephony
28,000–28,200	— telegraphy only
28,200–30,000	— telegraphy and telephony

It is the hope of the R.S.G.B. that this band plan will be adhered to not only by amateurs in the United Kingdom but also by amateurs in other countries which do not have band subdivisions determined by national regulation. The R.S.G.B. emphasizes that these are not intended as irksome restrictions. This band plan, backed by a majority of the U. K. amateurs, was devised only in an attempt to promote a more effective all-around use of the amateur bands.

The plan listed above will remain in force until the Atlantic City allocations become effective. The R.S.G.B. suggests the following band plan for use after that date:

3500–3600	— telegraphy only
3600–3800	— telephony only
7000–7050	— telegraphy only
7050–7150	— telephony only
14,000–14,100	— telegraphy only
14,150–14,350	— telegraphy and telephony
21,000–21,150	— telegraphy only
21,150–21,450	— telegraphy and telephony
28,000–28,200	— telegraphy only
28,200–29,700	— telegraphy and telephony



INDIA

The *Amateur Radio Club of India* is sponsoring a DX contest which will extend over the week ends of September 17th and 24th. The contest is open only to amateurs in countries which lie between Longitudes 10° E and 180° E, or roughly those countries between New Zealand and South Africa in the south and Eastern Europe to Japan in the north.

GERMANY

Amateur radio in Germany continues to flourish. Besides those stations licensed to personnel of the occupying powers (DL2, DL4, DL5), the German nationals have now been licensed, with call signs currently in use including DL1, DL3, and DL7. The DL7 stations are in the Berlin sector. QSLs are to be sent via D.A.R.C., P. O. Box 99, Munich 27, Germany.

QSL BUREAUS

Changes and additions to the last complete listing, in June *QST:*

Bahamas: C. N. Albury, Telecommunications Dept., Nassau
East Africa: P. O. Box 1313, Nairobi, Kenya Colony
Finland: OH2NT, Kasarminkatu 25 C 12, Helsinki

WEA

Word comes from the *Radio Society of East Africa* that special East African awards are now being issued, awards that will require considerable skill and perseverance. Annual certificates will be given to any amateur who proves contact with one VQ3 plus one VQ5 plus three VQ4 stations in any one calendar year, with no restriction as to mode or band. Each certificate will be in the form of a special souvenir card bearing a large photograph of some interesting aspect of East Africa, with the photograph being changed each year. Possession of five of these Annual Certificates, together with proof of contact with one VQ1 station, will entitle the holder to the WEA (Worked East Africa) award. It is expected that the WEA will be a very special trophy.

(*Continued on page 106*)

♦

This is the impressive layout at XE1IQ, station of Delfino Arrioja y Vargas. Push-pull 250THs comprise the final stage, modulated by a pair of 810s.

15th ARRL DX Contest

Part I: Final Results — C.W. Section

THE RESULTS of both the c.w. and the 'phone sections of the annual ARRL DX Contest are usually published in November *QST*, after the long and arduous task of checking logs and compiling scores has been completed. In order to bring you the results sooner this year we decided to break the final report of the 1949 contest into two parts, the first giving the c.w. scores and the second the 'phone highlights and final scores. The target for the first part was this issue (copy for which is due in July, contrary to a popular impression that *QST* is published like a newspaper, with the deadline scheduled just prior to the time copies begin to come off the presses! — *Ed.*). The use by many contestants of the new optional W/VE log form shown in February *QST* aided materially in allowing us to finish the checking in time to hit the target, in spite of the 17.3% increase in c.w. participation over the 1948 contest; it is planned to make this new form the official one for use by all U. S. and Canadian entrants next year. Photographs of high-scoring participants are en route, and October *QST* will show shots of the leading c.w. and 'phone performers as well as the official 'phone results.

Award Winners

The leading c.w. operator in each ARRL Mainland section and in each country from which qualifying entries were received will receive a bronze medallion engraved with his call. C.w. entries numbered 1200, 858 W/VE and 342 foreign. Awards are being made to 66 contestants in the W/VE area and to 82 participants outside the U. S. and Canada. The calls of recipients are shown in an accompanying tabulation of scores. It took much stamina and operating skill to come out a leader in such a fiercely competitive DX activity. The League extends heartiest congratulations to each winner.

Highlights

Among the top-flight W/VE operator scores, that of W8BHW was the most outstanding. Always a dangerous threat in any DX contest, Lindy stepped out way ahead of the field in this one and scored 390,450 points from 475 contacts and a multiplier of 274. W8BHW's total operating time was 87 hours, and different countries worked totaled 113! Lindy has set a mark that presents a real challenge to contestants in the 1950 DX fray!

Plunging into the contest on an all-out basis, W2IOP, well-known for his exploits in domestic contests, logged the second-highest W/VE score. In bringing new fame to himself as a DX contest operator, Larry out-DXed many of the best operators in the business! A contact total of 483 and multiplier of 257 netted W2IOP 368,538 points during 90 hours of operation.

Another specialist in contests of domestic scope, W4KFC, was next in line with 365,160 points, 479 contacts, 255 multiplier. Looking over the results of the last two DX contests, we note that Vic's sights have been set higher each year. Apparently he brought out the long-range heavy artillery this year!

Following the first three high scorers, each with a score over 200,000 points, were: W8JIN 349,263, W3BES 340,860, W2SAI (operated by W2QCM) 336,798, W2AQW 331,362, WØDAE 289,800, W3LOE 279,210, W6GRL 278,640, W2BXA 263,648, W3GHD 254,322, W6RM 253,890, W6LDJ 253,022, W2FBA 248,136, W8BTI 237,222, W8FGX 234,398, W3DGM 227,766, W9IU 224,220, W4FVR 217,086, W9DUY 212,058, W6HZT 201,696, W9GA 200,718.

Leaders in number of contacts were W2IOP 483, W4KFC 479, W8BHW 475, W2SAI 462, W3BES 462, W8JIN 453, W2AQW 449, W6GRL 430, W2BXA 413, W3LOE 411, W3GHD 398, W2FBA 392, W6LDJ 390, W6RM 390, W8BTI 382, W3DHM 374, W8FGX 374, W4FVR 373, W9IU 370, VE4RO 370, W9DUY 357, W9GA 356, VE3KE 356, W3FGB 353, W6HZT 352.

Highest multipliers (sum of countries-worked totals for each band) in W/VE: W8BHW 274, W2IOP 257, W8JIN 257, W4KFC 255, W3BES 247, W2AQW 246, W2SAI 243, W3LOE 227, W6RM 217, W6LDJ 217, W6GRL 216, W2BXA 214, W3GHD 213, W2FBA 211, W8FGX 209, W1BIH 209, W8BTI 207, W3DGM 203, W9IU 202.

The highest score submitted by contestants outside the United States and Canada was that of XF1A. Juan topped his terrific performance of last year, made 3051 contacts and a multiplier of 87 for a grand total of 796,311 points. XF1A worked all bands, 3.5–28 Mc., and came within 3 points of a perfect multiplier.

Credit for the second-highest foreign score, 498,840, goes to CM9AB, who chalked up 2066 contacts and a multiplier of 80. Following closely behind in third place, KV4AA tallied 2085 contacts and a multiplier of 79 to score 491,222.

Other scores deserving of special mention:

PY2AC 446,544, KZ5MB 343,359, KH6IJ 338,-985, KL7HI 325,243, VK2EO 313,398, JA3AA 286,626, HC1JB 275,100, ZL1MB 250,743, KP6AB 247,452, OK1FF 239,140, KP4DV 235,440, EI4Q 233,508, VO6J 231,190, PAØUN 218,625, HA5B 203,550, EL3A 200,304.

Leaders in number of contacts: XF1A 3051, KV4AA 2085, CM9AB 2066, PY2AC 1772, ZL1MB 1577, VK2EO 1514, OK1FF 1458, KZ5MB 1413, KH6IJ 1395, JA3AA 1385, PAØUN 1376, KL7HI 1373, EI4Q 1345, EL3A 1284, VO6J 1278, HB9EU 1241, FA8IH 1235, HC1JB 1234, HB9AW 1213, KP6AB 1213.

Highest multipliers: XF1A 87, PY2AC 84, KH6IJ 81, KZ5MB 81, CM9AB 80, KL7HI 79, KV4AA 79, HC1JB 75, KH6MG 74, KP4DV 72, KL7FM 70, JA3AA 69, VK2EO 69, KH6NE 68, KP4KD 67, JA2KG 63, KG6DI 63, KZ5AX 63, VK5KO 62, VO6J 61.

Disqualifications

The entrants listed below are deemed ineligible for c.w. score listings or awards in the 1949 DX Competition. In each case disqualification is for off-frequency operation as confirmed by a single FCC citation or advisory notice or two accredited Official Observer measurements:

W1s AQE BDS BPX LVQ, W2s ALB AUU DS LRW QEW, W3s CPV EVW FLH HVM JKO PEV WU, W4s BPD GDQ KOQ LAP, W5s BGP CEW KC MPZ, W6s EPZ HJ LDD OMC, W7s BSU EOI, W8s CCJ ECI OKB, W9s ABA OAT VTI, WØs JGF AIW, VE1s CU DB IM, VE3s ADV AWE, VE7HC, VE8AS, CO7BL, EA5BE, F3DI, F8QD, FA8CR, GW3ZV, HA48A, HB9FE, OK1s AW EA FF, ON4GU, OZ1W, OZ7EU, OZ9A, OZ9Q, PY2NX.

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The determination of standings in the club competition must await the completion of the 'phone checking detail. A tabulation showing club results will appear next month along with the final results of the 'phone section.

C.W. SCORES

Fifteenth International DX Competition

Operator of the station first-listed in each section and country is winner for that area, unless otherwise indicated. . . . Asterisks denote stations not entered in contest, reporting to assure credit for stations worked. . . . The multiplier used by each station in determining score is given with the score — in the case of W/VE entrants this is the total of the countries worked on each frequency band used; in the case of non-W/VE participants it is the total of the W/VE districts worked on each frequency band. . . . The number of contacts established is next listed. . . . The letters A, B, and C approximate the input to the final stage at each station; A indicates power up to and including 100 watts; B indicates over 100 watts, up to and including 500 watts; C indicates over 500 watts. . . . The total operating time to the nearest hour is given for each station and is the last figure following the score. . . . Example of listings: W3BES 340,860-247-462-C-80, or final score 340,860; multiplier 247; 462 contacts; power over 500 watts; total operating time 80 hours. . . . Stations manned by more than one operator are grouped in order of score following single-operator station listings in each section or country tabulation; calls of participants at multioperator stations are listed in parentheses.

ATLANTIC DIVISION

E. Pennsylvania

W3BES	340,860-247-462-C-80			
W3GHD	254,322-213-398-B- -			
W3DGM	227,766-203-374-C-83			
W3FGB	186,384-176-353-C-65			
W3FUF	110,055-145-253-C-59			
W3HRD	100,800-140-240-C-54			
W3GHS	92,250-125-246-B-55			
W3EQA	86,433-141-205-C-43			
W3KT	53,865-105-171-C- -			
W3IXN	52,500-100-175-B-60			
W3ARK	48,060- 89-180-B-59			
W3BXE	42,864- 94-152-B-26			
W3HFD	36,210- 85-142-C-30			
W3NOH	35,217- 91-129-B-40			
W3MLW	28,000- 70-135-B-65			
W3JLJ	27,729- 79-117-C- -			
W3HER	24,660- 60-137-B-58			
W3GFG	23,936- 64-128-B-21			
W3AFW	20,557- 61-113-C-45			
W3RJK	19,810- 70- 95-B-22			
W3ADZ	19,200- 60-107-C-37			
W3ORA	17,766- 63- 94-B-51			
W3MQY	16,524- 54-102-C-44			
W3GYV	12,624- 52- 79-C- -			
W3AFC	11,844- 47- 84-C-33			
W3QLW	10,428- 44- 79-B-39			
W3FRY	9504- 44- 72-C-13			
W3CGS	6630- 34- 65-C-19			
W3CLT	5148- 36- 48-B-15			
W3KEW	4437- 29- 51-C-21			
W3OSE	2178- 22- 34-A-21			
W3NNL	1020- 17- 20-A- 8			
W3DTE	585- 13- 15-A-24			
W3ADE*	360- 10- 12-B- 5			
W3DXK	224- 7- 11-A- 7			
W3PDJ*	12- 2- 2--- -			

Md.-Del.-D.C.

W4KXN/3	154,804-169-306-C- -			
W3EJV	154,350-175-294-C-77			
W3ITE	153,621-169-303-C-54			
W3JTC	120,690-149-270-C-54			
W3KDP	93,499-133-236-C-49			
W3BEN	68,252-113-202-C-52			
W3EYF	54,855-115-159--- 7			
W3LUL	51,339-109-157-B-3-			
W3FQZ	50,715-105-161-B-41			
W3FQB	50,058-103-163-A-65			
W3KÖ	37,312- 88-144-B-37			
W3WV	31,360- 80-132-B-38			
W3EIS	27,900- 75-124-B-28			
W3BOU	22,360- 65-117-C-45			
W3CDZ	22,032- 68-108-A-42			
W3KZQ	20,460- 62-110-B-38			
W3FYS	19,175- 65-100-C-36			
W3JHW	17,856- 64- 93-B- -			
W3LVJ	12,549- 47- 89-A-24			
W3FY	5355- 35- 51-B-18			
W3CWD	5016- 33- 51-B-20			
W3CDLG	4293- 27- 53-B-29			
W3AFU	3780- 30- 42-B-16			
W3MNO	3540- 30- 40-B-21			
W3JZY	3036- 23- 44-B-16			
W3HTK	2553- 23- 37-A- -			
W3OTZ	2112- 22- 32-B-11			
W3CIQ	1782- 22- 27-B-11			
W3NB	1476- 12- 41-B- 9			
W3IL	1188- 18- 22-A- 8			
W3KYF	627- 11- 19-A-13			
W3PFR*	210- 7- 10-A- -			

So. New Jersey

W2SAI[1]	336,798-243-462--- -			
W2AQW	331,362-246-449-C-65			
W2PWP	174,303-181-321-C-51			
W2IMU	85,527-129-221-B- -			
W2HEH	85,020-130-218--- -			
W2PQJ	66,557-113-197-B- -			
W2CGL	59,466-106-207-C-53			
W2RDK	57,768-116-166-C-35			
W2QKE	54,936-109-168-C-27			
W2FXN	28,258- 71-133--- -			
W2QKJ	19,560- 60-110-B-43			
W2PIN	15,015- 65- 77-B-28			
W3NF/2	2958- 29- 34-A- -			
W2BCF	2916- 27- 36-B-16			
W2HAZ	2079- 21- 33-B- -			
W2GME*	189- 7- 9-A- -			
W2ORS*	48- 4- 4--- -			

W. New York

W2FBA	248,136-211-392-B-79			
W2DSB	185,556-188-329-C-80			
W2PUD	162,357-181-299-C-53			
W2AW	126,360-156-270-B-51			
W2SO	90,440-133-227-C-94			
W2QCF	81,125-125-217-C-54			
W2BJH	50,200-100-170-B-58			
W2EMW	37,740- 85-148-C- -			
W2PTI	36,354- 83-146-B-43			
W2MA	21,186- 66-107-C-48			
W3CNT	17,820- 60- 99--- -			
W2ROM	12,954- 51- 85-C-28			
W2PHT	11,844- 47- 84-B-33			
W2TXB	9399- 39- 81-C-22			
W2QCP	9348- 41- 76--- 15			
W2RWE	7605- 39- 65-B-14			
W2QJM	7056- 42- 56-B-21			
W2REF	6156- 36- 57-B-30			
W2TVR	5856- 32- 61-B-22			
W2AXR*	5180- 35- 50-C- -			
W2PZM	2900- 25- 40-B-24			
W2SYV	2856- 28- 34--- -			
W2MCM	2760- 23- 40-B-15			
W2QQ	2142- 21- 34-B-17			
W2UPH	2088- 24- 29--- -			
W2BEN	1206- 18- 24-B-12			
W2KFN	960- 16- 20-B-38			
W2DOD	912- 16- 19-A- 6			
W2SAW	765- 15- 17--- -			
W2UNB*	507- 13- 13--- -			
W2CSK	495- 11- 15--- 17			
W2WZR	459- 9- 17-A- 7			
W2SSQ*	420- 10- 14-B- -			
W2UZN/2	297- 9- 11-A- 8			
W2WWP*	270- 9- 10-C- 3			
W2VGM	252- 7- 12-A-14			
W2UNB*	75- 5- 5--- -			

W. Pennsylvania

W3LOE	279,210-227-411-C-60			
W3KTW	123,930-153-272-B-45			
W3LNE	45,562-109-140-C-44			
W3LMM	36,801- 87-142-C-45			
W3LPF	28,329- 71-140-B-41			
W3KWL	14,514- 41-118-C-31			
W3KSR	11,568- 48- 81-B-25			
W3HXA	5809- 37- 53-B-32			
W3KQD	5786- 31- 62-B-24			
W3AZG	5148- 33- 52-B-17			
W3LOR	1092- 14- 26-B- 6			
W3PUA	1050- 15- 24-B-14			
W3WJF	810- 15- 18-B-16			
W3LOR	780- 13- 20-B- 6			
W3NCF	663- 13- 17-C- -			
W3MTK	495- 11- 15-B-18			
W3CJF	351- 9- 13-B- 6			
W3RWJ*	297- 9- 11--- -			
W3NRE*	189- 7- 9--- -			
W3MLG	60- 4- 5-A- -			

CENTRAL DIVISION

Illinois

W9GA	200,718-189-356-C-80			
W9PSR	177,970-185-337-C-68			
W9LM	177,708-177-335-C-86			
W9FJB	176,436-174-338-C-57			
W9NII	154,546-166-311-C-73			
W9IOD	150,894-166-303-C-87			
W9GRV	134,880-160-281-B-72			
W9AEH	107,442-141-254-C-59			
W9UNG	107,310-146-245-C- -			
W9CIA	92,637-141-219-C-71			
W9VIN	73,689-121-203-B- -			
W9MXP	40,392- 88-153-B-52			
W9ESD	39,984- 88-149-B-56			
W9BMV	34,936- 88-133-C-48			
W9FKC	31,996- 76-141-C-37			
W9BGC	21,420- 70-102--- -			
W9MXX	19,656- 72- 91-B-42			
W9JUO	16,968- 56-101-B- -			
W9AGM	16,245- 57- 95-B-23			
W9GMZ	14,523- 47-108-B-30			
W9ENQ	11,088- 51- 76--- -			
W9BVV	11,564- 49- 80-B- -			
W9NGD	7503- 41- 61-A-47			
W9TMU	6984- 36- 65-B-29			
W9KMN	5616- 39- 48-B-15			
W9GDI	4329- 37- 39-B-20			
W9ZMY	2325- 25- 31-B-44			
W9BPU	2040- 20- 34-B- 4			
W9DTX	1944- 24- 27-B- -			
W9DEA	1767- 19- 31-A-11			
W9SJF*	1674- 18- 31-A- -			
W9UHR	1672- 19- 30-B-16			
W9VPD	1296- 18- 24-C- 9			
W9OW	960- 16- 20-B-10			
W9PVA	960- 16- 20-B-17			
W9CMC	420- 10- 14-B- 6			
W9ALI	234- 6- 13-B- 2			
W9FWV	112- 4- 10-A-18			

Indiana

W9IU	224,220-202-370--- -			
W9DUY	212,058-198-357-C-82			
W9FWS	44,196- 87-170-B-69			
W9CKP	30,888- 72-143-B-42			

[1] Operated by W2QCM.

W9UC 21,255- 65-126-C-25
W9EGQ 17,784- 57-104-B- -
W9UMI 14 742- 54- 91-B-32
K9AAP 10,980- 50- 72-B-40
W9KYM 10,143- 49- 69--- 40
W9BQR 6600- 40- 55--- -
W9FMK 6084- 39- 52-B-23
W9JIP 5742- 33- 58--- -
W9NXU 1925- 25- 26-B-13
W9QLW 714- 14- 17-B- 7
W9DGA 330- 10- 11-B- -
W9WCE 147- 7- 7-B- 2

Wisconsin

W9RBI 134,946-153-294-B-77
W9LNM 124,122-151-274-B-78
W9RQM 104,654-134-261-C-48
W9YNB 35,073- 81-147-B-40
W9WEN 23,030- 70-111-B-41
W9KXK 14,688- 51- 96-B-41
W9YMG 13,524- 46- 98-B-26
W9BQM 11,660- 53- 81-A-44
W9RHP 7668- 36- 71-B-69
W9IHN 2592- 24- 36-B-10
W9WJH 1008- 14- 24-A- -
W9MDG 546- 13- 14-B- 8
W9UJM 330- 10- 11-B- 3
W9DYG 252- 7- 12--- -
W9YCV 210- 7- 10-B- -
W9HMU/9* 108- 6- 6-A- -
W9LUC 36- 3- 4--- -
W9GVF* 3- 1- 1-B- 4

DAKOTA DIVISION

So. Dakota

WØBLZ 44,109- 87-171-B-40
WØZRA 1566- 18- 29--- -
WØCRY 1188- 18- 24-B-11

Minnesota

WØRXL 48,608- 98-169-C-76
WØDGH 34,200- 75-154-B-56
WØJSN 14,520- 55- 88-A-48
WØRBA 12,300- 50- 82-B-25
WØPNQ 8694- 46- 63-C- 7
WØPVS* 7752- 25- 51-B-64
WØVIP 4686- 33- 48--- 13
WØKPQ 3600- 30- 40-A-20
WØCDV 3458- 26- 45-B-16
WØFID 3354- 26- 43-B-23
WØDEI 2340- 26- 30-B- 9
WØTKX* 1596- 19- 28-B- -
WØPIG 1512- 21- 24-B-13
WØLS 1428- 17- 32-C-10
WØRA* 858- 13- 22--- -
WØTYE 36- 3- 4-B-10

DELTA DIVISION

Arkansas

W5DRW 22 866- 74-103-C-41
W5BXN 16,343- 59- 93-C-47
W5NTT 48- 4- 4--- -

Louisiana

W5BBP 30,600- 75-136-C-34
W5LUU 29,230- 74-132-B-40
W5CEW* 7560- 30- 84-C --
W5NMS 6996- 33- 71-B-71
W5KWY 576- 12- 16----
W5LXI 126- 6 7-B - 5

Mississippi

W5CKY 108,711-141-257-C-70
W5ZD 42,210- 90-157-B-60
W5BK 9202- 43- 76-B-36

Tennessee

W4DQH 122,056-152-273-C- -
W4LHQ 60,342-113-178-B-36
W4CYP 55,044- 99-187-C-53
W4FCF 2300- 20- 41-B- 4
W4CVM 1377- 17- 27-B-15
W4ONX 994- 14- 24-B-40

GREAT LAKES DIVISION

Kentucky

W4KVX 88,392-127-232-C-32
W4PN* 17,325- 55-105-C- -
W4YFA 12,087- 51- 79---- -
W4KKG 7638- 38- 61-C-25

Michigan

W8EWS 193,068-186-346-B-65
W8UAS 138,387-163-283-B-80
W8CVU 130,815-153-285-B-70
W8KPL 105,486-147-246-C-56
W8LEA 75,684-119-212-C-56
W8MFB 68,820-111-208-C-35
W8IQS 29,722- 77-130-B-70
W8CRP 25,347- 71-119-B-28
W8YIN 24,310- 65-126-B-39
W8MPT 14,742- 54- 91-B-20
W8QZV 13,230- 54- 82-B- -
W8CJ 10,944- 48- 76-B-32
W8BWS 10,350- 46- 75-B-26
W8UPN 9180- 45- 68-B-20
W8OCA 8514- 43- 66-B-41
W8GLK 8316- 44- 63-B-18
W8DUA 6633- 33- 67-A-18
W8GSJ 2970- 30- 33-C-20
W8MCC 2277- 23- 33-B-14
W8YCT 1944- 24- 27-B-11
W8FLA 1380- 20- 23-A-14
W8CBG 297- 9- 11-B- 4
W8SCW* 210- 7- 10--- -
W8CLH 60- 4- 5-A-11
W8DSE 60- 4- 5-A- -
W8LYT* 12- 2- 2-A- 2
W8DBG* 3- 1- 1--- -

Ohio

W8BHW 390,450-274-475-C-87
W8JIN 349,263-257-453-C-80
W8BTI 237,222-207-382-C-70
W8FGX 234,398-209 374-C-70
W8FJN 149,730-161-310-C--
W8CDT 122,512-152-269-C-61
W8EYE 69,300-110-210-B-60
W8LPE 66,267-111-199-C-
W8LYP 66,163-109-203-B-61
W8BRA 60,844-106-195-B-40
W8BZD 51,381- 99-173-C-54
W8DAE 38,950- 82-159-B-50
W8WZ* 36,300-110-110-C- -
W8JJW 27,864- 72-129-C- -
W8WWU 22,704- 66-116-B- -
W8RSW 21,888- 64-114-A-37
W8ZCK 21,452- 62-118-A- -
W8JRG 20,048- 56-120-C-37
W8TJM 19,032- 61-104-C- -
W8KC 18,839- 59-107-B-45
W8SMC 17,422- 62- 97-B-31
W8ODU 17,172- 54-106--- -
W8QHV 15,523- 47-103-B-36
W8PM 15,399- 59- 87-B-35
W8LPD 14,364- 57- 84-B-12
W8ELB 13,200- 55- 88-B-70
W8OBS 13,005- 51- 85-B-50
W8OG 12,312- 54- 76-B-13
W8EHH 11,808- 48- 82-C-27
W8AL 11,703- 47- 83-B-36
W8YPT 10,971- 53- 71-B-23
W8QYI 10,950- 50- 73---- -
W8DOC 10,575- 47- 75-B- -
W8WEB 7548- 34- 74-B-25
W8YJE* 6909- 47- 49-A-37
W8EXI 6240- 32- 65-B-24
W8NMR 5775- 35- 55--- -
W8CSA 3690- 30- 41-B-47
W8DFQ 3248- 29- 38-A-13
W8BSR 3159- 27- 39--- -
W8SYC 2025- 25- 27-B- 1
W8ZJO 1767- 19- 31-C- 9
W8AFY 1105- 17- 22-B--2
W8DWP 1095- 15- 25-A-10
W8JFC 990- 18- 19-B- 9
W8URD 960- 16- 20-B-10
W8DDK 780- 15- 18-A-15
W3AYS/8 552- 12- 16-A- -
W8BMK 540- 12- 15-B- 8
W8YGR 510- 10- 17-A- 8
W8NXF 330- 10- 11-B- 4
W8AI 216- 8- 9-B- 6
W8UNA 216- 8- 9-A- 6
W8ZQU 189- 7- 9-A- 5
W8YFJ 168- 7- 8-A- 8
W8GL 126- 6- 7-B- 6
W8PCS 126- 6- 7--- -
W8BFH 10- 2- 3-A- 1

HUDSON DIVISION

E. New York

W2AWF 78,287-121-217-C-57
W2DSU 70,452 114-206-B-45
W2CJM 6820- 31- 74-A-21
W6JKH/2* 2716- 28- 33-B-20
W2WIK 1428- 17- 28-A-15
W2PFU 120- 5- 8-B- 2
W2KDS* 12- 2- 2--- -
W2GSR (W2s OWO, PAA, SGJ) 492- 12- 14--- -

N.Y.C.-L.I.

W2IOP 368,538-257-483-C-90
W2PBG 129,558-151-286--- -
W2WZ 123,930-153-270-C- -
W2LXK 122,544-144-293-C-62
W2WOQ 96,390-135-238-C-73
W2IRV 87,490-130-225-C-49
W2GSN 80,028-117-228-B-46
W2CSO 77,958-122-213-C-55
W2GTL 57,474-103-186-B-60
W2DKF 47,229- 91-173-C- -
W2UFT 40,584- 89-152-C-31
W2EGG 33,360- 80-139-C-30
W2SYG 33,033- 77-143-C-60
W2IFA 33,000- 75-153-A-70
W2CTO 27,738- 69-134-B-40
W2ZV 25,929- 67-129-B-54
W2AYJ 24,321- 67-121-B-21
W2HAQ* 23,595- 65-121-B- -
W2WC 23,232- 88- 88-A-23
W2BT 18 744- 44-142-C-20
W2CAA* 18,720- 45-142-B-16
W2KTF 14,706- 57- 86-B-22
W2BWC 13,695- 55- 83-B-19
W2NUU 10,578 43- 82---- -
W2ABS 10,500- 50- 70-A-22
W2AWH 9154- 46- 67-B- -
W2BRV 8385- 39- 73-B-18
W2AZS 5950- 34- 59-C-29
W2MHE 5610- 34- 55-A-31
W2SLU 5320- 35- 52-A-29
W2BO* 5292- 42- 42-C-14
W2SEI 4386- 34- 43-B-15
W2LCK 4172- 28- 50-B-12
W2YDG 3864- 28- 46-A-18
W2ASI 3657- 23- 53---- -
W2CLA 3276- 26- 42---- -
W2ETT 2208- 23- 32-A-13
W2FCT 2106- 18- 39-A-10
W2DBI 2052- 19- 36-A- 8
W2PRE 2016- 24- 28-A- -
W2UJJ 2001- 23- 29-B- 9
W2IFM 1440- 20- 24-B-12
W2NHH 966- 14- 23-A-20
W2OWX 585- 13- 15-A- 8
W2VNJ* 168- 7- 8-A- 8
W2SNV 162- 6- 9-B-13
W2ZML* 108- 6- 6-A- -
W2UNS* 48- 4- 4---- -
W2ZOS* 3- 1- 1---- -

N. New Jersey

W2BXA 263,648-214-413-C-76
W2BLS 78,975-135-195-B59
W2ATE 49,980- 98-170-B-54
W2DJT 47,047- 91-227-B-44
W2CGJ 42,180- 95-148-B 47
W2GNQ 42,054- 86-163-C-34
W2EQS 40,660- 95-144-A-76
W2AUH 40,158- 97-138-B-32
W2PXE 27,156- 73-124-C-57
W2SQT 27,027- 77-177-B-58
W2GVZ 20,475- 63-111-B-42
W2JMC 18,180- 60-101-C-51
W2LTP 11,475- 45- 85-B- -
W2AGU 10,512- 48- 73-B-34
W2CJX 8580- 44- 65---- -
W2KHT 8418- 46- 61-B-19
W2CWK 6498- 38- 57-A-15
W2ADP 5040- 35- 48-B-23
W2JQJ 4368- 28- 52-A-14
W2BU 4050- 30- 45-B- 8
W2ZT 3960- 30- 44-C-21
W2VJN 2088- 24- 29-B- 7
W2YZG 1890- 21- 30-A-16
W2YMF 1350- 15- 30-B-16
W2SOY 1173- 17- 23-A-12
W2HTX 1020- 15- 23-B-20
W2WCF 648- 12- 18-A- 7
W2NIY 352- 11- 11-A- 4
W2ABL 333- 10- 11-A- 2
W2BF 108- 6- 6-B- 4
W2IQG (W2s AZL, OTC, UEI) 394,752-257-516-C-92
W2JMC (W2VJM) 6125- 35- 59-C-43

MIDWEST DIVISION

Iowa

WØSQO 183,768-186-331-C-80
WØHNA 78,875-125-212-B-62
WØQLX 63,342-102-209-B- -
WØFDL 51,940-106-165---- -
WØBFY 28,125- 75-125-C-71
WØCFB 9729- 47- 74-B- -
WØFZO 6018- 34- 59-B- -
WØFGW 5292- 36- 49-B-25
WØDIB 5248- 32- 55-B-35
WØNTA 2475- 25- 33-C- 6
WØNCS 2178- 22- 33-A-25
WØQVA 1173- 17- 23---- -
WØOPK 714- 14- 17-B- 7
WØCCE* 378- 9- 14---- -

Kansas

WØDAE 289,800-184-325-C-61
WØGDH 139,968-162-288-C-60
WØFET 50,220- 93-180-B-52
WØCWW 40,317- 89-151-C-46
WØOZN 1092- 13- 28---- 8
WØIPI 552- 8- 23-A- 4
WØFDY* 36- 3- 4---- -
WØDEB* 27- 3- 3-A-14

Missouri

WØDU 21,909- 67-109-B- -
WØGBJ 18,408- 59-119-B-45
WØBTD 8342- 43- 66-B-33
WØBMM 7544- 41- 62-B-34
WØOMG 7242- 34- 73-C-25
WØARH 4650- 31- 50-B-46
WØAJU 1024- 16- 22-B- 8

Nebraska

WØBBS 37,497- 87-145-C-47
WØFWW 3248- 29- 38-C- -

NEW ENGLAND DIVISION

Connecticut

W1RY 191,394-186-343-B-67
W1BIH 167 067-171-326-C-74
W1TX 103,212-141-243-B-61
W1FTX 97,161-139-233-B-50
W1DF 49 878-102-163-A- -
W1EQ 27,436- 76-125-C-25
W1IKE 25,620- 70-122-C-40
W1ODW 21 896- 68-109-A-57
W1NJM 18,666- 61-103-B-21
W1AH 16,536- 53-107-C-31
W1PMR 15,714- 54- 97-A-32
W1DX 12,474- 51- 77-B-25
W1AFB 11,100- 50- 74---- -
W1CUH 9471- 41- 78-B-31
W1RUR 9198- 42- 73-B-36
W1APA 7068- 38- 62-B-11
W1QBD 4884- 37- 44-B-30
W1DIT 3770- 29- 44-A-15
W1CEG 3330- 30- 37-B-15
W1HV 2205- 21- 35-A-15
W1JTD 1980- 22- 30-B-12
W1QIS 1602- 18- 31-A-10
W1LZE* 663- 13- 17---- -
W1RWS 598- 13- 13-A- 5
W1BUD 390- 10- 13-A- 2
W1PEK 360- 10- 12-B-11
W1CY 72- 4- 7-A- 4
W1BDI* 3- 1- 1---- -

Maine

W1GKJ 34,080- 80-142-C-48
W1DFQ 26,316- 68-129-B-51
W1DPJ 10,922- 43- 86-C-26
W1PDN/1 351- 9- 13-A- -

E. Massachusetts

W1QPB 92,584-142-218-C-55
W1BOD 77,319-121-217-B-61
W1TW 42,660- 90-158-C-27
W1DDO 37,506- 94-133-A-47
W1NW 32,130- 85-130-C-34
W1AMQ 31,837- 79-135-B-54
W1UIB 31,047- 79-131-B-22
W1QJM 29,562- 79-128---- -
W1GA 22,720- 64-121-C-29
W1QMJ 18,624- 64- 97-B-48
W1HX 17,424- 72- 82-C-36
W1HCA 14,268- 58- 82-A-23
W1IOB 13,377- 49- 91-B-25
W1HVR 3614- 26- 47-A- -
W1CT 3276- 26- 42-B-17
W1JCE 2134- 22- 33-A-16
W1ONP 1782- 18- 33-B-18
W1[illegible]WK 1683- 17- 33-A- 7
W1MD* 952- 14- 24---- -
W1DYV* 702- 13- 18---- -
W1BGW 576- 12- 16-B- 2
W1ISX* 432- 12- 12-B- -
W1QEC 351- 9- 13-A- 7
W1QIE 288- 9- 12-A- 8
W1PPZ* 270- 9- 10-B- -
W1JCK 12- 2- 2-B- 2
W1PLJ 12- 2- 2-A- 6

W. Massachusetts

W1JYH 143,934-161-298-B-58
W1ZD 84,102-131-212-C-54
W1LFT 31,050- 75-138-B-54
W1AZW 20,703- 67-106-A-31
W1COI 17,582- 59-100-B-22
W1MUN 9890- 43- 82-B-20
W1EOB 6888- 41- 57-B-11
W1QFB 2688- 28- 32-B-12
W1EFQ 2178- 22- 33-B- -
W1FXF 1938- 19- 34---- -
W1BEF 1881- 19- 33-B-17
W1ASU 1377- 17- 28-B-10
W1HRV 1083- 19- 19-A- 9
W1OPJ 75- 5- 5-A- 3

New Hampshire

W1HOU 23,166- 54-144-B-20
W1CRW 18,540- 60-103-C 18
W1CDX 14,256- 54- 88-B-27
W1JIY 6086- 34- 61-B-16

Rhode Island

W1BIL 88,011-127-231-B-58
W1KUF 55,860- 98-190-B-37
W1CJH 43,134- 91-158---- -
W1PQM 14,820- 52-111-B-35
W1AWE 7242- 34- 71---- -
W1RFQ 96- 4- 6-A- 4

Vermont

W1EZ 21,630- 70-103-B- -
W1KRV 11,070- 41- 90-B- -
W2FFN/1 10,761- 51- 71---- -
W1BJP 7224- 43- 56-B- -

NORTHWESTERN DIVISION

Idaho

W7MHR 273- 7- 13-B- 5

Montana

W7KVU 9588- 47- 68-B-34
W7CJB 6834- 34- 67-B-44
W7EWR 2678- 26- 35-B-17
W7JLD 2178- 22- 33-A-27
W7FLB 1734- 17- 34--- -
W7GBL 756- 12- 24-B-17
W7FEE 72- 4- 6--- 4
W7LER 30- 2- 5-A- 6

Oregon

W7HXG 36,936- 81-152-A-51
W7MO 32,376- 76-142-B-60
W7KPV 25,996- 67-129-B-43
W7AHX 20,601- 63-109-B-54
W7AXJ 12,789- 49- 87--- -
W7MLJ 10,080- 42- 80-B-46
W7GFU 8901- 43- 69-B-26
W7FPK 8492- 44- 76-B-20
W7BTH 1254- 19- 22-B-18
W7LNG 714- 14- 17-B-17
W7HBO 270- 9- 10-B- 2
W7KQD 36- 3- 4-B- 4

Washington

W7VY 188,100-190-330-C-85
W7GUI 128,590-154-279-C-60
W7HJC 42,542- 89-161-C-49
W7KWC 24,000- 64-125-C- -
W7AVR 16,005- 55- 97-C-33
W7CNM 9744- 48- 69-B-21
W7JB* 9288- 43- 72-C-23
W7JC 9048- 39- 76-A-37
W7HS 5940- 33- 60-C-38
W7HLU 4495- 31- 50-A-32
W7FIM 2228- 20- 37-A-15
W7CZY 1275- 17- 25-C- 5
W7CWN* 3- 1- 1--- -
W7HPQ* 3- 1- 1-B- -

PACIFIC DIVISION

Nevada

W7KEV 42,018- 94-149-B-38
W7CX 192- 8- 8-C- 2

Santa Clara Valley

W6CEO 125,856-152-276--- -
W6DZZ 82,832-124-224-C-66
W6CIS 68,672-116-198-C-55
W6EAE 51,156- 98-175-B-60
W6SR 20,064- 57-119-B-59
W6IXJ 2808- 24- 39-B-34
W6EBY 2016- 21- 32-B-10
W6ZZ 810- 15- 18-C-25
W6HXY 198- 6- 11-A-16
W6JU 48- 4- 4-C- 3

East Bay

W6RM 253,890-217-390-C-75
W6MVQ 189,317-197-328-C-65
W6TT 175,389-181-323-C-82
W6MEK 142,674-158-301-C-80
W6UZX 95,228-133-172-C-55
W6CTL 72,709-119-205-C-58
W6KEK 36,180- 90-134-C- -
W6QDE 28,105- 73-129-C- -
W6ZUI 20,345- 65-105-C-34
W6LMZ 15,930- 59- 90-B-20
W6UYX 13,356- 53- 84--- -
W6EJA 10,458- 42- 83-C-21
W6FLT 7236- 36- 67-B-32
W6YI 1152- 16- 24-B-11

San Francisco

W6ATO 45,632- 92-169-C-74
W6MUF 13,800- 46-100-B-16
W6LV 10,710- 51- 70-C-29
W6YC 3612- 28- 43-A-19
W6WBU 405- 9- 15-A-30

Sacramento Valley

W6EFM 79,134-121-218-C-74
W6RMT 4830- 30- 57-B- -
W6GCM 60- 4- 5-C-17

San Joaquin Valley

W6SRU 86,430-134-217-C-60
W6VPV 14,520- 55- 88-B-18
W6BHI 1863- 23- 27-B- 4
W6EPQ 912- 16- 19-B- 7

ROANOKE DIVISION

North Carolina

W4FVR 217,086-194-373-C-80
W4AIT 186,004-182-342-C-78
W4GXB 132,060-155-284-B-45
W4LZF 117,216-148-265-C-60
W4MR 109,296-144-243-C-42
W4INL 41,230- 95-146-B- -
W4OG 11,319- 49- 77-C-32
W4CCH 7697- 43- 61-B-18
W4IZR 4860- 30- 54--- -
W4DO 504- 12- 14-B- 9
W4MOC 162- 6- 9-A- 6

South Carolina

W4NUJ 18,981- 57-111-A-47
W4DNR 3105- 23- 45-B- 8

Virginia

W4KFC 365,160-255-479-C-84
W4JFE 167,388-174-322-C-75
W4OM 126,225-153-275-C- -
W4LRI 47,000- 94-168-C-46
W4IWO 42,720- 89-160-B-51
W4VE 18,300- 61-100-B-26
W4LUE 16,236- 66- 82-C-35
W4LIM 7708- 41- 63-B-30
W4KJH 5742- 33- 80-B-33
W4JLW* 4557- 49- 93--- -
W4FF 4416- 32- 46-B-22
W4CKY 2268- 21- 36-A-13
W4MWA 2208- 23- 33-B-19
W4KMS 1620- 20- 27-B- -
W4FV 1449- 21- 23-C- 7
W4OTK 1320- 20- 24-C-40
W4NJV 1296- 18- 24-A- 6
W4KVM 1260- 20- 21-B- 8
W4HVQ* 702- 13- 18--- -
W4IWS 672- 14- 16-B-18
W4JBY 12- 2- 2-A- 1
W4LBG (W4s DHZ, INJ, KWY, KYD) 301,300-230-433-C-80
W4NNN (W6COD) 21,370- 71-107-B-

West Virginia

W8PQQ 78,568-122-246-C-35
W8VAN 57,918- 98-197-B-55
W8JJA 15,675- 55- 95-B-34
W8JM 5304- 34- 56--- -
W8UMR 5115- 31- 55-B-22

ROCKY MOUNTAIN DIVISION

Colorado

WØAZT 64,638-114-189-B-58
WØIC 1462- 19- 26-A-10
WØGKW 1122- 17- 33-B-18
WØCDP 855- 15- 19-B-13
WØIQZ 550- 11- 17-B- 7
WØSYA 387- 9- 15-B- 3
WØKV 192- 8- 8-B-13
WØSGG 90- 5- 6-A- 2

Utah-Wyoming

W7PGS 94,380-132-239-C-85
W7ORH 18,408- 59-104-B-43
W7LE 507- 13- 13-B- 5

SOUTHEASTERN DIVISION

Alabama

W4HA 5940- 33- 60-C-19
W4ICO 2640- 22- 40-B-15

E. Florida

W4BRB 174,240-176-330-C-75
W4LVV 57,517-113-171-B-70
W4FFF 5280- 40- 44-B-19
W4BYF 3720- 31- 49-B-19
W4ILE 3080- 28- 38-A- 8
W4IYT 1558- 19- 28-B- 8
W4FZW 945- 15- 23-B- 5
W4DRK 420- 10- 14-B-14
W4EED 243- 9- 9-B- 3
W4DOO 162- 6- 9-A- -
W4DUA* 108- 6- 6-B- -
W4CY* 48- 4- 4--- -

W. Florida

W4NN 104,085-135-259-B-65
W4BGO 46,762-103-152-C-48
W4GQM 11,781- 51- 77-B- -
W4QB 1008- 16- 21-B-11

Georgia

W4TO 118,455-149-267-C- -
W4DOC 65,670-110-113-C-41
W4DXI 64,575-105-205-B-60
W4DIA 37,584- 87-144-B-31
W4FEH 33,495- 77-145-C-30

SOUTHWESTERN DIVISION

Los Angeles

W6GRL 278,640-216-430-C-84
W6LDJ 253,022-217-390--- -
W6HZT 201,696-191-352-C- -
W6BPD 153,720-168-312-C-80
W6ANN 116,688-143-272-C-60
W6RW 114,208-148-257-C-80
W6CYI 110,227-139-265-C-80
W6AM 109,980-141-260-C-39
W6BJU 72,657-117-207-C-65
W6UCX 72,320-128-189-C-65
W6SRF 66,557-113-197-C-66
W6PQT 52,416- 96-187-C- -
W6JFJ 49,896- 99-168-B- -
W6WWQ 23,556- 78-102-C-69
W6AKI 22,016- 64-116-C-45
W6VAQ 16,815- 59- 95-A-70
W6JWL 14,229- 51- 93-B-40
W6ID 13,388- 56- 84-C-34
W6VAT 9792- 51- 64-B-30
W6ETJ 3078- 27- 38-B-13
W6TDO 1863- 23- 27-A-27
W6SN 918- 17- 18-C-20
W6AX 240- 8- 15-C- 2
W6NTR* 216- 8- 9-A- -
W6DQZ 54- 3- 6-B- 3
W6GHU (W6TZD) 227,919-209-365--- -
W6TSW (W6NNV) 186,111-183-339-C-93
W6GFE (W6s AVM, BXL) 143,040-160-298-C-65

Arizona

W7QAP 33,235- 85-131-C-34
W7JYZ 29,337- 77-127-C-56
W7ENA 14,685- 55- 89-A-43
W7RFE* 918- 17- 18--- -

San Diego

W6BAM 71,862-118-203-C- -
W6AMO 47,616- 96-166-A-69
W6LRU 45,978- 97-158-A-51
W6MI 29,412- 76-129-A-28
W6EHV 23,718- 67-118-C-27
W6GTM 19,656- 63-104-C-48
W6KBD 9568- 46- 70-B-36
W6CAE 8268- 39- 73-C-33
W6LHW 4350- 29- 50-B-38
W6UWI* 720- 12- 20-B-10
W6RLQ* 27- 3- 3-C- 3

WEST GULF DIVISION

Northern Texas

W5ENE 180,726-182-331-C-80
W5FKQ 26,103- 77-113-C-40
W5FWA 2037- 21- 33-B-27
W5OLG 189- 7- 9-A- 9
W5ANE 12- 2- 2-A- 2
W5RR 3- 1- 1-A- 3

Oklahoma

W5LJI 1920- 20- 32-A-23

Southern Texas

W5GEL 113,091-149-255-C-60
W5FNA 79,788-122-218-C-55
W5DAA 30,346- 79-128-B- -
W5JKB 8190- 42- 65-B-32
W5JPC 3198- 26- 41-B-17
W5PM 1080- 18- 20-B- 6
W5HDS* 720- 15- 16-C-18
W5OUL* 48- 4- 4--- -

New Mexico

W5LGS 44,436- 92-161-B-33
W5FKP 6660- 37- 60-B-23
MSG, NRP, NTM, NWP, NXK, ODQ, OIA, OML, OVL, PES, PGH, UQR/5 43,560- 90-162-B-96

CANADA

Maritime

VE1PQ 91,260-117-260-B-71
VE1OK 91,191-113-269-B-67
VE1EK 11,997- 43- 94-A-27
VE1HG 8474- 38- 75-A- -
VE1ZZ 7626- 41- 62-A-65
VE1VB 663- 13- 17-B-10
VE1SP* 462- 11- 14-B- 3
VE1DD* 180- 6- 10-A-10

Ontario

VE3KE 193,936-184-356-B-73
VE3QD 173,570-170-341-C-82
VE3BTG 43,824- 83-176-B-65
VE3AGX 38,948- 91-144-B- -
VE3BBR 37,762- 79-170-A-42
VE3IJ 22,753- 61-125--- -
VE3ABF 22,736- 58-131-C-20
VE3DT 16,416- 57- 96-B-32
VE3JJ 9030- 35- 86-B-25
VE3QU 7998- 43- 62-B-18
VE3SR 7668- 36- 83-B-30
VE3XY* 3276- 26- 42--- -
VE3BBQ 2268- 21- 36-A-22
VE3AMK* 1938- 17- 38--- -
VE3BZG 1071- 17- 21--- 6
VE3PE 840- 14- 20-B- 8
VE3BLY 468- 12- 13-B- 7
VE3YR* 75- 5- 5--- -
VE3API 45- 5- 15-A- 6

Quebec

VE2BV 38,016- 88-146-B- -
VE2BK 10,224- 48- 71-B-24
VE2OL 8694- 42- 69-A-22
VE2KS 5346- 27- 66-B-14
VE2XR 12- 2- 2-A- 1

Alberta

VE6AO 28,542- 67-142-B-33
VE6MZ 26,483- 71-125-C-46
VE6PY 2869- 19- 51-B-27
VE6BO 182- 7- 9-A- 5

British Columbia

VE7ZM 148,851-149-333-C-57
VE7ZZ 16,218- 53-102--- -
VE7EH 14,523- 47-103-B-45
VE7KC 12,393- 51- 81-B- -
VE7VX 11,233- 47- 80-B-28
VE7XA 2760- 23- 40-B-17
VE7AFI 1176- 14- 30-A-17
VE7CC* 576- 12- 16--- -
VE7AIT 432- 8- 18-A-11
VE7AX* 192- 8- 8--- -
VE7ZM* 72- 4- 6--- -

Manitoba

VE4RO 191,922-174-370-C-76
VE4XO 79,768-118-226-B-23

Saskatchewan

VE5OC 13,500- 50- 90-B-35
VE5JV 12,397- 49- 85-B-34
VE5QZ 3250- 25- 44-A-15
VE5UN 1488- 16- 31-A-21
VE5PK 462- 11- 14-A- 5
VE5GF 108- 6- 6-B- 6

Yukon

VE8OG 3892- 28- 47-B-15
VE8FW 432- 9- 16-A- 8

AFRICA

Algeria

FA8IH 198,288-54-1235-A-

Belgian Congo

OQ5QF 24,720- 24-344-A-17
OQ5LL 252- 7- 12--- -

Egypt

SU1CR 47,515- 43-371-A-30

Eritrea

I6USA 10,104- 24-141-B-23

French Cameroons

FE8AB 31,899- 49-217--- -

French Morocco

CN8AG 5,796- 12- 161--- -
CN8BC 287- 7- 14- A-2

Gold Coast

ZD4AB 16,476- 33-167-A-14

Kenya

VQ4CUR 3,933- 19- 69-A- 6

Liberia

EL3A 200,304-52-1284-B- -
EL7A 165,186-54-1023-B-43

Madeira

CT3AA 4818- 11-146-A- -

Mauritius

VQ8AY 4,389- 11-133-A-24

No. Rhodesia

VQ2GW 6,720- 16-140-A-12

So. Rhodesia

ZE1JI 19,822- 22-301-A-20
ZE1JO 4,005- 15- 89-A-15

Tangier

EK1GW 6,732- 11-204-B-15

Tunisia

FT4AB 26,208- 9-365-A-36

(Continued on page 106)

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How:

A comparison of the speeds in DX communications of prewar and postwar operating reveals a concerted movement toward QRQ. Radiotelephony and radiotelegraphy DX work are now carried on with a *savoir-faire* formerly found exclusively among the traffic nets on the lower frequencies. Where a smoothly-handled straight key used to be sufficient to match the speed of almost any c.w. DX operator, a well-oiled bug on the operating table is virtually a necessity today.

One of the results of this upswing of general operating proficiency in the c.w. field is the increased use of break-in procedure by DX stations, rare or otherwise. And especially is this true of contest operation.

The desirability of fast break-in for c.w. work is not to be denied; nevertheless, there are limiting factors present in its application to DX work. One of these has been the cause of considerable confusion in recent months.

Specifically, when a DX station using break-in is being called close to his frequency by many Ws it is important that the call of the station he elects to work be sufficiently identified. Coincidental "BKs" may easily lead several callers to believe they have "raised" the DX station. Continued coinciding "BKs" may even mean logging of the same QSO by stations other than the one actually contacted, particularly when a short exchange of serial numbers is involved.

Hence, we recommend to all DX operators who use break-in: Use your own call as sparingly as you wish but try to keep stations who are calling you informed as to whom you are actually working. This may involve repeating the other fellow's call several times during the QSO but it will greatly minimize the difficulty outlined in the preceding paragraph.

Enough gasbagging. Let's get down to cases.

What:

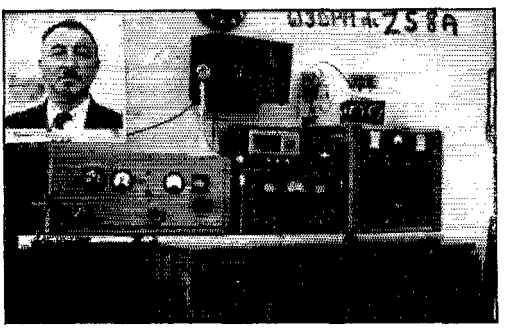
While at the very ebb of the slow season, there are still guys putting DX into the log on *eighty* and *forty*. W2CWK thumbed through the atmospherics for **LU7AZ** (3520) and **PY7WS** (3522) and Europeans have peeped through to the East Coast on occasions. VP5BD (see below) and VK9NR are reported preparing for 3.5-Mc. work.

If all the fellows who found a new country in **VP5BD** (7295), of the Caymans, were laid end to end the light companies would go bankrupt. W4BRB was the early bird for this deal and took on quite a job in handling the first influx of QSLs bound for the gentleman. Gene mentions the work of a small group of W DXers who have tagged themselves "DX Anonymous," dedicated to the task of promoting activity among the more scarce prefixes. FG8 and FY8 prospects are now being given attention. Also notable regarding VP5BD is the number of strictly-20 DX men who found themselves groping about in the dark in order to raise a 7-Mc. antenna for the job as quickly as possible . . . . . W6ZGY hasn't found pickings too slim, what with **KP6AE** (7040), **UAØFJ** (7050), **UAØKFD** (7050), **JA2BQ** (7042), **ZS5YF** (7032), **VR2AS** (7054), **HC7KD** (7125) and **VK9NR** (7038) . . . . . The last specified was also snagged by W2WWP along with **EA7LU** (7005), **VP4TAQ** (7000) and numerous VK/ZLs. Clark's schedules with ZLs 2ACV and 4FT continued solid throughout the summer months . . . . . W2ETT found **PY7WS** 'way up on 7220 kc. plus **YV1AX** (7085), while W1QMJ nailed **W2OXE/MM** (7010) of the MacMillan Expedition, OQ5RA and YU1WEZ . . . . . **UAØFK** (7040), **UA3DI** (7055), **JA2BJ** (7008) and G3HK look nice in W7MGO's log and W7MQY adds **LU8AE** (7030) and ship **SM8ALF** (7032).

Twenty appears more like its old self with W4BPD back in business. Gus never does things half way, having just completed rebuilding to the tune of six separate Clapp-oscillator exciters, one for each and every DX band. He broke the set-up in on chaps like **EA6EG** (14,147) in the Balearics (we hope), **ZP8BL** (14,025), SV6AA, **SVØWH** (14,040), **HZ1AU** (14,052), **VK1VU** (14,045), **ZA1B** (14,050), **ZK2AA** (14,125), **YK1AC** (14,050 t7), **CR4AD** (14,050 t5), **UM8KAA** (14,015 t5), **ST2DD** (14,055), FK8AC, **W6CRE/-KC6** (14,065) on Ponape, **MI3GH** (14,050) and **EA8RM** (14,110 t7) . . . . . The Fours seem to thrive in the hot and humid season. W4FVR popped up with some doozies: **UL7AB** (14,070), **MD4GC** (14,030), **MS4UU** (14,100), **ZA2AL** (14,110), **VK1RA** (14,050), **VK9ML** (14,050), **VR2BH** (14,030), **VS1DA** (14,090), **VS7s RA** and **RF** (14,070), **VS9BU** (14,080) in Aden, **MP4BAD** (14,050) in Oman, **ZS3R** (14,075), **KX6BI** (14,080), **KR6NE** (14,035), **FF8GC** (14,125), **TA1AT** (14,160), **EA8AL** (14,005), **OY3IGO** (14,080), **EK1FO** (14,070), **SVØAJ** (14,030),

* DX Editor, *QST*. Please mail reports of DX activity to W9BRD's home QTH: 1517 Fargo Ave., Chicago 26, Ill.

DU1GT (14,090) and ST2WB (14,110). Allen also caught up with AC4NC (14,105) and notes that the Tibetan fades in and then out again with a snap of the fingers . . . . . It never rains but what it pours, figures W6EAY. Eric hadn't had a tumble from an Asian during two years of effort and then within three hours one morning he gathered in XZ2KN, VS2CC and VS6s AC, AE, AL and BI. Wow! . . . . . Youngster VE2AFC has UO5KAA (14,085), FO8AB (14,002), PK1AU (14,095) and IS1AHK (14,005) to his credit and W4LQB found ship PI1LS (14,060), a Dutch weather vessel in the Channel . . . . . W2TXB took a short seasonal respite but is now back stronger than ever: MB9AJ (14,070), UA9CL (14,060) who is ex-U9MF from prewar, GD3UB (14,070), GC5OU (14,060), CT3AV (14,155), PK4DA (14,035), YK1AF (14,080) and last but



Among the cream of the African crop is J. G. D. "Johnny" Leask of ZS8A. The snap shows his neat set-up at Quthing, Basutoland. Perhaps you worked him when he was ZS4P.

not least, MD7WE (14,030) on Cyprus . . . . . The potent pipsqueak himself, W2QHH, got in on I1ALU/M1 and I1LT/M1 (14,070), W6EGX/KW6 (14,100), W6BKV/-KW6 (14,097), VP2GC (14,030), UC2CB (14,116), FK8AB (14,003), GC3ZU (14,104), FO8AC (14,050), and some OEs . . . . . K2BG got only as far as a 6L6 buffer while constructing a new rock-crusher because he had so much fun raising some thirty countries with 15 watts. So QRO is QRX . . . . . In between hamfests, W1APA evolved confabs with HS1SS (14,130), KB6AJ (14,020), TF5TP (14,050), UF6AC (14,105 t8), VR2BD (14,050) and ship SV1AE . . . . . When not busy with law cases in the Big Town, W2WZ slips home to Glen Cove to serve subpoenas on disturbers of the peace UL7KAA (14,058), CR7BD (14,071), VK1FE (14,045), OQ5GD (14,018), EP1MN (14,061), a bunch of JAs and W6GGT/KW6. Man, what a carload of active KW6s there are these days — the place must be as wire-entangled as Schofield Barracks was before the war . . . . . W1IIN finds YS1RA holding forth on 14,040–060 kc. and W4OJH/5 welcomed TG9RB (14,005) to the log . . . . . W3QLW speaks of LB6Y (14,055) and VP1AA (14,122) while W8YGR adds YN1MH (14,130) . . . . . W4NAP's list features LX1AS (14,034–065 t7) whose QSLs, incidentally, have been coming through with regularity . . . . . W2SAI comments re VT1RF of Kuwait whose credentials appear to be in good order and who will be a new one for most.

'Phone reports are not numerous but these should give you some idea of the goings-on in that department. XE1AC kept busy with AC4NC (14,327), F9QU/FM8 (14,358), W6ATB/KC6 (14,206), PK5HI (14,355), PK6CS (14,351), CR9AG (14,345), FF3CN (14,303), VS6BE (14,328), VS7BR (14,325), VK1ADS (14,315), FT4AT (14,340), XZ2KN (14,318), KW6AN (14,223) and OE4LV (14,301) . . . . . HC2JR has been hobnobbing with KR6BR (14,170), VP7NK (14,183), VS1AX (14,295), VS7SN (14,338), VU7AH (14,300), SVØWF (14,383) and PK4PQ (14,305) . . . . . Dropping the bug for a bit, W2TXB shook his tonsils at MD2AC (VFO), GD3UB (14,250), YS1MS (14,185), ZC6UNJ (14,360), AR8BC (14,180), EL6A (14,340) and 4X4AA (14,340) . . . . . W4BPD flipped off the b.f.o. for VR4AC (14,200) and VS1AY (14,360) while W4QT grabbed MF2AC, among others . . . . . W8TAJ tidied up his beam before hooking ET3AJ, OQ5CF, FA8WU and ZC1AL, and WØDST tallied ZE2JG, CP1JB, HL1BJ, PK6FQ, PJ5KO, VR2BM, HP1LO, KG6ID, KX6AF, KA1AI, DU1AP and DU1HR.

Conditions on *ten* have been mighty morbid. The southern latitudes have fared better as HC2JR has the following 'phones crossed off: KM6AK (29,006), KS4AI (27,246), KW6AM (29,442), AG2AB (28,425), AP2F (28,262), AR8AB (28,394), EK1WX (28,392), EL2A (28,327), FA8IH (28,208), FF8FP (28,482), MB9BM (28,092), MT2FU (28,318), ZB1AM (28,291), ZB2H (28,171), ZD4AX (28,380), CN8MZ (28,230), OQ5LL (28,147), VP2GG (28,280), VQ4SC (28,174), VQ5PBD (28,350) and W9CVH/KJ6 (29,480). Anyway, there are a few for the W/VE mob to watch for when things do open up in the north . . . . . W2QHH keeps an ear on the band in fair weather or foul and appropriated ZD2FB (28,071) on c.w.

Where:

Proceeding according to plan, the I1 boys were really dishing out the portable-San Marino QSOs during July. Cards for these contacts should go via the sponsors of the session, the ARI . . . . . When a call appears in these lists for the second time (or third, etc.) it is indicative of either a changed or a more correctly-worded QTH. Moral: Always use the address last appearing for a given station.

C1JH	Fred Holt, Top Floor, 11 Tung Lo Wan Rd., Hong Kong
C3AJ	P.O. Box 193, Canton, China
DK8AU	(via DL1RK)
DL2NU	(via RSGB)
EA8BC	Jose Rivera, Laguna de Tenerife, Canary Islands
F9QU/FM8	(via FM8AA)
FF3CN	Radio Coloniale, Dakar, F.W.A.
HA5BD	A. Sass, Dohany-utca l.c., Budapest, Hungary
HA5PA	J. Erdossy, Knezits-u 29, Pesterzsebet, Hungary
I1BMU	B. Tremel, via Giulia 98, Trieste, F.T.T.
I1BMV	G. Giro, via Ghega 3, Trieste, F.T.T.
I1BNU	F. Gironcoli, via F. Venezian 5, Trieste, F.T.T.
I1BNV	G. Metelli, via del Bosco 32, Trieste, F.T.T.
ex-J2AAG	1272 E. 9th St., Brooklyn, N. Y.
KB6AJ	% CAA, Canton Island, So. Pacific
KX6BI	Navy 3234, FPO, San Francisco, Calif.
MD2NA	1950th AACS Sqdn., APO 231 % PM, N.Y.C.
MD4GC	(via RSGB)
MP4BAD	(via RSGB)
OE1KR	(via W2NFR)
OE3LN	(via W2NFR)
OE8II	(via RSGB)
OQ5GD	(via OQ5RA)
PJ5KO	(via ARRL)
PK6s CS, NQ, XG	(via W6ZEN)
SV1AE	E. Antassiou, SS Atlantic No. 2, % Thillard 16, P. Souday, Le Havre, France
SVØWH	APO 206, % PM, N. Y. C.
VE8OO	Baker Lake, N. W. T., Canada
VE8RT	(via VE8AS)
VE8SI	(via EV8AS)
VP4TAQ	4 Woodford Rd., St. James, Trinidad, B. W. I.
ex-VP4TBA	T/Sgt. J. R. Sharp, Hq. & Hq. Sqdn. SAC, Offutt AFB, Omaha, Nebr.
VP5BD	E. H. D. Tibbets, Cayman Brac, B. W. I.

VP6PV	P. Carrington, Cheapside, Barbados, B. W. I.
VR5PL	Box 45, Nukualofa, Tonga Islands
VS1DA	Royal Navy Radio Station, Kranji, Singapore, Malaya
VS9BU	(QSL via G3BUX)
W6CRE/KC6-KG6	Box 100, Guam
XZ2FK	(via RSGB)
YO5AA	Box 326, Bucharest, Roumania
YO5WZ	Ing. Constantin Honae, Str. Basarabiei 26, Timisoara, Roumania
ZA2AL	Box 221, Tirana, Albania
ZC6DZ	U. S. Consulate, Jerusalem via Israel
ZC6PM	(via ARRL or W8WEN)
ZE2KL	G. Metcalfe, Aircrew Mess, RAF, Thornhill, Gwelo, Southern Rhodesia

W1s APA, IIN, IKE, JGY; W2s CJX, TXB, VMX; W4s BPD, BRB, FVR, MR; W5DF; W6s EGE, PH; W9s CFT, DGA; XE1AC; all were instrumental in accumulating the above glossary.

Tidbits:

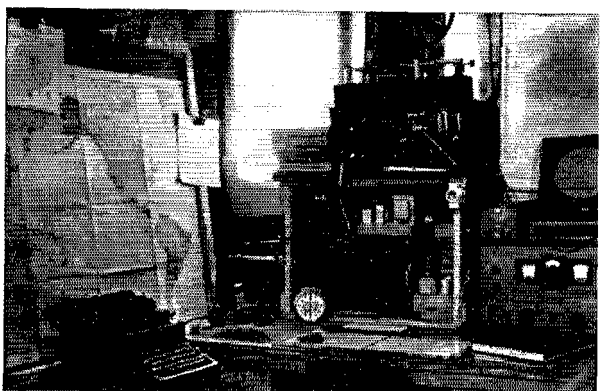
Indian mail from VU2s BP and JP is quite informative: There is as yet no numerical prefix subdivision in India where amateurs are concerned. VU3 calls are held by the police service and VU4 is supposedly reserved for technical training institutions and the like, not officially designating the Laccadive Islands. VU7 is still considered proper for Bahrein Island although areas adjacent to India have been using this prefix. VU2 continues as the official amateur label in the country proper. The popular VU7AF of Nepal has now become "just another VU2" [You talk awful big, boss. — *Jeeves*], having returned from his good will assignment. Loss of this rare one should not come as too great a blow since VU2BP mentions in the same breath the appearance of newly-licensed FN1C and FN8DC operating in Chandernagore. VU2HM has misplaced his QSL records and requests those who are awaiting overdue cards to reapply . . . . An additional item of import from the land of Kipling states that the ARCI will run its first DX contest on the week ends of September 17th–18th and 24th–25th. So grease up the whirligig to shoot some soup over the pole on these dates . . . . One more period to keep in mind is that from September 18th through 23rd. That's when HB9EO is scheduled to operate HE1EO in Liechtenstein on 14,056-kc. 'phone/c.w. and 7028-kc. c.w. Ralph will heed no calls on his frequency and guarantees a 100% QSL policy . . . . VP5AT hastens to make plain that he does not operate from the Caicos as some reports have indicated; nor does he work 3.5 Mc. So the VP5AT thus reported must be regarded as the work of a pirate . . . . Major Guy Blencoe of HL1AA renown is now situated at West Point while signing W9ESM/2 and is momentarily expecting his W2 call. For any QSL queries, et al., he can be reached at Post Signal Office, West Point, N. Y. . . . . W2NIY had it from EL3A that the latter was being transferred to Paris duty. The fact that the call is still being heard may be attributable either to a change in orders or the carrying on of a new licensee . . . . . HZ1HZ asked W4EIW to make known his desire to work Central American stations between 1600–2200 GCT. This we willingly aid in doing provided Ahmed still gives the North American gang a break occasionally! . . . . . W9ACE, much more popularly known as YI2AM, is now assigned to Washington, D. C. He'll be on with a W3 call presently and welcomes mail addressed: Armin H. Meyer, 1702 Summit Pl., NW, Washington, D. C. . . . . Through W8NBK, TA3AA passes remarks about *several* tentative excursions in the vicinity of the Dodecanese group under the call SV7AA. TA3AA's postman's holiday to Iraklion as SV6AA is now history. Jules' little personal Field Day was good for 55 DX contacts and all W call areas save W7 were worked. For his next sterling performance this accommodating gentleman plans to feature a session on Kiosk Island in the Dodecanese group. That will be as SV5AA no doubt. W8DHC and W1HX were SV6AA's first and last QSOs and he used 10 watts plus a 2-tube blooper receiver . . . . . W2HVZ finally worked a VK and a little out of the band, at that. While flying south of Japan [No, Jeeves, he was in an airplane] the fellow ran into VK2GS on 7905 kc. The latter was about to set down on Okinawa and was working air-to-ground . . . . . W9QKJ is awaiting his W5 call after quite a term on the Continent as D4AON and DL4ON. Ken will finish up all his QSL chores for past operation while he attends the electronics officers school in Biloxi, Miss. . . . . KZ5XJ, whose photo appeared in a recent column, finds himself in a strange fix. The powers-that-be down in the C. Z. decided they had issued his call in error and, without notice, changed him to KZ5WZ. Wally doesn't mind 800 QSLs now made obsolete but he's having no picnic attempting to inform eager beavers on the trail of a KZ5 diploma that KZ5XJ and KZ5WZ are one and the same station . . . . . While chewing his nails down to the half-moons as regards VP5XX, W4MR and others received quite a jolt when one AC5CS popped up in the *Call Book*. Now we're wondering if he's the same guy that has been intermittently active on 20 these past months, and getting razzberries to boot. If so, perhaps we had all better get together to chip in for a peace offering of some kind. We'd lend him the services of Jeeves for this purpose but the latter's gift of subtle sarcasm would probably offend him further . . . . . The guy who has been spending much time of late behind the bug at TG9RB is none other than ex-HH2BL, Jim Buckler, an ex-W9 and formerly of the ARRL staff. The outfit will use the call TDRK on 80 during the winter season . . . . . The Northern California DX Club's monthly, *The DXer*, recently completed its first year of output. The organ is really packed with juice, a few samples of which follow: A new Faeroes representative in the person of **OY2GA** has been heard spending some precious moments around 14,100 kc. FK8AC joins FK8AB on New Caledonia, operating on 20's low edge, c.w., and he gets his Montgomery-Ward catalogs through Box 104, Noumea, New Caledonia. W6IKQ has really been hitting the road, being reported sitting in on proceedings at G5LI, I1SN/M1 and other points . . . . . W6ECP is now one of the crew who wheel JA4AF around the kc. Sporting a kw. plus a Vee beam, the boys wish to make known their availability for the handling of Japan-bound traffic. . . . . If you thought that FF8GP was somewhat on the shady side, W1IKE has news for you. The REF has begun shoving his QSLs through wholesale.

More on the *QSLL* subject: Ex-VS7PH (now G3ATH) wonders if he's satisfied the QSL demand. If some are still in need, write No. 53537, F/Lt. H. Pain, 6, Granville St., Skipton, Yorks., England . . . . . VP3TR is closing down for a trip back to W6SMU and has dished out some 2200 wallpapers in the last 19 months. Full completion of verification will be undertaken upon arrival of a new supply of

(*Continued on page 112*)

♦

You may remember AG2AB better as old XAFQ. Here's the gear at AG2AB, operated by Capt. Walter White, USA, in the Trieste uplands overlooking the sunny Adriatic. AG2AB concentrates on 28-Mc. 'phone.



♦

Vertical Beams on 14 Mc.

BY A. D. MAYO,* W5DF

FOR a long time I have wondered why we do not use vertical antennas on 20 and 40 meters, particularly in view of their apparent superiority in the matter of securing low-angle radiation for DX. The handbooks indicate that higher "losses" will be encountered on 20 meters with a vertical dipole than with a horizontal one, although I have found no clear explanation. There are data to show that poor grounds result in a reduction in the intensity of extreme low-angle radiation from the vertical, but according to various curves available the vertical should still be superior to the horizontal.[1]

From the standpoint of construction, verticals can certainly be built more easily and cheaply, and they take up less ground space. Only one pole is required for a 20-meter dipole. My first antenna consisted of an 18-foot surplus whip antenna mounted on top of an 18-foot 4 by 4. The pole was set 3 feet in the ground, with the aid of a borrowed post-hole digger. The operation took about 30 minutes, and the pole only cost $2.62, delivered.

Another type of construction is to clamp a 10- to 16-foot length of dural or steel tubing or conduit to the side of the pole, using two stand-off insulators, and dropping a wire down the pole from the bottom of the self-supporting section.

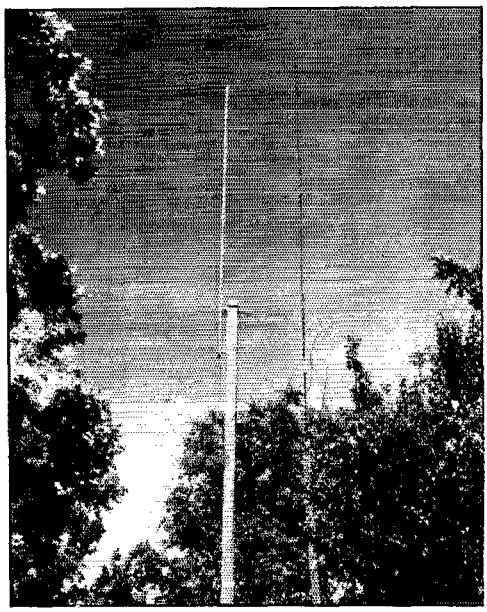
The whip was used on 40 and 20 meters by connecting it as in Fig. 1. A wire from the bottom of the whip dropped down to the base of the pole, to complete the antenna. A ground connection was used instead of a counterpoise only because it wasn't convenient to install the latter.

With 50 watts on 40 c.w., signals were very good up to 2000 miles, although no direct comparisons were made with a horizontal antenna. On 20 c.w., with 130 watts input, 51 countries were worked in about 3 months.

A Vertical Beam

Back in February a second vertical antenna was installed 7 feet from the first and adjusted as a parasitic reflector or director. A parallel-tuned circuit for adjusting the parasitic element was installed at the base. A relay is there now, with a second parallel condenser that can be cut in by energizing the relay. This allows remote changing of the parasitic element from a director to a reflector, and gives a choice of pointing the system toward Europe or New Zealand.

With the transmitter running 275 watts input, this little beam (which cost only $10.00) puts a consistent signal into Europe. It was found that several Europeans can be worked at a sitting, any time they are coming through. The average report runs around 569. This has been found to run about one S point less than W5EGK gets with a 3-element beam and 700 watts, on direct comparison at the same DX station. It is also about one S point less than W5CKY gets with a horizontal full-wave antenna, with a lobe toward Europe and a rig running 1 kilowatt. From these rough



The 2-element vertical beam at W5DF uses whip antennas mounted on the tops of poles, with wire extensions down to the ground to make up the necessary length.

* 1914 West Capitol St., Jackson, Miss.

[1] In theory the vertical should be better for DX work in cases where very low angles are utilized (long-haul work). In practice, such differences as there are seem to favor the horizontal. Experimenting on commercial circuits some years ago (Bruce, *Proc. I.R.E.*, Aug., 1931; Carter, Hansell and Lindenblad, *Proc. I.R.E.*, Oct., 1931) seemed to show that, while there frequently was little or no choice between the two, waves reflected from the ionosphere tend to be more horizontally- than vertically-polarized, regardless of the polarization of the transmitting antenna. Thus the vertical might tend to be a slightly poorer receiving antenna on long-haul work. However, many times a vertical antenna without excessive ground losses might be better for transmitting over long paths. Because the best vertical angle varies from time to time over any long path, it is unlikely that any one type of antenna will always outperform another under all conditions, if the gains are comparable but the vertical angles are different. — *Ed.*

checks, it would appear that the one S-point difference could be attributed to the other stations' higher powers and that the beam is performing creditably.

Changing the Directivity

The patterns obtained on the ground with a field-strength meter agree reasonably well with theory, although there is some distortion from near-by drain pipes and metal clothes poles. However, an interesting phenomenon was noticed that might prove useful in receiving. There are two nulls that can be shifted through 180 degrees, until they meet in front or in back. The position of these nulls is determined by the tuning of the parasitic element, and they will practically wipe out an S9 signal, with little effect on signals from other directions. The effect is shown in Fig. 2. I first noticed it when a strong ZL signal came through one afternoon during the DX Contest. With the receiver set on him, I ran a headphone extension line out to the base of the antenna. By merely tuning the condenser on the parasitic element, it was possible to knock out any particular one of the many stations that were calling the DX, without any apparent effect on the others. In this case they happened to be calling from enough different directions to demonstrate the possibilities. I have considered remote tuning of the condenser on the parasitic element, through a pair of Selsyns. It should permit rejection of an interfering signal on the same frequency as a piece of DX, if they are not both on exactly the same bearing.

Tuning the Elements

The tuning units for the antenna and parasitic are mounted at the base of each support in old coffee cans to protect the components from the weather. The size of coil conductor and the spacing of the tuning condenser will depend upon the power used, but receiving-type condensers are satisfactory for the parasitic element. Of course, the parasitic element could be cut to the right length and left that way, but this would eliminate the simple reversing procedure and the possibility of "steering" the antenna system. If the element length is close to correct, the tuned circuit should be one that will resonate to 14 Mc.

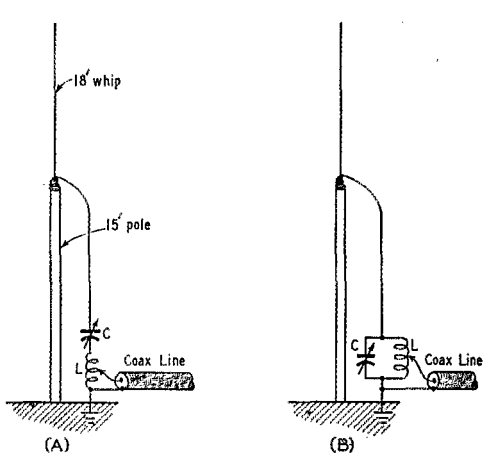


Fig. 1 — The basic antenna element as used on (A) 10 and (B) 20 meters. In either case, *LC* resonates to the band in use. The coaxial line is tapped up on the coil for proper loading (see text).

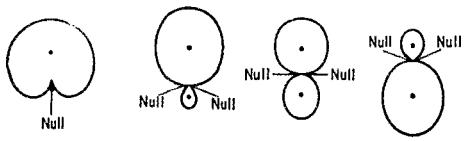


Fig. 2 — Depending upon the tuning of the parasitic element, the beam pattern (and the position of the nulls) changes. The four sketches show how the null swings around as the beam reverses direction.

In tuning the driven element, the tuned circuit was resonated by exciting the entire system from another antenna and tuning the condenser for maximum indication of r.f. in the tuned circuit. A neon bulb or spark with a sharp pencil will be sufficient. The coaxial line is then tapped up on the coil until the thing loads well at the transmitter. Finally, the current is measured at both ends of the coaxial line and the tap adjusted further, until the current readings are practically the same. Since the coaxial line is 55 feet long (1.2 wavelengths), it was assumed that any high standing-wave ratio would have shown up as a difference in these current readings.

A 3-element beam was built, on a South America-Asia line, and it worked into Asia quite well. This beam was spaced 0.6 wavelength from the other, and it was planned to include provision for feeding the driven elements of both antennas in phase, to give a third antenna system working broadside along another bearing. However, I never got around to installing the relays for direction changing and, since the Js came through at an inconvenient hour, the feed line was put back on the European beam. Moreover, the area around the Asia beam grew up into a jungle and is reported to be full of snakes. The XYL had a flower garden in that area last year and would occasionally come running into the house screaming that she had dug up a baby adder, but I never did see any. Thus, while nothing can be told now about the results of combining the two beams, the dope is passed along for anyone who wants to start thinking along the same lines.

The 33-foot elements fed at the bottom are not very useful on 28 Mc., since the main lobe shoots up at too high an angle, according to the book. According to results on the band, the book is right, because no DX was worked when the antenna was tried.

New National Traffic Plan

ARRL Maps New Traffic Organization for All Amateurs

BY GEORGE HART,* W1NJM

AMATEUR traffic handling, for those amateurs not interested in big-time operations, has gotten to be a complicated business. The casual trafficker who originates a message now and then often does not know what to do with it, how to send it on its way. He might get results by a directional CQ on 80 or, if he knows a little about net procedure, he might report into his section's traffic net, if his section has one, and, if he is lucky, he might find someone willing to take it off his hands. Then, again if he is lucky, that someone may put it onto the proper net or trunk line which will send it speedily to its destination.

Too often, he is not lucky. The message shuttles back and forth for days until it gets into the hands of someone who has the necessary connections, and by that time it is so old that it is a discredit to amateur traffic handling.

The big nets, with their skilled operating personnel, are functioning as efficiently as ever — perhaps more so, under modern network operating procedures. They specialize in handling traffic in bulk, especially from fairs, expositions and hobby shows. Their coverage in most cases extends wherever they can find a skilled operator to provide it. Many of them tie into sections with live-wire traffic organizations for local traffic distribution. Most of them look with disfavor, and understandably so, at unskilled operators who try to "report in" to their nets, with or without traffic, and who through lack of net "savvy" slow down a hustling traffic team.

Needless to say, many of the skilled operators on these nets also work into their section traffic nets, providing traffic outlets to certain points. But confusion often reigns supreme in the small section net for this very reason. The net control station (NCS) is supposed to know that W4XXX can take traffic for Georgia and Alabama, but not for Florida, and that W4YYY handles all Midwestern traffic except Texas, which is handled by W4ZZZ. The NCS must not only know how properly to direct a net, but he must have had experience with this particular net so that he knows what's what, who's who, and who takes what traffic for where. How much easier it would be if *all* the traffic going outside the section could be cleared to one (or more, if traffic is heavy) station designated for that job! If that could be done, then the NCS would have only his own section and net protocol to worry about — which is enough.

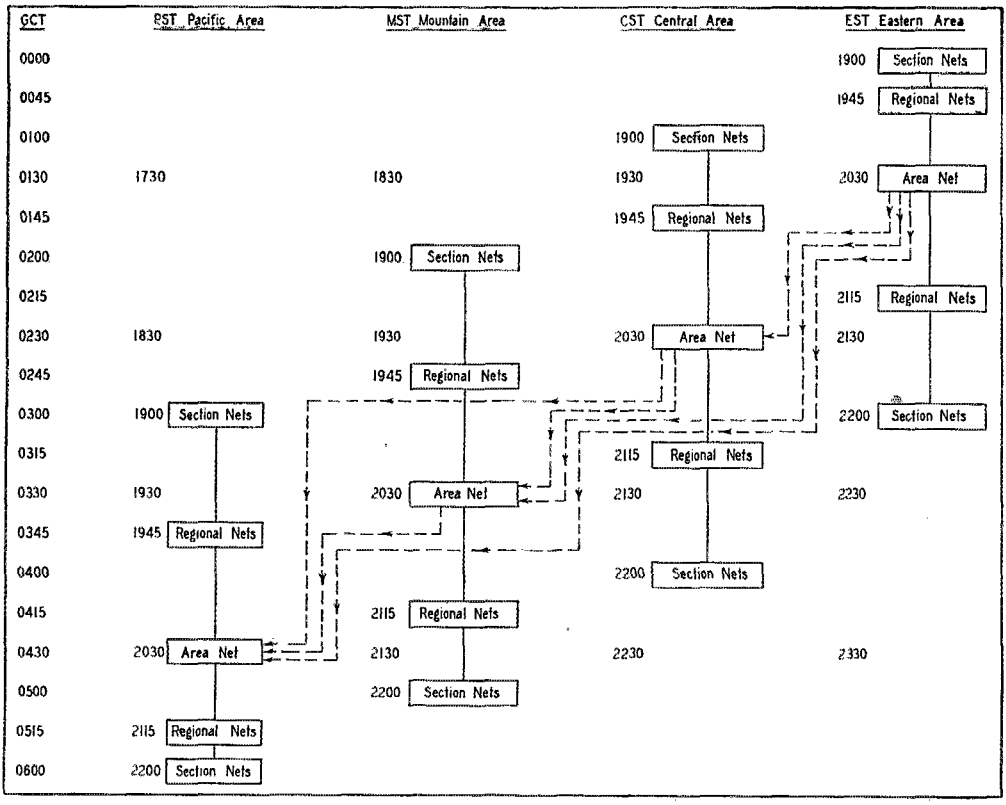
• Existing nets can continue unaffected.
• Plan gives potential tie between each section net.
• Adoption of plan contingent on your support.
• All amateurs asked to send comments and suggestions after a trial.

During 1948, practically every section in the ARRL field organization had a net of some kind going, and 47 sections had nets devoted exclusively to traffic handling. If, in each section net, a certain station (or stations) was designated to take all traffic going outside the section, this station then to report into a later net having greater coverage, and the same procedure repeated funneling into still greater coverage areas, we would have a traffic organization of national scope capable of handling traffic to (and from) any point in the entire field organization, which includes the entire United States, most of its Possessions and most of Canada.

This, in briefest outline, is the essence of the ARRL National Traffic Plan. It takes the already-existing section net as a unit and makes two larger unit categories which are called "regional" and "area" nets. Each regional net covers a certain number of section nets (normally those within a certain call area), and each area net covers a certain number of regional nets (normally those within a time zone). The area nets, of which there are four (one for each time zone), pass traffic around among themselves, and it then comes back down through regional and section nets again *in the same evening.* This requires organization and teamwork of no small dimensions, but it will work if we get together on it and push.

The casual amateur who has a message can put it into his section net and then forget about it, and the traffic-handler who has only a limited time available can devote an occasional evening, or any part of one, to handling traffic without committing himself to regular schedules. The regulars, the topnotch traffic-handlers who are able and willing to devote much of their operating time to traffic, will assume the managership jobs of the various networks involved.

* Assistant Communications Manager, C. W.



Time relationship of the various net meetings. Note that while all nets in the same category meet at the same time by their clocks, they are actually spread over a three-hour period as shown in the GCT column. Dotted lines indicate representation of area nets in other area nets to the west of them.

Because of space limitations, it is not possible to describe the operation of the National Traffic Plan here in detail; complete details are available in mimeographed form upon request of any amateur interested. All we can cover here are general principles of the plan's operation, and these are somewhat evident from the diagram.

Note that all nets in a certain category (e.g., section nets) meet at the same time *by their clocks*, but that actually nets in the Eastern Time Zone (EST) meet one hour earlier than those in the Central Time Zone (CST), two hours earlier than those in the Mountain Time Zone (MST) and three hours earlier than those in the Pacific Time Zone (PST). Thus, when the Eastern section nets are cleaning up the last of their traffic in the late section net meetings, the Pacific section nets are just getting started on theirs. This difference in time is like a current flowing from east to west: traffic going in that direction can just coast along with the current, while traffic from west to east must buck the current. It is therefore necessary to have some long-haul circuits by means of which traffic from the West Coast can reach the East Coast the same night, and this is the primary purpose of the "cumulative representation" of area nets from east to west. A direct outlet to the Eastern area must be available in the Central area net; direct outlets to both Central and Eastern areas must be available in the Mountain area net; and direct outlets to *all three* of the other areas must be available in the Pacific area net. The effect of this is that the Pacific area net, which meets at 2030 PST (2330 EST), is of national scope in which traffic routing is available to and from all parts of the ARRL field organization.

The sequence of net meetings in each area, as shown in the diagram, is important. Regional and area nets automatically fit into this pattern. Section nets are requested to coöperate to the best of their ability. At 1900 local time, section nets will meet and one station will be designated to clear all traffic going outside the section. This station will then report into the regional net at 1945. In the regional net, one of the participating stations will be designated to take all traffic for points outside the region, and he will then report into the area net at 2030. Then at 2115 the re-

(Continued on page 96)

"EUREKA! The short waves at last!" *QST* for September, 1924, enthusiastically proclaims the establishment of new short-wave bands for amateurs — 75 to 80 meters, 40 to 43 meters, 20 to 22 meters, and 4 to 5 meters. In addition, we'll hold our older 150- to 200-meter band, with 'phone privileges. Worked out in close coöperation with ARRL, the new Department of Commerce regulations are expected to stimulate wholesale rebuilding of our stations. Technical Editor S. Kruse has anticipated this and has lost no time in getting full design and constructional data on short-wave receivers, transmitters, measuring equipment, and antennas into this issue. "Make a wavemeter first" is "LQ's" sage advice.

The oratory of the presidential candidates is being carried far and wide this year, via the radiophones, and the amateur with time for national politics will be interested in Frank H. Jones' method of revamping a neutrodyne to tune down to 100 meters. Mr. Jones, Cuban 6KW, receives KDKA and WGY regularly on this wave. . . . ARRL is participating in antenna tests being conducted at the elaborate amateur station of 8AQO, Cazenovia, N. Y. Grounds, counterpoises, antenna lengths and insulation are the factors under investigation. . . . A 5-watt transmitter costing twenty-five dollars is described by Department Editor H. F. Mason. The rig is built around a Rolls Royce type 202 tube.

The first ARRL Board of Directors to be elected under our new Constitution has held its initial meeting, in Hartford. Photographed hard at work on League business are H. L. Reid, alternate for Dir. Dobbs, Southeastern Division; Dir. Gravely, Roanoke; Vice-President Stewart; Dir. Corlett, West Gulf; Dir. Pinney, New England; Dir. Laizure, Midwest; Dir. Bidwell, Atlantic; Dir. Jansky, Dakota; Dir. Weingarten, Northwestern; Dir. Segal, Rocky Mountain; Traffic Manager Schnell; President Maxim; Secretary Warner; Dir. Painter, Delta; Dir. Darr, Central, and Treasurer Hebert. Canadian General Manager Russell and Pacific Director Babcock also attended the meeting.

Gleanings: Howard S. Pyle, 8FT, recommends the use of red and black colors on our DX report cards so they will stand out in station photos. . . . The ARRL Board has approved, with reservations, use of Esperanto as an official international radio language. . . . Humor of the times: *First Ham:* "Know who the first c.w. expert was?" *Second Ham:* "Yeah! Noah! He built the first arc!"

Fall V.H.F. QSO Party

September 24th–25th — Certificates for Leaders

THE League announces an early fall V.H.F. Party as a chance for all v.h.f. operators to try for new QSOs and DX. This is an invitation to all amateurs who can work any or all v.h.f. bands (50 Mc. or above) to use 'phone, m.c.w. or c.w. between 2 P.M. local standard time (EST, CST, MST, PST) Saturday, September 24th, and midnight local standard time Sunday, September 25th. See what new stations and states *can* be worked. Try out your new antennas and gear. Don't miss this. Mark your calendar today and see where your signals will land in a period in which you are assured that the v.h.f. brotherhood all over the land is in there listening for you.

How To Take Part

Call "CQ contest" to get in touch with other contestants. When using c.w. or m.c.w., call "CQ." Exchanging signal-strength and readability reports is suggested but not required. When you work another v.h.f. amateur, you must give him the name of your ARRL section. Page 6 of this issue is a register of the League field-organization set-up, and serves as a convenient section check-off list. ARRL staff members are not eligible for awards. You compete only with amateurs in your own ARRL section for the certificate award.

Count 1 point for successfully-confirmed two-way exchanges of section information on 2 or 6 meters. A one-way exchange does *not* count. When two-way exchanges are accomplished with your transmitter on the 220-, 420-, 1215-Mc. or higher bands, you may record 5 *points* per QSO.

Multiplier

The sum of station points earned is multiplied by a section multiplier. Each time a new section is worked two-way it adds one to the multiplier. *The multiplier grows by one if you rework this same section on another band.* (Scoring differs in this respect from other ARRL competitions to encourage everyone to make use of *as many* v.h.f. bands as possible.) A simple tabulation with points and section list is all that is required. A card to Headquarters will bring the simple form on which to report; or your own similar tabulation will be accepted.

Rules

1) Name-of-section exchanges must be acknowledged by both operators before either may claim the point(s).

2) All claimed contacts must fall in the contest period and must be on authorized amateur frequencies above 50

(*Continued on page 118*)

CONDUCTED BY E. P. TILTON,* W1HDQ

RECORDS — RECORDS — RECORDS! After coasting along for nearly two years without alteration, our records box this month sports new DX records for 144, 220, 420 and 1215 Mc. And if all the 2-meter records that have been held since the last issue went to press were to be carried in the box it would have to be doubled in size.

When W3GV and WØWGZ worked on 144 Mc. in September, 1947, they hung up a real mark for the gang to shoot at. Their contact was no fluke: it combined everything — good locations, excellent antennas, well-equipped stations, operating savvy, and the best propagation of the year. It was the culmination of a period of rapid development on 144 Mc. when our records for two-way work stretched from 145 miles in 1946 to 660 miles a little more than a year later. From then to the present, gear used on 2 meters has continued to improve and the extent of activity, long a limiting factor, has expanded until there are now progressive stations in almost every section of the country.

There were several near misses meanwhile. In May, 1948, W2TDW/4, operating from Clingman's Dome, near the Tennessee-North Carolina border, worked W2RH, Port Chester, N. Y., for an almost exact duplicate of the existing record. As reported last month, the 1949 sharpshooting at the record started off with a contact between W5JTI, Jackson, Miss., and WØNFM, Solon, Iowa. This was another case of close duplication of the previous accomplishments for distance, but it was an important milestone: the first north-south work over anything like the record distance.

Then, on July 10th, things started to happen again, with W3s, 8s, 9s and Øs cracking the 600-mile mark. W3GKP, Silver Spring, Md., worked W9TKL, Waukegan, Ill., 610 miles, and W3AIR, Glenmont, Md., worked W9TKL and W9JIL, Plainfield, Ill., soon after, for an additional 10 miles or so. W8WSE, Garfield Heights, Ohio, worked WØs NFM, DEN, BZE and HQA, the last being about 620 miles. WØZJB, Gashland, Mo., was hearing W8s UKS, WJC and BFQ for two hours. Then when he got his rig going the W8s heard him working W9s, and called without response. Vince's antenna relay wasn't making contact on receive. Result: a 700-mile record missed!

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

RECORDS

Two-Way Work

50 Mc.: CE1AH — J9AAO
10,500 Miles — October 17, 1947

144 Mc.: W3CUM — WØBIP
800 Miles — July 23, 1949

220 Mc.: W1CTW — VE1QY
275 Miles — June 29, 1949

420 Mc.: W6VIX/6 — W6ZRN/6
262 Miles — July 4, 1949

1215 Mc.: W1OFG/1 — W1MZC/1
37 Miles — July 30, 1949

2300 Mc.: W6IFE/6 — W6ET/6
150 Miles — October 5, 1947

3300 Mc.: W6IFE/6 — W6ET/6
150 Miles — October 5, 1947

5250 Mc.: W2LGF/2 — W7FQF/2
31 Miles — December 2, 1945

10,000 Mc.: W4HPJ/3 — W6IFE/3
7.65 Miles — July 11, 1947

21,000 Mc.: W1NVL/2 — W9SAD/2
800 Feet — May 18, 1946

The following night the band was open across the Alleghenies, and the W1s and 2s had their innings. It was one of those rare openings between W1 and W8 (it had happened only once before) and Easterners who had horizontal arrays cashed in. It started with W2BAV working W8s UKS, RS and UB, to alert the W1s. W8UKS began to come through at W1HDQ in bursts during his contact with W2BAV, but the first New England contact went to W1PIV, East Freetown, Mass. Your conductor caught him right after, and worked W3RUE, Pittsburgh, briefly at the same time. W8WJC was next worked by the writer, and W1BCN and W1MNF, far out on Cape Cod, caught one or more of the 8s, for the best DX of the evening, approximately 600 miles. W2BAV was reported heard S5 in the Chicago area and W2NLY heard W9PM. A lot of interesting DX, and plenty of new states all around, but no new records!

The record breaking remained for the small hours of the 23rd. From late evening on the 2-meter band was crammed with signals all over the Middle West, and many contacts were made at

distances up to the existing record. Then W8WJC, Everett, Ohio, worked WØBIP, Elliott, Iowa, and the race was on, the record jumping past the 700-mile mark with this contact. Next in line was W8UKS, Burton, Ohio, extending it to about 720 miles. By this time almost everyone in the region from Pittsburgh to Toronto was after WØBIP, but the lucky man was W3CUM, Butler, Penna., who caught him after W8UKS, for the best DX reported for the opening, about 800 miles. This is not yet confirmed by calculation, but is listed tentatively from map measurement, until more exact methods can be used. Others who heard and called WØBIP include W3QKI, Erie, Penna., 780 miles, VE3AIB, Toronto, Ont., 830 miles, and W2PLU, Buffalo, N. Y., 840 miles. W3QKI worked WØEMS, Adair, Iowa, for a 755-mile contact.

The rig at W3CUM uses an 829B in the final, running 90 watts input. It was built from the Millen story in *QST* for September, 1947. The antenna system is four stacked dipoles, bidirectional, better known as the W8UKS "City Slicker." (A description of this popular array is scheduled for an early issue of *QST*.) The receiver is a VHF-152 ahead of an SX-25. The station is in a 4-room trailer home, situated on Armco Hill, five miles south of Butler, Penna., at 1300 feet above sea level. Operator B. R. Cooke is an old timer at hamming, having been at it continuously since 1914. He works only on 144 Mc., and has been active on the band since the summer of 1946. The signal of WØBIP peaked at S9-plus for a few seconds, but he averaged S5 during the record-breaking QSO.

Dwight Pierson, WØBIP, says that the band opened around 10:15 CST, and by 11 just about every station in W8 and W9 was pouring in S9. When W8UKS passed the word that the W3s were calling him Dwight did the best he could, but the QRM was so bad that W3CUM was the only one he could copy. W3QKI was heard for a brief period, but too weak to be copied through the welter of W8, 9 and Ø signals. Contact was made with W3CUM, who was S4 to 5, at 11:54 and terminated at 12:06. The rig at WØBIP is a 522 exciter driving an 829B at 80 watts input, feeding a 16-element horizontal array. His receiver is a VHF-152 ahead of an NC-240D. Dwight says that there is red-hot interest in Western Iowa and Missouri, and the gang in the East can be sure that there will be activity out there come another good opening.

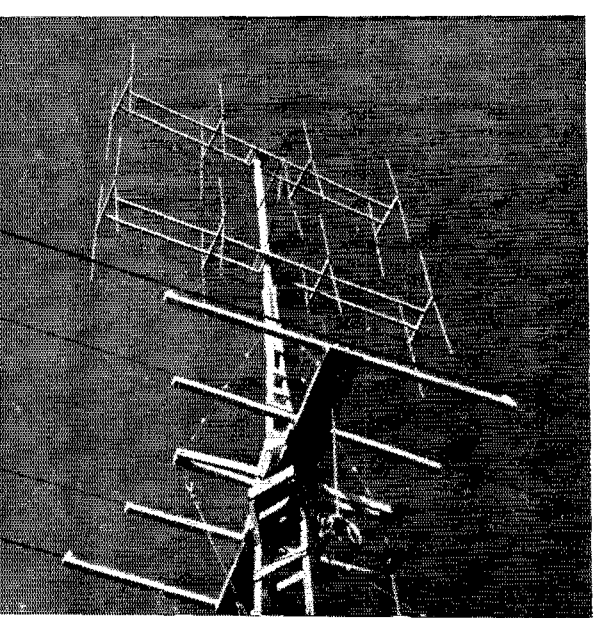
The 420-Mc. record was extended from 186 to 262 miles on July 4th, but nobody lost out on this one, as the job was done by the previous record holders, W6VIX and W6ZRN. Utilizing the curving Southern California coast to the best possible advantage, W6VIX/6 set up on Tecate Peak, a 3890-foot elevation 35 miles east of San Diego, and close to the Mexican border. W6ZRN/6 was atop El Tranquillan Peak, 2170 feet, 50 miles northwest of Santa Barbara, providing a 262-mile path substantially all over water.

The first try was at 2:45 P.M., after contact was made on 2 meters. W6ZRN was heard very weakly, for about 5 minutes, on 420. Then all contact was lost, until 10 P.M., when only the 2-meter signals could be heard. The following day contact was made on 2 at 1:30 P.M., and two-way work was carried out on 420 at 2:15. Signals were very weak at first, but built up to S9 in a period of about an hour.

The rig at W6ZRN/6 was an APT-5, running 30 watts input, with an ASB-5 receiver, and a 12-element array. W6VIX/6 used an 8025 oscillator at 15 watts input, a homebuilt receiver made from parts of a BC-788, and 8 half waves in phase with a screen reflector. W6FIX, Los Angeles, worked W6VIX/6 and heard W6ZRN/6 on 420. W6CFL and W6NLZ, Los Angeles, and W6WSQ, Pasadena, were heard on 420 by W6VIX/6.

The 1215-Mc. record was extended from 12.5 to 17.4 miles on July 9th, when W1OFG and W1MZC maintained communication on this band from elevated locations in Paxton and Marlboro, Mass. The boys had been working on this project for several months; the contact was easy, but the work that preceded it was quite a different matter. The rigs were 2C40 lighthouse transceivers, using cavities and parabolic antennas mounted on camera tripods. The very strong signals obtained over the 17-mile path indicate that they can stretch their record considerably, if need be.

The long July 4th week end was expedition time all over the country. W9LWE and W9BXK made



The 32-element 144-Mc. array at W6MVK is mounted above a dual array for 28 and 50 Mc. The same structure now also carries a 6-meter beam.

their second annual 2-meter expedition to Caledonia, Minnesota, to provide contacts with that state for the gang in the Chicago area and farther. Contacts were made with W9s TKL, EHX, BBU, JDD, MBI, ZHB, UCH, JIL, PZS, PK, DXX, PM, CAW, WØs WGZ and JHS, and W8WJC. Best DX was W8WJC, about 500 miles. The rig used was a 522 driving a pair of 24Gs at 50 watts, feeding an 18-elemental horizontal array. Receiving was done with a VHF-152 with a cascode preamplifier.

That veteran mountain-top specialist, W4FBJ, was working from White Top Mt., Va., the same week end. His list worked on 144 Mc. included W4CPZ, South Carolina; W4HVT, North Carolina; W4JFV, Virginia; W4s OXC, JDN, MKJ and KLP, Kentucky; W8s WJC, UKS, WRN, CYE, CPA, ZUR and WSE, Ohio; W8s EP, BKI and JKN, W. Virginia; W9JMS, Indiana; and W9FVJ, Illinois. And Floyd says conditions were poor! He was also on 50 Mc. for a short period. White Top looks like a good bet for v.h.f. expeditions, as there is good a.c. up there and you can drive to the top. Interested parties should write the White Top Company, Abingdon, Va.

For the second time, the microwave section of the El-Ray Radio Club, of Waltham, Mass., conducted a 2400-Mc. expedition over the July 4th week end. W1ILS, former record-holder in both the 2400- and 3300-Mc. bands, was on Mt. Greylock with W1AQE and others. W1JSM was operating from Mt. Wachuset. Though they had previously spanned this path with c.w. magnetrons, this time they were trying to do it with low-powered transceivers, but without success. To take the curse off this they spent the week end working 2 meters and a fine time was had by all. One milestone was passed in their microwave work, however. W1ILS took one of the mobile rigs to Bennington, Vt., where the first microwave Vermont–Massachusetts contact was made with W1AQE on Greylock. They set no mileage records, but they have a states-worked record that will not be broken easily: New York, Massachusetts, and Vermont; three states and two call areas, worked on 2400 Mc., from one location!

The following week end saw W1s CNX, JDF, PZA and OOP combining forces to operate W1OOP/1 on 144 Mc. from Mt. Kearsarge, a 3000-foot elevation in Warner, N. H., 30 miles northwest of Concord. Using a 522 transmitter, a 16-element vertical array, and a cascode converter working into a 5-Mc. i.s. strip, these boys worked from 5:45 P.M. Saturday to 11 A.M. Sunday, giving New Hampshire contacts to 21 W1s, 42 W2s, 13 W3s and 2 W4s. Best DX was W4IKZ, Chesapeake Beach, Va., nearly 500 miles.

The converter used in this expedition is an interesting item. Watch for a detailed description of it by W1OOP in an early issue of *QST*.

Standings as of July 25th

W9ZHB	48	W4GMP	34	W7CAM	25
WØZJB	48	W4WMI	33	W3QYD	44
W9QUV	48	W4FNR	33	W3YLS	38
WØBJV	48			W8NQD	31
WØCJS	48	W5AJG	47	W8LBH	30
		W5VY	47	W8RDZ	27
W1CLS	45	W5ML	42	W8RFW	25
W1CGY	44	W5VV	42		
W1LLL	43	W5JLY	41	W9HGE	47
W1HDQ	42	W5HLD	40	W9ZHL	47
W1KHL	41	W5FRD	38	W9PK	47
W1LSN	40	W5FSC	37	W9ALU	46
W1HMS	37	W5DXB	35	W9JMS	46
W1RO	36	W5ZZF	34	W9QKM	45
W1JLK	35	W5GNQ	32	W9RQM	44
W1ELP	35	W5JBW	32	W9UNS	42
W1EIO	35	W5IOP	30	W9UIA	42
W1DJ	31	W5NND	32		
W1HIL	31	W5LWG	26	WØUSI	47
W1CGX	28			WØQIN	47
		W6UXN	47	WØDZM	47
W2RLV	45	W6OVK	40	WØNFM	47
W2BYM	42	W6ANN	38	WØINI	47
W2IDZ	40	W6IWS	37	WØKYF	44
W2AMJ	38	W6BPT	35	WØJHS	44
W2QVH	37	W6AMD	35	WØYKX	43
W2FHJ	29	W6NAW	35	WØTKX	43
		W6FPV	34	WØSV	42
W3OJU	44	W6BWG	20	WØHXY	41
W3OR	35	K6BF	14	WØPKD	36
W3RUE	34				
W3MKL	33	W7BQX	45	VE3ANY	33
		W7ERA	43	VE1QZ	31
W4EQM	44	W7DYD	43	VE1QY	28
W4FBH	44	W7HEA	40	VE4GQ	20
W4QN	43	W7FDJ	36	XE1GE	19
W4LNG	42	W7FFE	35	VE3AET	16
W4GIY	40	W7KAD	35	HC2OT	16
W4EID	40	W7JPA	35	XE2C	14
W4EQR	40	W7ACD	32	VE2GT	14
W4DRZ	38	W7QAP	32	XE1QE	10
W4MS	37	W7JRG	32		
W4FQI	34	W3CIR/7	30		

Here and There on 6 and 2

Lakehurst, N. J. — Probably no area in the country has a worse TVI problem than Southeastern New Jersey. The region around Lakehurst and Toms River is fringe area for both New York and Philadelphia, and between these two cities all TV channels are in regular service. This discouraging outlook had W2BYM off the air for some time. Mel had been running nearly a kilowatt on 50 Mc., and he was having no end of neighbor trouble. Then he got a TV receiver and went to work. Harmonics from the 6-Mc. oscillator in his exciter were causing quite a bit of trouble. This was largely eliminated by the installation of 25-Mc. crystals, but blocking on Channel 2 was still present. Dropping his power to 80 watts reduced this to a small amount of hash on his own receiver, depending upon where the beam is pointed, and how well the TV signal is coming in.

There is still trouble on Channel 11, from 4th harmonic, and slight cross-hatching on 5 and 7, but all other channels are clear. Neighbor trouble is greatly reduced. Now Mel is working on a new layout, incorporating shielding and

filters, to clear his own receiver. Meanwhile, W2BYM is again heard on 6, after a long absence. He has found that 80 watts will work out, as witness his climb from 39 to 42 states worked, and good results on the double-hop openings to W6, 7 and XE.

Prescott, Ariz. — TVI has come to Arizona, too, as a result of frequent sporadic-*E* activity making possible occasional reception of California TV stations on the lower channels. W7NMD reports that a TV receiver in his immediate vicinity has served a useful purpose, however. Its wide coverage in the v.h.f. region makes it a fine means of tracking down parasitics, key clicks and modulation troubles.

Shemya, Aleutian Islands — This is not the best place in the world to listen for 50-Mc. signals, but WØTKX/KL7 is trying during July and August. If any signals are heard Bob will waste no time in getting transmitting facilities into service. As of July 24th he had had no luck.

Oslo, Norway — The 50-Mc. band was open between 2010 and 2300 GCT on June 30th, according to word received from LA7Y, via W2BAP. He reports that commercial harmonics and amateur 'phone signals, unidentified, but believed to have been of American origin, were heard, peaking S5 to 6.

Washington, D. C. — With a view to determining sentiment on the matter of the 50-Mc. c.w. assignment proposed by FCC, and originally requested by ARRL, W3PCB and W4HVV recently conducted a mail poll of the more active 50-Mc. men over the country. Out of 300 ballots sent out, 201 were returned. Of these 66 were in favor of the c.w. assignment and 135 opposed. Since it is not the purpose of this department to engage in political controversy, the above facts are published, at the request of the poll sponsors, without editorial comment.

Canton, Conn. — At the suggestion of W2NLY and others, your conductor starts messages to distant points each Thursday night at 8 P.M., with the object of developing 2-meter relay routes. Fast relaying over long distances has had a real appeal for amateurs through all the history of our hobby. It was the basis for the formation of the American Radio Relay League, originally, and it still may hold the key to the maintenance of regular activity on 144 Mc. over wide areas, regardless of propagation conditions. Nobody has to be sold the idea of activity on the v.h.f. bands when conditions are hot, as at present, but all of us who are seriously interested in v.h.f. would like to see more use of our frequencies during the *low* periods as well as the high ones.

If you'd like to participate, line up stations to the east and west (or north and south) of your location to work with you. Emphasis should be placed on reliable hops, rather than exceptional ones. Watch for messages coming your way, and see that they are pushed along without delay. With proper coöperation we should be able to have a one-evening exchange between the East Coast and Chicago, for instance, and a transcontinental v.h.f. relay is not beyond the realm of possibility.

Already the potentialities have been demonstrated. Without advance warning or plans two-meter relays of more than 1000 miles have been completed. A message originated by W5JTI, Jackson, Miss., on July 22nd at 8:17 P.M. CST got as far as W2EH, Collingswood, N. J., the same evening, and was forwarded to W1HDQ two days later, by W3KBA, who intercepted it along the route. Routing was W5JTI, 4HHK, FWH, FI, FBJ/4, 8CYE, 3RUE, 3GKP, 3OWW, 2EH. A message from W9NFK, Franklin Park, Ill., took 10 days on the way, but got through on 144 Mc. The route was W9NFK, BBU, UCH, 8AMW, UKS, 3RUE, GKP and 2EH.

These are not direct routes, nor fast handling, by any means, but the important point is that, though they were started cold, these messages made their destination. Contrast this with prewar attempts to turn the same trick on 56 Mc. All failed to get across the Alleghenies, despite much advance planning and publicity. The only successful long-distance 5-meter relays were those involving portable stations in strategic spots, or help from the ionosphere in the form of sporadic-*E* skip.

Chicago, Ill. — Dedication ceremonies for W9FCN, the new station of the Midwest V.H.F. Club, will be held at the Club's new headquarters, Sept. 15th. The use of W9FCN was granted by FCC upon request, in honor of its former holder, Elmer D. Sweeney, who died in November, 1947. Elmer was a charter member of the club, and did much to promote v.h.f. activity in the Chicago area. He organized several expeditions to provide DX contacts on the v.h.f. bands, and was active in WERS work during the war. His widow will be a guest at the dedication.

Halifax, Nova Scotia — Yarmouth and VE1QY are not necessarily the end of the line for 2-meter stations looking for DX along the Atlantic Seaboard. VE1QZ, Halifax, has heard the band open several times this summer but he has little luck in raising stations he hears. Because of BCI Oscar uses n.f.m. or c.w. exclusively. The former is ineffective in weak-signal work with present-day receivers, and too few fellows tune carefully with the b.f.o. on. (The 522 boys can't receive n.f.m. at all, and most of them don't have any b.f.o.!) Watch for VE1QZ on 144.9 Mc., c.w., when conditions are good to the northeast. He has both horizontal and vertical arrays. He definitely can copy c.w.

Los Angeles, Calif. — Noting that there is a dearth of information on W6 doings in these pages (we can't eavesdrop on California — we have to be told) W6MVK, Los Angeles Section PAM, brings us up to date. There are over 600 v.h.f. stations in the Southwestern Division, he says. Some of the more consistent 144-Mc. fellows have logged more than 500 in the past year. There are around 15 regularly active on 420, and some on 220. Activity has been low on 50 Mc., but it seems to be picking up. Mobile work is popular on 144 and 420 Mc., with W6ZUX providing one of the most powerful 2-meter mobile sigs with his 829-equipped 522, running 50 watts input. Most powerful home set-up is W6KKG, with 750 watts to a pair of 127As. There are literally hundreds of beams, many of them 16-element jobs

2-Meter Standings

	States	Call Areas	Miles		States	Call Areas	Miles
W8UKS	18	7	720	W8WRN	9	5	
W8WJC	17	7	700	W2PJA	9	4	
WØNFM	14	7	660	W1BDF/1	9	3	
W8BFQ	14	6		W1JMU	9	3	
W2BAV	14	5		W1OOP	9	3	
W3RUE	13	6	530	W1QXE	9	3	
W3KBA	13	6		W3KWH	8	5	
W3GKP	13	5	610	W4AJA	8	4	
W1BCN	13	5	600	W3KWU	8	4	
W1PIV	13	5	575	W4NRB	8	4	
W2NLY	13	5	515	W9OBW	8	4	
W4IKZ	13	5	500	WØHAQ	8	4	
W1HDQ	13	5	480	W1MBS	8	2	275
W2NGA	13	5		W8RDZ	7	4	340
W8CYE	12	6		WØBZE	7	4	520
W8WSE	12	6	620	W9NFK	7	4	450
W9JMS	12	5	600	W2FHJ	7	3	
W3KUX	12	5	575	W8DIV	6	4	
W2WLS	12	4		W4MKJ	6	4	355
W2DPB	12	5	500	VE3AIB	6	4	
W4FBJ	11	5		WØZJB	6	3	
W2QNZ	11	5		W4FQI	6	–	
W3PGV	11	5		WØGOK	6	–	
W1CTW	11	4	500	W2RPO	5	4	
W3OWW	10	5		W1AW	5	2	
W9PK	10	5		W4KKG	5	–	
W4CLY	10	4	500	WØHXY	5	2	
W1REZ	10	4		WØDEN	4	3	520
WØWGZ	10	4	660	W9UIA	4	3	205
W1JSM	10	3		WØJHS	4	2	
WØIFB	9	6		W4LCG	4	2	
W3GV	9	5		W5ML	2	1	425
W4HHK	9	5		W5AJG	2	1	400
W3BLF	9	5		W5JLY	1	1	1060*
W3HB	9	5					

* Crossband.

of W6IDF design. Activity is sparked by the Two Meters and Down Club, now one of the largest clubs in the area. The downward trend of conditions on 10, and the TVI resulting from operation on that band, are aiding in the extension of v.h.f. interest and activity.

Silver Spring, Md. — W3GKP works his 2-meter DX the hard way — on c.w. Smitty says the 500-watt c.w. rig works out nicely provided: (1) He puts out the strongest signal from Maryland. (2) Enough fellows who have not yet worked Maryland happen to be on. Despite the scarcity of 2-meter b.f.o. users, W3GKP has managed the first contacts between Maryland and a number of areas, including a 610-mile contact with W9TKL, Waukegan, Ill., on the 10th, and W9UCH, Ft. Wayne, Ind., on the 23rd.

Collierville, Tenn. — Sunrise skeds have been good business for W4HHK. Paul has worked W4FBJ/4, Glasgow, Ky., and on the morning of the 21st he made it with W9JMS, Cory, Ind. Fairly frequent contacts are made with W4FWH in Nashville, 200 miles, and the gang in the St. Louis area. Jackson, Miss., is worked regularly. Paul is up to 9 states and 5 call areas, which is real going from the Memphis area!

Norfolk, Va. — The big 2-meter opening that provided the new record carried over to portions of the Atlantic Seaboard Sunday morning, the 24th, allowing stations in the Norfolk area to make their first VE3 contacts on 144 Mc. W4IKZ found the band open at 7:30 A.M. and worked VE3s AIB and ANT, as well as W8EP, W8UKS and W8ER. The VE3s are about 500 miles from Norfolk.

St. Louis, Mo. — Activity on both 6 and 2 meters is being encouraged in the St. Louis area by means of organized operating. The 6-meter group, consisting of WØs JNG, JON, JRP, KYF, SHW and VMY, meets on the air each Wednesday evening at 6:30 P.M. CST. The "144-Mc. Ears Net" meets every Tuesday at the same time. WØKYF acts as net control station, and members presently include WØs AJU, AOU, BJL, BZN, DMB, IHD, KYF, SHW, VAV, VMY, ZIS, ZJG and W9NSD.

Council Bluffs, Iowa — Here's something new in transmitter hunts: For the CBROC Hamfest, July 17th, the boys cooked up a tough one. The spot selected was one of the highest in Council Bluffs, but a patch of corn shielded the antenna system from view. The rig was installed in a comfortably shady spot nearby, but the gas-engine generator was placed in a ravine 100 feet away to aid in the concealment, and to muffle the generator noise. Just ordinary stuff, so far — but the hidden station committee, WØCCY, WØYYF, and George Fenel, put the rig on a 5-element vertical array and *rotated* it continuously at one r.p.m. during the hunt. The winning team, WØs QXR, UTF, UUV and Paul Curry, located the rig in one hour and forty minutes — but they found the power unit first!

San Mateo, Calif. — Amateur television is all the rage in the San Francisco area, with several stations on the air on 420 Mc. W6VSV has camera equipment and at the recent San Mateo County Radio Club hamfest, Bob televised the proceedings, with the technical assistance of W6VQV, W6UOV and W6WAB. The transmission was received 30 miles away in Berkeley by W6QT and onlooker, W6OVK.

East Freetown, Mass. — There are as many systems for telling when the 2-meter band is going to be open as there are 2-meter amateurs, but one used at W1PIV is probably the most unusual. Eddie has a 32-element array that can be operated either horizontal or vertical. On a doubtful night he goes out in the darkness and turns the array over. If nothing happens he comes back in and goes to bed, but if water falls on his head he turns the antenna south and waits for the W4s to start coming through! Never fails, he says — and, if you stop to think over the causes of condensation, that system is not as silly as it sounds. Other popular signs: high barometer, fog rolling in from the ocean, rapidly-dropping temperature, and a dead calm in the early evening. All have real basis in fact; they're not superstitions. The weather maps are the best bet, however, and W1PIV and W2BAV are among those who study the weather maps regularly.

Dallas, Texas — It takes morning skeds to work 2-meter DX, according to W5AJG. Leroy has had no luck in evening work at all, but on July 7th he worked 15 stations between 6 and 9 A.M. These included W5s DXB, Vivian, and ML, Oil City, La., his first out-of-state contacts on 144 Mc.; IRP, Lufkin, NQA, OUG and NZX, Houston, KFB, Baytown, DAA, Kingsville, JPG, Brownwood, VY, San Antonio, DUK, Kema and DSB, Beaumont. Stations from the south, east and west were coming through all at once, but no DX signals have yet been heard from the north.

Stations all through the eastern part of Texas and the northwestern portion of Louisiana have daily early morning workouts. W5IRP, Lufkin, and W5MAW, Nacogdoches, work Houston, Beaumont, Palmer, and Baytown frequently, distances up to about 140 miles. W5ML, Oil City, La., worked as far down as San Antonio on the 7th. His QSO with W5VY was good for 425 miles. Since he's had his 8-element array (the 2-meter meat in the "V.H.F. Sandwich" of June *QST*) Art has been working up to 200 miles or more pretty regularly on the morning skeds.

Collingswood, N. J. — The unbelievable has happened! Following the interesting results W2EH achieved with his horizontal array (the first contacts between the Pittsburgh and Philadelphia areas) Brownie, W2PAU, appeared on 144 Mc. with a horizontal job. It's a 5-element affair, mounted on the same boom as his vertical, with a relay for switching back and forth. Numerous checks have been made, but, like your conductor, who has been running flop-over checks for weeks, Brownie has been able to draw no very definite conclusions as yet.

1215-Mc. Record Extended — WØCJS Awarded 50-Mc. WAS

Late reports: Not content with the 17-mile work reported earlier in this section, W1OFG and W1MZC extended the record to 37 miles on July 30th. W1OFG/1 operated on a rooftop in Newton Center, Mass., while W1MZC/1 used the same hill as before in Paxton, Mass.

M. R. Junkins, WØCJS, worked his 48th state on 50 Mc. in June. By submitting the necessary 48 confirmations on August 3rd, he became the proud holder of 50-Mc. WAS Award Number 3.

Silent Keys

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

W2QCN, Raymond J. Kohl, Fairport, N. Y.

W3GGQ, Edward L. Hope, sr., Pittsburgh, Penna.

W4JRS, ex-W3GTF, Frank T. Henson, Elliston, Va.

Ex-W5ID, Ross Roberts, Canton, Miss.

W5IRB, Bess M. Dotson, Fayetteville, Ark.

W6CZG, Myrle L. Davis, Mountain View, Calif.

W7JGW, George W. Bowen, Tempe, Ariz.

W7RRX, Earl E. Pillow, Tempe, Ariz.

W9AB, Harry B. Miller, Mishawaka, Ind.

WØGCF, Emery J. Nagy, Denver, Colo.

WØNBV, Harold A. Hodge, Lemay, Mo.

WØVJH, Ashley J. Ingerson, Browns Valley, Minn.

G3BKU, Colin Bridgewater, London

VE3ZM, William McCormick Gammon, Guelph, Ont.

VE5SC, Lorne Moffatt, Prince Albert, Sask.

ARRL Conventions

A.R.R.L. MARITIME DIVISION CONVENTION

Halifax, Nova Scotia, September 3rd–5th

Coincidentally with the celebration of the 200th anniversary of the founding of Halifax, hams and their ladies will descend on Halifax over Labor Day week end for a gala affair of their own. Sponsored by the Halifax Amateur Radio Club, the ARRL Maritime Division Convention will be held at the Nova Scotian Hotel, with registration at 2 P.M. starting the series of interesting events making up the three-day program.

Throughout the week end there will be welcoming addresses, contests galore, open house at Halifax ham shacks, technical talks, emergency communications organizational meetings, picnicking, musical entertainment, and all of the things that add up to a bang-up convention.

Plan now to come to Halifax for the convention, meet old friends and make new ones, and visit the oldest city in Canada during its bicentenary celebration. The OMs will have to fork over $3.50 apiece for the whole works; YLs and XYLs pay $2.50 each. For advance registration or other information, write F. A. Webb, VE1DB, P. O. Box 663, Halifax, N. S., Canada.

A.R.R.L. HUDSON DIVISION CONVENTION

New York City, October 7th–9th

The famous Palisades of the Hudson River will reverberate with more than football cheers the week end of October 7th–9th when 12 metropolitan radio clubs act as hosts to the ARRL Division Convention to be held at the gigantic 9th Regimental Armory at 125 West 14th St. in New York City.

One of the chief attractions of the convention will be the Greater New York Amateur Radio Show, with exhibits and displays to show every side of amateur radio. In addition, the Army and the Navy promise a comprehensive display on the newest in radar, radio and electronics. The traffic men, DX enthusiasts and the v.h.f. boys will each have their own gathering under the leadership of a well-known amateur in each particular field. A special meeting for the old timers will be held under the auspices of the Quarter Century Wireless Club. Amateur teletype will be demonstrated for the first time in actual operation. Traffic will be handled from the convention floor while TV sets alongside the transmitters will probably be showing the World Series. The new ARRL TVI motion picture will be run several times each day so that everyone will have an opportunity to see it. Technical talks, lectures and demonstrations on such subjects as antenna theory, mobile operation, single sideband, teletype operation, transmitter keying and elimination of TVI will be well worth hearing. A code-copying contest is scheduled for Sunday afternoon. And there will be several special talks and seminars under the guidance of competent authorities for those interested n getting started in amateur radio. The big banquet will be held Saturday evening, followed by a party with dancing, singing and fun for all.

What about gals? Sure, an elaborate and special program has been planned for their entertainment. It will include a fashion show, a steamboat trip around Manhattan Island, a visit to the Statue of Liberty, a trip through Radio City, a visit to Chinatown and many other sights.

The registration fee is $1.75, not including the Saturday night dinner and after-banquet party. But if before October 1st you'll pop a letter and remittance to the New York Amateur Radio Convention, Inc., P. O. Box 1198, Church Street Station, New York 7, N. Y., the tariff per registration will be only $1.25. Write for yours now.

A.R.R.L. MIDWEST DIVISION CONVENTION

Omaha, Nebraska, October 8th and 9th

Get out your calendars, OMs, and mark a big red circle around October 8th and 9th, the week end of the biggest-ever Midwest Division Convention, with headquarters at the Fontanelle Hotel, Omaha. Then, get plenty of rest so you'll be in tiptop shape for the two full days of activities, with never a dull moment. The convention committee, made up of members from most of the division's clubs, finds it necessary to borrow Hollywood adjectives to give any adequate idea of the convention programs. It promises to be a convention you can't afford to miss. There'll be something interesting for the OMs, XYLs and SWLs going on every minute of the two jam-packed days. Don't miss out on technical discussions of practically every phase of amateur radio, bull sessions, two-meter transmitter hunt, exhibits of the latest in ham gear, movies, buffet supper, open forum, "belly-bustin'" banquet, Sunday morning breakfast clubs, and entertainment galore. When the clock strikes 12, at darkest midnight, an initiation into the Royal Order of Wouff-Hong will be staged.

Hotel reservations are already going fast so send in your registration at $6.00 per person immediately to the Midwest Division Convention, ARRL, Box 233, Omaha, Nebraska. See you in Omaha!

A.R.R.L. NEW HAMPSHIRE STATE CONVENTION

Manchester, N. H., September 17th

If you're looking for an opportunity to take in another of New Hampshire's famous ham gatherings, set aside Saturday, September 17th, as the magic date. For that's when the Manchester Radio Club will sponsor this year's ARRL New Hampshire State Convention at the Masonic Temple, 1505 Elm St., Manchester.

In addition to talks by top-notch speakers on a variety of amateur radio subjects, the program includes ARRL organizational meetings, novel contests, special gathering of the YLs, old timers' round-up — plus the banquet, with the caterer of 1947 fame.

Ducats are $4.50 each, including the big feed. If you want to pass up the banquet, the cost is $2.50. For reservations, write Olga Apostolos, W1QJY, 75 Medford St., Manchester, N. H. Meet you at Manchester.

HAMFEST CALENDAR

CALIFORNIA — September 10th and 11th, at Mt. Shasta, Siskiyou County. Third Annual Hamfest staged by Mt. Shasta Amateur Radio Club. Especially designed to bring Northern California and Southern Oregon hams together for good fellowship. Registration fee of $3.75 includes Saturday dance and big hot lunch on Sunday. Plenty of games and entertainment for OMs, XYLs, YLs, and Jr. Ops. Make advance reservations through Secy.-Treas. Paul H. Chitwood, W6EWG, P.O. Box 805, Mt. Shasta, Calif.

OHIO — September 11th, at Ash Grove, on Winton Road, a few miles north of Cincinnati. Annual Stag Hamfest auspices of the Greater Cincinnati Amateur Radio Assn. Last year's attendance record of 500 is expected to be bettered. Registration is $1.50 per person, which includes two meals. Be sure to attend!

WASHINGTON — October 2nd, at Normana Hall, Everett. Sponsored by Cascade Radio Club. Registration 11 A.M. to 2 P.M. Fee of $3.50 includes banquet and full program. For reservations or particulars contact Secy. R. E. Womack, W7EOR, 1701 Walnut, Everett, Wash.

Correspondence From Members-

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

AMATEUR ORGANIZATIONS

401 Jackson St., Rochester, Pa.

Editor, *QST:*

. . . May I add my regrets to those expressed in your columns that there have been divisions among amateurs which have led to the setting up of rival organizations. It seems to me so unnecessary and tends to transfer the conduct of amateur affairs from the guidance of the democratic and voluntary ARRL to the bureaucratic and compulsory FCC. Of course, the ARRL is imperfect — but it has done a grand job, and I don't expect greater perfection from rival groups or from the Government. This is not to discredit the FCC in any way; it is essential and does its work well, too. But in the end, it enforces the rules; and if we don't like those rules, it will be far harder to argue with the FCC than to elect new directors to the ARRL. . . .

— *Rev. Don H. Gross, W3QVC*

R.F.D. 10, N. Kansas City, Mo.

Editor, *QST:*

A recent bulletin published by an amateur organization brings out a point in regard to the $4.00 membership dues of ARRL. For $4.00 you get, in addition to ARRL membership, twelve magazines of about 125 or more pages each. On the other hand we read in the bulletin of this other organization that if the members didn't contribute $5.00 and 1949 dues immediately that this organization would be forced to disband. You pay $5.00 and dues with no publication other than a few short bulletins. My dollar goes farther with ARRL.

— *Ben M. Wendt, WØICD*

P. O. Box 82, Lockland, Ohio

Editor, *QST:*

. . . Signed up with the SARA as a charter member; but since they and the NARC are raising so much "Ned," am dropping out; am a firm believer in one strong, central organization to represent all hams; and while I may not agree with everything done at Hq. it may be because I am not as well informed as I would like to be and thus cannot form a fair opinion of what you fellows are attempting to do for us. And it can hardly be otherwise for you certainly cannot inform each member on every little move you make there; nor would it be good policy; for it just might interfere with what you are attempting to do; by letting the public know what is being "worked up." . . .

— *Dana E. Cartwright, sr., W8UPB*

5 Cooper Square, New York, N. Y.

Editor, *QST:*

This is a message of vital importance to all radio amateurs, and we would appreciate your printing it prominently in *QST*.

An invitation is extended to all amateurs to join a new organization, S.P.A.R.R.O.W., that has been formed to protect the rights of amateurs throughout the world. Our platform is simple but aggressive, and consists of the following popular planks:

1) For all c.w. men, we pledge ourselves to fight for exclusive c.w. on all bands, with code test of 10 words per hour.

2) For all 'phone men, we pledge ourselves to fight for exclusive 'phone on all bands, with no code test of any kind.

3) For all amateurs, we pledge ourselves to fight for more exclusive amateur frequencies throughout the spectrum, with no need to show public interest, convenience and necessity.

If anyone can think of anything else he wants, we will be glad to add it to our program and pledge ourselves to fight for it.

— *John E. R. Kapushnik, Treasurer, Society for the Protection of Amateur Radio Rights Of the World*

GIL CARTOONS

1900 South Menlo, Sioux Falls, S. Dak.

Editor, *QST:*

Can't recall having seen any bouquets thrown at Gil for those extra FB cartoons he turns out month after month, so I'll start it. The covers on June and July *QST* beat them all. If they don't pat you on the back around Hartford, Gil, come on out here, and I'll do it.

— *J. W. Sikorski, WØRRN*

INFO ON QSLS

5242 Hyde Park Blvd., Chicago, Ill.

Editor, *QST:*

I have just finished digging through my QSL file, trying to scrape up enough cards for a 7-Mc. WAS, and discovered that many of the cards give no indication whatsoever of frequency, not even the band or type of emission. I also discovered some with no dates and/or no time. There was even one card from a W1 with nothing but the call.

I have always thought of a QSL as a means of confirming a contact, but some of the hams sure have a funny way of doing it.

— *P. J. Schram, W9UBP*

A.R.R.L. ANTENNA BOOK

Lascelles Ave., Beaumont, South Australia

Editor, *QST:*

The *ARRL Antenna Book* hit Adelaide last week like a 100-m.p.h. gale. Old antennas are coming down left and right! Please convey our heartiest thanks to George Grammer, By Goodman and Ed Tilton for their splendid contributions, which are much appreciated. 73.

— *F. A. Haas, VK5FH*

INSURANCE

607 Shelby Street, Detroit, Mich.

Editor, *QST:*

Until very recently an amateur's transmitting antenna and tower was covered against windstorm when the amateur had the extended coverage endorsement attached to his *dwelling* fire policy (extended coverage includes windstorm, hail, explosion, riot, riot attending a strike, civil commotion, aircraft, vehicles and smoke).

Now, however, because of a recent ruling of the National Board of Fire Underwriters, the antenna and tower is considered part of the *household contents* and is only covered against windstorm loss in the event that the amateur has the extended coverage endorsement attached to his *household contents* policy.

Since it is questionable if one in five hundred amateurs has extended coverage on his contents at the present time, I thought it advisable to bring this important matter to

(Continued on page 114)

Hints and Kinks For the Experimenter

A LOW-POWER 110/220-VOLT A.C.-D.C. TRANSMITTER FOR 'PHONE AND C.W.

THE transmitter described here was built for use in British Honduras, where 110- and 220-volt d.c. mains are predominant. It is thought that others who are faced with similar problems will find this rig to their liking. It may be used on either a.c. or d.c. mains, 110 or 220 volts.

The diagram shows the filament connections required for 110-volt operation. If 220-volt operation is desired, the filaments must be wired in series. A 35Z5 rectifier is used in the standard a.c.-d.c. supply circuit, with a small resistor being used in place of an iron-core filter choke. If available, the choke would probably serve the purpose to better advantage.

The oscillator is the conventional regenerative circuit, with its plate circuit tuned to the second harmonic of the crystal frequency. The final amplifier required no neutralization in the layout used.

The audio end of the transmitter utilizes a single-button carbon microphone, transformer-coupled to the grid of a single 50L6. The Heising system is used to couple the modulator tube to the r.f. circuit, with the primary of an ordinary receiver output transformer being used as the choke L_4. Microphone current is obtained from the cathode of the 50L6 modulator tube.

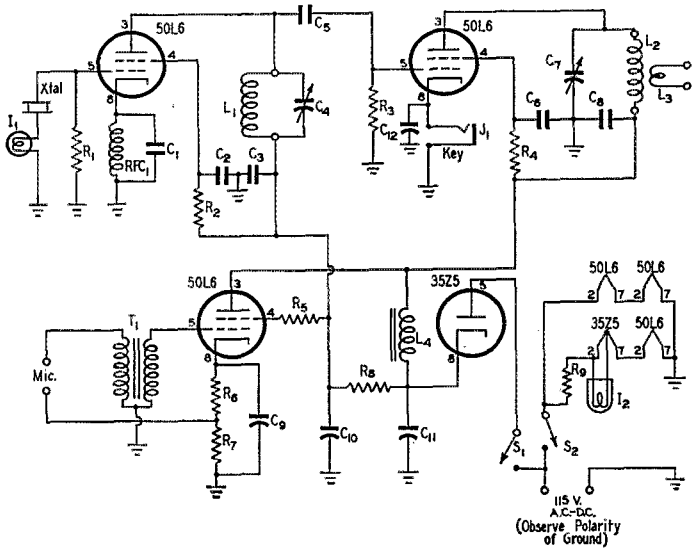


Fig. 1 — Circuit diagram of a QRP a.c.-d.c. transmitter that is usable on either 110- or 220-volt lines.

C_1 — 0.0047-μfd. mica.
C_2, C_3, C_5, C_6, C_8, C_{12} — 0.0022-μfd. mica.
C_4 — 50-μμfd. variable.
C_7 — 100-μμfd. variable.
C_9 — 50-μfd. 50-volt electrolytic.
C_{10}, C_{11} — 8-μfd. 450-volt electrolytic.
R_1, R_3 — 47,000 ohms, ½ watt.
R_2, R_4 — 15,000 ohms, 1 watt.
R_5 — 1500 ohms, 1 watt.
R_6, R_7 — 100 ohms, 1 watt.
R_8 — 400 ohms, 2 watts.
R_9 — 250 ohms, 50 watts, with slider.
L_1 — 14 Mc. — 11 t. No. 18 s.c.c. close-wound on 1-inch d. form.
— 28 Mc. — 7 turns No. 12 enam., ¾-inch inside diam., with prongs from tube base soldered to ends for plugging into coil socket.
L_2 — 14 Mc. — 9½ turns No. 18 d.c.c., 1½-inch diam.
— 28 Mc. — 4½ turns No. 12 enam., 1½-inch diam.
L_3 — 14 Mc. — 2 turns No. 18 insulated wrapped around center of L_2.
— 28 Mc. — 1 turn No. 18 insulated, wrapped around L_2.
L_4 — Modulation choke (see text).
I_1, I_2 — 6.3 volt, brown bead.
RFC_1 — 2.5-mh. r.f. choke.
S_1, S_2 — S.p.s.t. toggle switch.
T_1 — Microphone transformer. Single-button mic. to grid.

Before placing the transmitter in operation, the filament dropping resistor R_9 must be adjusted to provide the correct voltage for the 35Z5-50L6 branch of the filament circuits. It should be adjusted so that a drop of about 30 volts is provided (assuming 115-volt line).

To tune the transmitter, insert the oscillator coil, and tune it to resonance with the oscillator plate condenser. A flashlight bulb and a loop may be used as an indicator in the absence of a plate milliammeter. Tune for maximum brilliance of the lamp, and then back off the setting of the condenser a little. This will permit the crystal to start a bit more readily. Next, insert the amplifier plate coil, again tuning for resonance. Tune for maximum brilliance, and then turn the plate supply off. Connect a 150-ma. pilot lamp in series with one of the antenna feeders, apply plate voltage, and readjust the final tank condenser until the bulb glows brightest. The lamp may then be shorted out of the circuit, and you are ready for a QSO.

In operation this little flea-power rig has been used with gratifying success, with many W stations having been worked on 10-meter 'phone, and the local Central American stations on the lower frequency bands. — *Armando Perez, VP1AP*

BROADCAST-BAND COVERAGE WITH THE BC-348-Q

FIG. 2 shows the circuit of a simple one-tube converter that is useful in adding coverage of the standard broadcast band to the BC-348 or any other receiver that tunes to approximately

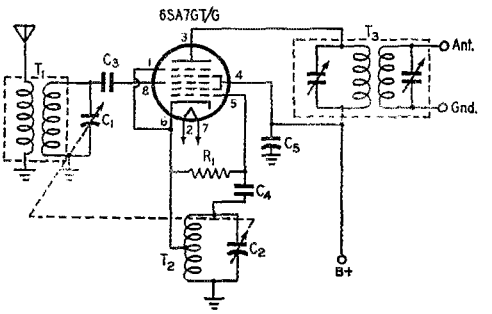


Fig. 2 — Diagram of a simple converter used to provide broadcast-band coverage with the BC-348 and similar receivers.
C1, C2 — Ganged tuning condenser, 365 μμfd. with cut-plate section.
C3, C4 — 100-μμfd mica.
C5 — 0.1-μfd. 200-volt paper.
R1 — 20,000 ohms, ½ watt.
T1 — B.c. antenna coil (Meissner 14-2436).
T2 — Tapped oscillator coil (Meissner 14-1033).
T3 — 456-kc. i.f. transformer (Meissner 16-5712).

450 to 500 kc. Standard parts are used throughout, and construction layout is not critical. The power-supply requirements are small. Almost any source of 150 to 200 volts d.c. at a few milliamperes and 6.3 volts a.c. at 0.3 amp. will suffice. — *Victor Alfonsi, W2VSU*

CURE FOR "TALK-BACK" IN THE BC-610

IN most instances where serious "chatter" or "talk-back" is experienced when the BC-610 is used on 'phone, the trouble is caused by the overload relay, *RY-5*, and not by the modulation transformer, as is commonly supposed. The cure is effected by connecting a large capacity, 30 to 50 μfd., across the relay. This may be done simply by connecting the condenser, which should be rated at 150 volts or more, from the center tap of *T-6* to ground. — *J. K. Hall, jr., W4KCT*

LOCK-ON FOR THE T-17B HAND MICROPHONE

I HAVE noticed on several occasions when in contact with a station using a T-17B microphone that the audio is frequently interrupted. This is caused by the fact that it takes a lot of pressure to hold the switch button closed, and after a few moments the hand gets cramped. A simple solution to the problem requires only that a ¾-inch piece of No. 18 wire be soldered under the edge of the metal mounting washer that is found beneath the bakelite switch button. After reassembling, it will be possible to lock the switch in the "on" position with a slight twist of the button. — *R. A. Cohagen, W8NBM*

SOME USES FOR THE SCR-274 DYNAMOTORS

IF you have a need for a small high-speed 115-volt a.c. motor, don't overlook the small dynamotors that come with the SCR-274-N receivers. With a minimum of effort they can be converted to do a good job.

Remove the socket and the wires from the base, and take off the end covers. Remove the castings holding the brushes, and replace them just opposite to the way they were removed. The low-voltage brushes and the small condenser that is across the contacts may be discarded.

Connect the wires from the field winding directly to the high-voltage brush holders, and bring out one lead from each brush to serve as the 115-volt a.c. input leads. Make sure that the high-voltage end of the armature is the one contacted by the brushes, otherwise a fuse will be blown! Drill and tap the end of the armature so that a small length of threaded rod can be inserted for a power take-off. A hole with a rubber grommet inserted in the other end of the case will serve to bring out the 115-volt leads. A small toggle switch can also be installed in the end cover. Be sure to remove the small grounding straps from the brushes to the frame.

When reassembled, the motor has its original appearance except for the power take-off rod extending out of one end, and the line cord out of the other. The motor will easily handle a six-inch fan blade. — *Elmo V. Boswell, WØPXW*

—•••—

IF you have no need for the small dynamotor that came with your SCR-274-N receiver, the base and frame inside of which the "works" are assembled can be utilized as a light-weight wall bearing for holding the rotary mast of your beam antenna to the side of the house. Remove the end covers, the castings, and the armature. Next chop out the field winding by forcing a cold chisel between it and the inside of the case. A few good whacks with a hammer should break the coil loose from its moorings. Remove all of the screws that extend through the side of the case into the "sleeve" formed by the removal process, and you are all set. The "bearing" will pass the pipe supports used in most beam installations, and may be packed with rags and grease to take out any undesired play between the pipe and the sleeve.—*W1FTX*

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Asst. Comm. Mgr., C.W.
ALBERT HAYES, W1IIN, Natl. Emerg. Coördinator

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

Fall Beckons. After a summer with heat and humidity at record heights, fall will indeed be welcome. We hope for cool, crisp, QRN-free days with signals working out on all bands of amateur interest. This is not to say it's been a bad summer. Not at all. Scores of amateurs have handled KLPO-W2OXE/MM traffic, DX has been better than in some years, v.h.f. records required daily revision, and mobile installations paid dividends in communication results as never before. But for all this it has been unseasonably warm for amateurs with facilities in attics and cramped quarters. Fall with its new DX possibilities, the invitation of different League appointments and awards, and increased traffic net activity on 3.5–4 and 7–7.3 Mc. cannot fail to be welcome.

Does Your Emergency Rig Meet These Requirements? This fall many ECs are planning to run their own local September tests and have organizations overhauled *before* the Simulated Emergency Test to come in October. Accent in local tests is increasingly on *mobile* amateur equipments. *Zero Beat* (Hampden County Radio Club) suggests that right now is the time to examine your emergency equipment to see if it meets these points. (1) Is it safe? (2) Is it in working order *now*? (3) Is it compact, yet sturdy and portable? (4) Can you get it on with someone else's power, antenna, etc.? (5) Can someone else operate it without a special education?

Department Heading. We start the new season by welcoming some new titles to our masthead, especially those of Assistant Communications Manager, C.W. and Assistant Communications Manager, 'Phone. These establish us in the manner authorized by the Board of Directors. The function and new recognition accorded through the ACM-'Phone post was discussed in this section last month and we should be in a position to give you the name of the new man very soon. Exactly parallel functions in reviewing and promoting 'phone and c.w. activity have been assigned the new desks. To avoid confusion in your mind we have done away with all such broad titles as Communications Assistant, and substituted words closer to the major duties performed. Ideas, questions, and suggestions on 'phone operating activities, procedures and objectives should be sent in from PAMs, OPSs, and members with a preference for voice operating to be handled by the new ACM-'Phone. The ACM-C.W. will be equally receptive to letters and ideas from RMs, ORSs, etc. The silhouetted operators left and right of our heading can now be identified. They are the profiles of our ACM-C.W. and 'Phone respectively, busy at their home stations!

New Traffic-Count Definitions Adopted. Effective September 1st, the traffic-count definitions are modified as explained in "Traffic Topics" in this issue, and in accordance with a poll of all CD appointees. Of the votes received, 86.1% were in favor of the modified definitions which now read: (1) *originated*, (2) *received*, (3) *relayed*, and (4) *delivered*. Response was received from every class of appointee. Voice-operating appointees and emergency coördinators favored the change as much as those specializing in daily traffic work, the lowest group percentage registered being the 83.3% in favor (from SCMs).

Why Not More BK-IN on 40? There is surprisingly little break-in operation on 7-Mc. c.w., yet it makes possible faster, more efficient, and more enjoyable operation. Break-in is simple to arrange, too, and just as useful on this as on other bands. *It is not necessary that one have completely perfect facilities to take advantage of break-in when the stations you work are break-in equipped.* When you hear any operator advertising with his calls that he *has* "break-in," don't sit idly by, minute after minute of his call! After the first invitation to *break* is given and at each subsequent pause in any call, turn on your transmitter and tap your key—and you can start the QSO immediately!

W4IRL writes, "When I am answering a CQ, I send BK after each two calls—sometimes with results, too often not. It turns out that an operator was hearing me all the time and waited until I signed. What a waste of time and kilocycles! To BK-IN he need only turn on his transmitter and tap his key."

QRV? Drop a line to the SCM about the appointment you're qualified to hold. Give the fall activities a whirl. Increase your skills. Try your hand in the Frequency Measuring Test, and the Fall V.H.F. Contest, and don't forget the CP Qualifying Runs. These events cover five different September dates. See the ARRL Activities Calendar and announcements in this issue.

—*F.E.H.*

HIGH CLAIMED SCORES— 1949 FIELD DAY

Listed below are high claimed scores reported for the Thirteenth ARRL Field Day, June 18th–19th. These are subject to checking and grouping according to the number of transmitters in simultaneous use at each station. Complete FD results will be published in a later issue.

Class 1

(Listings show club name, or number of operators if a nonclub entry, call used in FD, claimed score, and number of simultaneously-operated transmitters.)

Mid-Cities Amateur Radio Club	W6GAL/6	18,778–10
Los Angeles Fire Dept. Amateur Radio Club	W6QV/6	15,714– 8
Frankford Radio Club	W3FRY/2	15,597– 9
(30 Operators)	W6UF/6	15,565– 8
North Suburban Radio Club	W9AP/9	13,095– 8
Mike and Key Club of Santa Monica	W6YB/6	12,015– 7
Northwest Amateur Radio Club	W9IT/9	11,925– 8
Tri-County Radio Assn.	W2OM/2	11,862– 7
Ohio Valley Amateur Radio Assn.	W4FU/4	11,007– 5
Inglewood Amateur Radio Club	W6MSO/6	10,206– 8
Helix Amateur Radio Club	W6MSG/6	10,086– 8
Oakland Radio Club	W6OT/6	9963–11
Monmouth County Amateur Radio Club	W2AF/2	9720– 8
Royal Order of Suds Club	W6CG/6	9693– 7
Jersey Shore Amateur Radio Assn.	W2GSA/2	9414– 6
Somerset Hills Radio Club	W2HXM/2	9369– 6
United Radio Amateur Club	W6ME/6	9248– 7
Soledad Amateur Radio Club	W6GER/6	9148– 8
Potomac Valley Radio Club	W4KFC/3	8928– 8
West Side Radio Club of Toronto	VE3JJ/3	8883– 8
Valley Radio Society	W6FET/6	8572– 5
Lakewood Amateur Radio Assn.	W2VDJ/2	8559– 6
Santa Clara County Amateur Radio Assn.	W6UW/6	8453– 5
Central Jersey Radio Club	W2AI/2	8253– 5
Concord Brasspounders	W1OC/1	7866– 6
Dayton Amateur Radio Assn.	W8TQ/8	7794– 3
Cleveland Brasspounders Assn.	W8BAW/8	7758– 4
K B T Radio Club	W2EWT/2	7749– 3
West Seattle Amateur Radio Club	W7GP/7	7708– 5
Sacramento Amateur Radio Club	W6JN/6	7389– 9
York Radio Club	W9CPW/9	7389– 4
Denver Radio Club	WØTW/Ø	7209– 4
Minneapolis Radio Club	WØFDS/Ø	7119– 6
Egyptian Radio Club	W9AIU/9	6933– 3
North Bay Amateur Radio Assn.	W6MLZ/6	6926–
Crescenta Valley Radio Club	W6RFR/6	6777– 5
Narragansett Assn. of Amateur Radio Operators	W1CJH/1	6777– 5
Citrus Belt Amateur Radio Club	W6GM/6	6750– 4
Wisconsin Valley Radio Assn.	W9RQM/9	6633– 2
Electric City Amateur Radio Club	W3SM/3	6534– 6
Delaware Valley Radio Assn.	W2ZQ/2	6363– 5
(12 Operators)	WØGM/Ø	6354– 3
San Mateo County Amateur Radio Club	W6YU/6	6345– 5
Hamilton Amateur Radio Club	VE3BNG/3	6270– 8
(25 Operators)	K9NR/9	6210– 7
Union County Amateur Radio Assn.	W2GIZ/2	6120– 7
Brasspounders and Foamblowers	W9EDK/9	6003– 4
Nassau Radio Club	W2BVL/2	5976– 5
Ridgewood Radio Club	W2ZT/2	5895– 5
(10 Operators)	W6NIK/6	5859– 5
Four Lakes Amateur Radio Club	W9SWQ/9	5796– 5
Beaver Valley Amateur Radio Assn.	W3GJY/3	5706– 4
Charleston Amateur Radio Club	W8COE/8	5595– 4
The Milwaukee Amateur Radio Club	W9LVR/9	5589– 2
Raritan Valley Radio Club	W2QW/2	5445– 3
Milwaukee Amateur Radio Emergency Corps	W9ESJ/9	5271– 4
Motor City Radio Club	W8MRM/8	5175– 2
St. Paul Radio Club	WØSMT/Ø	5166– 1
El-Ray Amateur Radio Club	W1OMI/1	5151– 7
The Nutley Amateur Radio Club	W2JV/2	5148– 4
Polecats Emergency Corps of the Hamfesters	W9DXU/9	5130– 4
Mars Amateur Radio Society	W3PGA/3	5076– 6
The Racine Megacycle Club	W9UDU/9	5013– 3

Class 2

(Listings show calls of operators at each station, call used, and score.)

W6EYH	W6EYH/6	6844
W1s HFO ORP	W1HFO/1	4819
W2s FBA JBQ	W2FBA/2	4725
W5s BAJ KSW	W5BAJ/5	4698
W6s GTM HQM	W6GTM/6	4030
W6BAM	W6BAM/6	3186
W6s VIC WIR	W6VIC/6	2525
W2s SGK SYG	W2SYG/2	2430
WØSWI	WØSWI/Ø	2430
W2WZQ	W2WZQ/2	2390
W6PJF	W6PJF/6	2369
VE2s BK CO	VE2CO/2	2254
W9s AEW SKM	W9AEW/9	2227
W3RC W4KMG	W3LTR/4	2160
WØAGL	WØAGL/Ø	2143

Class 3

W6YOJ/6	1390	W6CXZ/6	324
W6BRC/6	1147	W1BB/1	243
W6NSX/6	891	W4JYB/4	229
W6AM/6	850	W6UG/6	216
W2CVV/2	621	W6VVT/6	206
W6GKM/6	553	W6DAJ/6	189
W6ZVD/6	513	WØLHT/Ø	156
W6FTG/6	499	W6LSO/6	148
W6FDE/6	466	W6KEB/6	94
W6CAZ/6	445	W6EPX/6	67
W1FH/1	387	W9AA/9	54
W6AGA/6	364	W6VAM/6	27
W1BDI/1	351		

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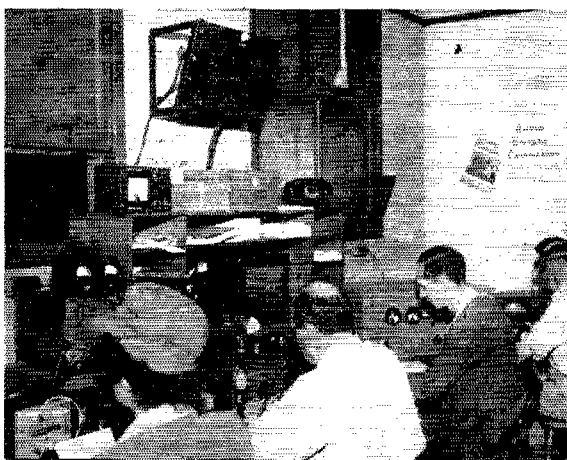
Here's a view of the operating position at WØRVG, the station of the Heart of America Radio Club, as permanently set up in the Kansas City, Mo., Red Cross Building, showing, *l. to r.*, Mildred Lewis, Red Cross teletypist, Emergency Coördinator WØBCD, SCM Ben Wendt, WØICD, and George Turner, WØNNU, who is in charge of the maintenance of the equipment. An arrangement of this nature, controlled and operated by the amateurs, and set up permanently in the Red Cross Headquarters, is something many clubs might emulate.



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NEW W1AW OPERATING SCHEDULE

(Effective Sept. 1, 1949)
(All Times Given Are Eastern Standard Time)

W1AW will return to an expanded operating schedule on September 1st, as detailed herein. Mimeographed master schedules showing complete W1AW operation in EST, CST, MST, PST or GCT will be made available to anyone upon request.

Operating-Visiting Hours:

Monday through Friday: 1130–0600 (following day).
Saturday: 1900–0230 (Sunday)
Sunday: 1600–2200

General Operation: Use the chart below for determining times during which W1AW engages in general operation on various frequencies, 'phone and c.w. Note that since the schedule is organized in EST, certain morning operating periods may fall in the evening of the previous day in Western time zones.

W1AW will not be open from 2200 September 4th to 1130 September 6th, in observance of the Labor Day holiday. 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. — 1887, 3555, 7215, 14,100, 28,060, 52,000, 146,000 kc.
'Phone — 1887, 3950, 14,280, 29,000, 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, Monday through Friday. Speeds are 9, 12, 18, 25 and 35 w.p.m. on Monday, Wednesday and Friday, and 15, 20, 25, 30 and 35 w.p.m. on Tuesday and Thursday. Approximately ten minutes of practice is given at each speed. Next certificate qualifying run from W1AW and WØTQD is scheduled for Sept. 19th; from W6OWP, Sept. 6th.

The station staff:

T. F. McMullen, W1QVF, "fm"
R. N. Eidel, W1RUP, "re"
R. E. Morrison, W1RXL, "lr"

BRIEF

W1AVY specializes in working maritime-mobile stations on 28 Mc. From October 1947 to May 1949 he worked a total of thirty-one /MM stations. Can anyone top this record?

FREQUENCY-MEASURING TEST, SEPTEMBER 16TH

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), Friday, September 16th. 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 3751, 7244 and 14,164 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, September 17th (9:30 P.M. PST, September 16th), W1AW will transmit a second series of signals for the Frequency-Measuring Test. Approximate frequencies used will be 3622, 7135 and 14,066 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.

QST To Report Results

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 GENERAL-CONTACT SCHEDULE

(Effective Sept. 1 1949)

W1AW welcomes calls from *any* amateur station. Starting September 1st, W1AW will listen for calls in accordance with the following time-frequency chart.

EST	*Sunday*	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
0015–0200 *	7215	.....	3555	7215	3555	7215	3555
0200–0300	.....	.....	←——3950- or 14,280-kc. 'phone ** (Tues. thru Sat.)——→				
0300–0400	.....	.....	←——3555-, 7215- or 14,100-kc. c.w. ** (Tues. thru Sat.)——→				
1130–1230	.....	←——29,000-kc. 'phone (Mon. thru Fri.)——→					.....
1230–1300	.....	←——28,060-kc. c.w. (Mon. thru Fri.)——→					.....
1500–1530	.....	.....	14,100	14,100	14,100	14,100	.....
1530–1600	.....	14,280	14,100	14,100	14,100	14,100	.....
1600–1700	.....	14,280	←——29,000-kc. 'phone (Tues. thru Fri.)——→				.....
1800–1900	14,100	3950	7215	14,280	7215	14,280	.....
2015–2100 *	14,100	146 Mc.	52 Mc	7215	14,100	7215	.....
2110–2130 *	3950	14,280	3950	14,280	3950	14,280	.....
2230–2330	.....	3950	1887	3950	1887	14,100	.....

* Starting time is approximate. General-contact period on stated frequency begins immediately following transmission of Official Bulletin which begins on the hour.

** Operation will be on one of frequencies stated, depending on propagation conditions, expediency and general activity.

CODE-PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from W1AW/WØTQD will be made on September 19th at 2130 EST. Identical texts will be sent simultaneously by automatic transmitters. Frequencies of transmission from W1AW will be 1887, 3555, 7215, 14,100, 28,060, 52,000 and 146,000 kc. WØTQD will transmit on 3534 kc. The next qualifying run *from W6OWP* only will be transmitted on September 6th at 2100 PST on 3590 and 7248 kc. These W6OWP-only runs will have different text from the runs sent by W1AW and WØTQD. For additional qualifying run dates, see the ARRL Activities Calendar elsewhere in these pages.

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, 15 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, Monday through Friday, 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 July *QST*
Sept. 5th:	*Narrow-Band Pulse Transmission*, p. 11
Sept. 6th:	Qualifying Run, 2100 PST, from W6OWP only
Sept. 8th:	*A 10-Meter Handie-Talkie*, p. 17
Sept. 14th:	*An Inexpensive VFO Transmitter*, p. 20
Sept. 16th:	*It's a Dog-4's Life!*, p. 34
Sept. 19th:	Qualifying Run, 2130 EST, W1AW/WØTQD
Sept. 20th:	*A Variable-Frequency Antenna*, p. 41
Sept. 22nd:	*On the Air with Single Sideband*, p. 61
Sept. 28th:	*A Fixed-Tuned Plug-In Converter*, p. 62
Sept. 30th:	*A Practical Operating Desk*, p. 66

COUNTRIES-LIST CHANGES

Since the adoption of the ARRL Postwar Countries List, the official standard used in connection with the annual DX Competition and the DX Century Club, several changes have been reported in this department. See page 40 of March, 1949, *QST*, for the latest published list. Effective April 1, 1949, Newfoundland and Labrador, VO, have been deleted from the Countries List, since on that date they became a part of Canada. All confirmations of VO contacts prior to April 1st will be credited for DXCC, but confirmations of contacts after April 1st will be credited as Canada. Make this change on your list and watch *QST* for further changes and additions.

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In response to many inquiries concerning LU1ZA, the Argentine station operating from the South Orkney Islands, we regret to announce that DXCC credit cannot be claimed on the basis of contacts with this station. We have been informed by the authorities whom we consult on such matters that the South Orkneys are officially a dependency of the Crown Colony of the Falkland Islands, and as such are under the direct jurisdiction of the British Commonwealth. Under the circumstances, the crediting of this station toward DXCC would be contrary to the provisions of DXCC Rule 7.

Y.L.R.L. DOINGS

Newly-elected officers of the Young Ladies' Radio League, international organization of licensed women operators, for the 1949–1950 term are: president, Helen Morrison, W3OLY; vice-president, Anabel Gifford, W3NNS. Also appointed for the same term are: secretary-treasurer, Marion Kurtzner, W3NHI; editor of *Harmonics*, Barbara Houston, W3OQF; publicity chairman, Louisa DeSoto, W2OOH.

District chairmen for the term are: 1st District, Eleanor Wilson, W1QON; 2nd, Lillian Ruocco, W2PMA; 3rd, Mae Burke, W3CUL; 4th, Annette Thompson, W4LKM; 5th, Anne Maring, W5OTU; 6th, Maxine Willis, W6UHA; 7th, Miriam Brown, W7JFB; 8th, Dorothy Willett, W8UDA; 9th, Helen Thompson, W9JPT; 10th, Alice-May Stewart, WØGOJ; VE, Mary Snell, VE1ZM; G, Margaret Mills, G3ACC.

YLRL extends a cordial invitation to all licensed YLs wherever they may be, in this country or any other, to become members. For further information about the club write to any of the above-named officers.

And don't forget, YLRL is offering to OMs and YLs alike the special WAS/YL certificate for anyone who can confirm contact with a YL station in each of the 48 states. Those interested in seeking the award (of interest to all) will want a copy of the YLRL Directory, listing all members of YLRL, plus accounts of their interesting activities. Copies may be obtained for $1 from Secretary-Treasurer, W3NHI, 823 Fairview Rd., Swarthmore, Pa.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH.....222	W8HGW....208	W6SAI.....199
W6VFR.....218	W3BES.....207	W3GAU....199
G2PL.....210	W2BXA.....204	W2AQW....198
	W6EBG.....200	

RADIOTELEPHONE

W1FH.....179	W4CYU.....154	G2PL.....148
W6DI.....163	W8HGW....153	W2BXA....148
XE1AC.....157	VQ4ERR....153	W2AFQ....147
	W1JCX.....150	

From June 15 to July 15, 1949, DXCC certificates and endorsements based on postwar contacts with 100 or more countries have been issued to the amateurs listed below:

NEW MEMBERS

W1HX.....150	G3AH.....105	W7HIA.....101
KH6BA.....114	W2AGO.....104	W3LPF.....101
ON4AZ.....112	PY1AHL....103	OK1HI.....100
W1AWX....111	W5EGK.....103	PAØBK.....100
KP4CC.....110	W2AW.....102	PAØALO....100
W6YMD....108	W2UVE.....101	W6MI.....100
W2AUH....105	W4DIA.....101	VE3AAZ....100

RADIOTELEPHONE

W3RIS.....115	W9TJ.....103	W8ALC....100
W6IKQ.....108	VE7ZM.....101	W7PEY....100
W2AEB.....105	W8ZOK.....101	W2OR.....100

ENDORSEMENTS

W1FH.....222	W6ZCY.....170	W9FJB.....133
G2PL.....210	VK2DI.....165	W2TXB....131
W6EBG.....200	WØDAE.....164	W9PSR.....131
W2HHF....193	VE7HC.....162	W2JVU.....131
W6GRL.....193	W3KQF.....162	OK1VW....130
W6SAI.....191	W6RM.....160	W1BDS....126
W3KT.....190	W6SRU.....156	W4VE.....122
W6MEK....184	W6ANN.....152	W8ZMC....121
W4AIT.....181	W4FVR.....150	W6YZU....120
W3DPA.....181	W6UCX.....145	OK1AW....120
W9KOK....180	W6EAK.....140	W3ALX....116
W2COK.....180	HB9J.....140	W8GLK....112
W2DS.....180	W5BGP 136	G2BQC....111
W6GAL.....180	W3LNE.....134	G2HNO....110
LU6DJX....173	W1AB.....134	

RADIOTELEPHONE

W6DI.....163	W4EWY.....134	W1ADM ...124
VQ4ERR....153	W1LMB.....132	W6MBD ...120
W2APU.....141	W8KML.....130	W9RNX....110
	W5BGP.....130	

TRAFFIC TOPICS

By the time you read this, the active traffic season will be getting started, and it promises to be the most active season since the war. Nets, both old and new, will be springing up in greater numbers than ever, and there will inevitably be some collisions. In order to avoid conflicts as much as possible, we intend this year to keep card files of all nets in existence, by name, by states and by frequencies.

When a traffic organization asks us to recommend a frequency for operation of their net, we pick one which, according to our records, is not in use by any other net within range at that time. If we do not have the data on your net, it is very possible that we will recommend the frequency your net is operating on.

To avoid this possibility, *register your net with ARRL!* Drop us a letter, postcard or hamgram with the following information: (1) name of net; (2) frequency; (3) time and days of operation; (4) call of the net manager; (5) net call; (6) approximate *direct* coverage; (7) approximate duration of net. We would like registration of *all* nets, both traffic and emergency. On the basis of the registrations, we hope to put out a mimeographed net directory in October and supplement or supersede it from time to time as required. Therefore, in addition to the original registration, keep us informed of changes in any of the above data.

The fact that you have registered the net with us means that we will not recommend to any other net that it use that frequency at that time. It does *not* give you the right to use that frequency at that time to the exclusion of all others! If someone is rag-chewing on the frequency your net is using, or comes on with a long CQ in the middle of your net, and refuses to move off after being asked by the NCS to do so, he is perfectly within his rights. The best thing to do is to ignore him, grin and bear the QRM, and think of the fine training you are getting trying to copy through it. Ordinarily, the QRM is unintentional and most casual rag-chewers will, when asked, cheerfully move off. On the other hand, those who claim they are in some net's hair *wherever* they go have got a point. In any case, bad names, nasty letters and invectives have never been known to improve the situation.

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All traffic-handlers are requested to take note that the names of message categories will undergo a partial change starting with all traffic handled in September. The basic count is the same (i.e., one point for each time a message is handled by radio and one point when delivered to an external addressee), but the names of the categories are being changed and rearranged for the sake of simplicity. Each of the following counts *one* point in your traffic total:

Originated: Every message *sent by radio* for the first time from your station. No change from the old system.

Received: Every message *received by radio* at your station. Note that this includes *all* messages received, whether received for relay or received for delivery.

Relayed: Every message *sent by radio* from your station that is *not originated* at your station. Your total of relay points would no longer include messages *received;* these would all be counted in the *received* column.

Delivered: Every message delivered to the addressee other than yourself, your station, or someone on the immediate premises. A message addressed to you or your station would simply be one *received*, since no delivery action is required.

BPL requirement: 500 or more total, or 50 or more *delivered* in one month.

CD appointees who voted in the recent poll were overwhelmingly in favor of these changes. As this is being written, the old categories are still being used, and will be used until September 1st. The change will not become apparent in *QST* until the December issue, which reports September traffic handled. New Form 1 reporting cards are available if you do not already have some.

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The ARRL National Traffic System is about to become a reality. If you are interested in taking part, read the article on the subject elsewhere in this issue, and drop us a line for complete mimeographed details on operation of the system. We are at present busily lining up prospects for leadership rôles, specifically managers of regional and area nets. It is mid-July as we write this, and there is still much to be done; but by the time you read this, operation should be about ready to commence. If you have not yet volunteered your services, do it now and get in on the ground floor.

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Some additional changes have been made in the special "QN" signals for net use. QNA and QNZ have already been changed, as noted in this column in March, 1949, *QST* (p. 62). We now announce additional changes as follows:

QNG . . . Take over as net control station.

QNJ . . . Can you copy me? (or . . .)

QNN . . . Who is net control station? Net control station is . . .

QNP . . . Unable to copy you (or . . .).

Most of these changes have been made simply to conform to general usage; others to discard unused signals and substitute useful meanings for them. Note that it is never necessary to use a question mark after a QN signal. The way it is used, and by whom, will always indicate whether a question is intended.

These changes are effective immediately. Users of QN signals are urged to make the necessary alterations on their lists.

BRIEF

Eunice, W1MPP, was the first-prize winner of the QLF contest at the Portland (Me.) Amateur Wireless Association hamfest on June 25th. This YL beat some of New England's best OM traffickers at their own game, including W1NGV, who placed second, and W1s QEE and LRG who were the runners-up.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for June traffic:

Call	*Orig.*	*Del.*	*Rel.*	*Extra Del. Credit*	*Total*
W6CE	22	43	1150	29	1244
W7CZY	63	80	837	38	1018
W4PL	17	50	780	44	891
K5NRJ	142	49	576	17	784
W5GZU	11	23	668	22	724
W9EBX	10	8	696	8	722
W7CKT	14	3	570	3	590
W9QIL	55	129	217	114	515
W1IIN	55	53	360	46	514

The following made the BPL for deliveries:

W6FDR 204	W8RJC 122	W8TRN 104
W6DDE 180	W7KCU 120	W7ZU 103
W5FOM 122	W8NOH 110	W8GZ 102

A message total of 500 or more or 100 "deliveries plus extra delivery credits" will put *you* in line for a place in the BPL. The Brass Pounders League is open to all operators who qualify for this monthly listing.

BPL HONOR ROLL

Points for BPL Honor Roll are accumulated at the rate of four points for every BPL appearance plus one point for every 100 points in your *BPL* traffic total. The Honor Roll listing below gives the point totals and shows only the *high ten* traffic-handlers for 1949 and postwar:

1949		*Postwar*	
W4PL	118	W4PL	293
W7CZY	105	W7CKT	257
W6CE	103	W6REB	243
W7CKT	77	WØHMM	165
W9EBX	72	W7CZY	152
W5GZU	55	W6FDR	143
W6REB	54	W2TYU	128
W6DDE	50	W7FST	127
W9QIL	50	W6CE	119
W6FDR	45	WØTQD	105

FIELD DAY, MOUNTAIN STYLE!

For at least a score of amateurs the June 18th–19th Field Day week end was more than a preparedness test of emergency equipment. In fact, for several amateurs of the Petersburg area of West Virginia, the week end became a "wet" run under actual emergency conditions.

Late Friday night, June 17th, a flash flood struck the city of Petersburg with such swiftness that people barely had time to get out of their automobiles before being engulfed in the muddy water. Actually, the water rose so rapidly that at least a dozen persons are known to have drowned, with many others still unaccounted for.

When this disaster struck, communications and power lines serving the community were destroyed and miles of highways surrounding Petersburg were inundated, thereby isolating that city from the rest of the country.

W8EYV of Keyser, W. Va., was the first amateur to get on the air from Petersburg, followed shortly by W8YGL and W8ESQ of Clarksburg, the latter pair being members of the Mountaineer Amateur Radio Association who were setting up for Field Day operations when they heard of the Petersburg situation. W8DOU attempted to get into the area, but was turned back by severe road washouts.

With the coöperation of members of the Potomac-Rappahannock Valley Emergency Net and others who assisted in the handling of traffic, the group handled administrative messages and health and welfare inquiries for the Red Cross, reports to the U. S. Weather Bureau and the Weather Observer's office at Washington, special traffic for press and b.c. services, power company traffic, and special instructions such as requests for personnel and medical supplies from the U. S. Army, CAP, and city and state authorities.

On Sunday W8CJU and W8OXO were able to get into the area with a CAP SCR-299 and were fired up in short order. K4AF and K4USA, MARS stations, together with W8CLX/8, handled considerable quantities of traffic on MARS frequencies, relieving the frequencies of the other stations in the emergency area.

Operations continued throughout the 19th and 20th, and the weary operators made their way back to their homes to sleep off one of the biggest Field Days in history.

All stations who took part in the handling of traffic were unanimous in their praise of the many stations who assisted by remaining silent, as well as those who spent many hours keeping the frequencies clear of casual operations.

The following are among those known to have contributed to the success of this operation: W3s AHQ, AQV, BHK, CG, ECP, HZF, JCR, LTW; W4s IPC, JCV, JDS, KAV, LMB, LNX, PHL, ZV; W8s AMD, CJU, CLX, CUG, DOU, ESQ, EYV, HSC, HUK, ILK, LQR, OXO, PZT, WFR, WKP, YDN, YGL, YIE, ZQC, ZRV; W9s CCB and IJM; WØEEK, K4AF, K4USA, and W1AW.

AMATEURS HELP IN WOOD RIVER TORNADO

On May 21st at approximately 6:00 P.M. a tornado whipped into Wood River, Ill., which is about twenty miles northeast of St. Louis, Mo., and a short distance south of Alton, Ill.

EC W9DJG immediately telephoned W9TSS, assistant emergency coördinator, telling him of the blow and asking him to get in his car, which carries a ten-meter mobile, and meet him at the police station at Wood River.

W9DJG also called W9YZE, another member of the Mobile Emergency Corps, and they proceeded to Wood River and met at the police station. W9DJG happened to reach the police station first and immediately set out for the disaster area with an American Legion member who directed him through back streets and down alleys and at the same time pulled trees out of the way and, in general, helped him to get out to this area about three miles from the police station.

When W9DJG arrived at this spot he started dispatching ambulances to the different parts of town by ham radio, as it appeared that was to be the only method available for the time being.

At the same time W9TSS stayed at the Police Station and City Hall to direct activities from that end, the Mayor and Chief of the Fire Department being out in the disaster area which seemed to be centered at Central and Ferguson Streets, which W9DJG made his base of operations.

The tornado struck at about 6:00 P.M. and by 6:30 P.M. EC Jansen was in communication with the City Hall where W9TSS was operating and at the same time W9YZE was on a roving assignment checking all the spots where communications might be needed.

It wasn't very long until other members of the Emergency Corps began to come into the area. One of the first to show up was W9RVT, assistant ARRL coördinator, who drove in from Edwardsville, Ill., about ten or twelve miles away. His portable was set up at the Brushy Grove School, which was in another very badly damaged area, and which later was to be used as the Red Cross field station for the entire disaster area.

By this time a contact was made with W9RVF in Alton, who got in touch with the Red Cross Chapter headquarters which by now had set up a new base in the Haskell House at Alton. At this point W9ILH was later set up and operated from about 11:30 P.M. until operations ceased on Tuesday, May 24th, at 2:00 P.M.

While all of this was going on, more and more hams were coming into the area to take over the operating jobs as they were needed. A 20-meter net was set up between the Wood River police station and St. Louis, with WØNFA using his mobile to contact W9NDA in Alton, who made contact with St. Louis, getting press releases and traffic of that nature to the outside area.

At about midnight W9ILM was set up at the police station using a gasoline generator as a source of power supply, and W9TSS and W9YZE were released for roving assignments. From that time on W9ILM became the control station until the next day when telephone communication was again possible from the police station to the outside area. W9EKP then took over as control station at the Brushy Grove School where the transmitter of W9RVT had been set up and was now running from a gasoline generator.

All day Sunday welfare messages were handled out of the area by W9FIN, emergency coördinator for East St. Louis, who came in to help. When time came for him to leave, W9UWC, of Peoria, took over the job of funneling the traffic out by way of his portable rig. A lot of this traffic was handled by a relay into W9AIU, the station of the Egyptian Radio Club, which is located 15 miles south of Wood River, where it was fed into the Illinois net.

W9THB, the emergency coördinator for the Granite City, Illinois, area, as well as WØBQL, emergency coördinator for St. Louis, did a mighty fine job of helping out during the entire night of May 21st to May 22nd. A total of 2200 messages was handled during the three-day operation.

The following is the list of some of those who gave many hours of their time to the emergency: W9ILM, YZE, LWH, DJG, ILH, ICN, RVF, NDA, Alton; W9EKP, JPT, UZU, RVT, OJN, VZG, Edwardsville; W9FBE, NTL, TSS, Cottage Hills; W9DCY, THB, WQV, Granite City; W9WQZ, Venice; W9ZZP, Greenville; W9QNK, FIN, DZU, East St. Louis; W9UMC, Peoria; WØLLN, NNF, QDF, GEM, NFA, BQL, St. Louis.

— Harold H. Jansen, W9DJG, Emergency Coördinator

A.R.R.L. ACTIVITIES CALENDAR

Sept. 6th: CP Qualifying Run — W6OWP
Sept. 16th: Frequency-Measuring Test
Sept. 19th: CP Qualifying Run — W1AW, WØTQD
Sept. 24th–25th: V.H.F. Contest
Oct. 7th: CP Qualifying Run — W6OWP
Oct. 14th: CP Qualifying Run — W1AW, WØTQD
Oct. 15th–16th: Simulated-Emergency Test
Oct. 22nd–23rd: CD QSO Party
Nov. 2nd: CP Qualifying Run — W6OWP
Nov. 16th: CP Qualifying Run — W1AW, WØTQD
Nov. 19th–20th, 26th–27th: Sweepstakes Contest
Dec. 4th: CP Qualifying Run — W6OWP
Dec. 13th: CP Qualifying Run — W1AW, WØTQD

Station Activities

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

ATLANTIC DIVISION

EASTERN PENNSYLVANIA — SCM, Jerry Mathis, W3BES — The girls account for just about all the traffic this month. CUL has a new 50- and 144-Mc. rig and desires traffic outlets on these bands for the winter season. T.V. and the garden almost wiped out the traffic activity of EU. NNV now is OBS. He has worked 30 KP4s and received cards from all of them. The amateurs of the Philadelphia area, under the direction of EC ISE, again provided communication for the Red Cross on July 4th at the Fairmount Park celebration. From noon until 5 P.M., ISE, ITP, and FWH operated a fixed station in the Park Guard headquarters and 2HEH, BES, and LVF held down the other end of the circuit at the Red Cross HQ tent. EM was mobile and spotted locations for two more fixed stations which were operated from gas electric generators. At 5 P.M. FWH and ISE transferred to the Sedgley Park Guard house near the Schuylkill River, 2HEH and LVF set up beside the P.A. system, and EM and BES located beside the Red Cross stockade across the river under the Girard Ave. Bridge. The Red Cross workers and the police were continually bringing in casualties and lost children to the stockade and to the police station and people were calling the police on the land line to locate the lost. The radio set-up permitted a cross check to be made and also announcements to be broadcast over the P.A. system relative to missing persons. The hams were given a fine "plug" over the WCAU P.A. system and received the thanks of the Red Cross. Many of those receiving the service sought to pay for it but naturally pay was refused. A motorist was mired in when he parked and a call from EM's mobile to FWH brought help from the AAA. The cars of FWH and ISE were severely burned by falling fireworks. All fixed stations used HT-18 Hallicrafters with n.f.m. on 28.8 Mc. with an 8-foot wire for antenna and S9 signals were read at all positions. The noise of the fireworks dictates the use of earphones next year. Traffic: W3NHI 140, CUL 120, EU 2.

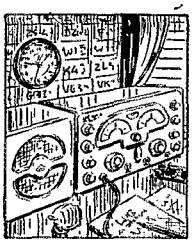
MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, Eppa W. Darne, W3BWT — The Washington Mobile Radio Club held a Net Operations Drill and demonstration on June 20th for members of the organized Naval Reserve. Local telephone calls were accepted from the Reserve personnel and put through via a 'phone patch at one of the fixed stations. NL assisted in preparations and KBE was Net Control Station. Approximately 36 stations in the area participated in this activity. The Baltimore Amateur Radio Communications Society's Field Day set-up was at Koppelman Lane and Old Harford Road. GBB was chairman of the Field Day Committee. Antenna installations were made the prior week end. At the June 6th meeting, Ed Crosby talked on "Optical Communication" and gave a demonstration of the "Snooperscope." The BARCS now publishes a swell bulletin called the *Modulator*. The Chesapeake Amateur Radio Club featured Herbert A. Cook, chief engineer of Airpax, Inc., at its June 7th meeting. His subject was "Vibrators and Vibrator Power Supplies." At the second June meeting NIJ talked on "Antenna Impedance Matching." The CARC will continue meetings all summer. Thirty members participated in Field Day activities. LFF, LMC, FLG, and George Woodrow compose the permanent Field Day committee. The Rock Creek Amateur Radio Association conducted its Field Day operations at Richmeadows Farm near Boyds, Md. Rigs were on 5 bands under the call AIR/3. The Washington Radio Club, at its June meeting, enjoyed a splendid talk and apparatus exhibit. The subject was "Multiplex Radio Communications Systems," presented by Dick Ellis, NXN, vice-president of the Rock Creek Amateur Radio Association, assisted by Gene Melton, FNG. Committees were formed for the August Club Picnic. Members of the Potomac-Rappahannock Valley Emergency Net were "on deck" and did splendid work in the recent floods on the upper river waters. The emergency condition happened on Field Day, June 18th. FPQ, Regional Coördinator, AHQ, and others went into immediate action, furnishing communication to and from the stricken areas. The entire section membership is indeed proud of the splendid disaster work of our "PRVEN" members, the "Always Ready" Net. OPG is now located at Patuxent River, Md. 4OXX/3 is operating portable at Bainbridge, Md., using 7- and 14-Mc. c.w., and 28-Mc. 'phone. Ex-BDU now is CG, and is on 28-Mc. 'phone. HOP and PHT are on 1.5 Mc. BHQ is building a 28-Mc. mobile rig. IBX is trying to drive his 28-Mc. rig with a BC-458A. JPX and KWU are on 420 Mc. FLG has 420-Mc. transmitter but no receiver yet. IKX is on 28 Mc. with a good signal. HUA and IZ also are on 28-Mc. c.w. HG is working good DX with his new mobile rig. JCL's XYL is working for her ticket. NUM has changed QTH and gets out fine. OWB gets out well on 44 Mc. Also heard on this band in the Baltimore area are JUI, GIO, WA and KFM. EYX is having his Collins 32V-1 converted at the factory. He also has new 28-Mc. mobile rig. MZA has completed his 60-foot windmill tower. PFR's XYL expects to take her exam soon. PFF is again on 28 Mc. KYG and MTE are busy fitting rotators on their beams. NVL has nice 144-Mc. rig. Traffic: W3AKR 9, KZS 8, CJS 4, FWP 4, MCG 4, NB 4, AKB 3, BWT 2.

SOUTHERN NEW JERSEY — SCM, G. W. (Bill) Tunnell, W2OXX — The scarcity of monthly reports will of necessity make this column a short one. ORS is gradually convincing the landlord that he should permit a new antenna. WUP is on 420 Mc. with a twenty-four-element beam. OSB is radio operator on a tanker again. Our Atlantic City traffic man, YSP, received his Class A license and is rebuilding his receiver. ZYX, in Wildwood, formerly was KG6DK. Field Day activity in this section was unusually high, with at least five clubs participating. Traffic honors go to RFF, who turned in the only traffic report. The Hamilton Township Club code class has produced another new ham, namely AUE. Our friend FBC is expected to return to the U.S.A. in the very near future. This being my last contribution to this column, I will say many thanks for your individual and collective support during my term of office. I'll be looking for each of you from 3DVC. Traffic: W2RFF 2.

WESTERN NEW YORK — SCM, Harding A. Clark, W2PGT — SEC: SJV. RM: FCG. Popularity of the annual Field Day is proven by the increased number of participants and stations taking part. Many took part for the first time and learned of many errors and plan to profit from their experiences. While these experiences are still fresh in your minds is the time to make plans for next year — a written memorandum filed away for future use is an excellent idea. RZP worked LU7AZ on 3.5 Mc. after the band apparently had folded for the summer. OWT is working out on 144 Mc. with 7 watts. OXP is working most of the State on 144 Mc. from an ideal location near Turin. ZRX is building 813 final. YGW was heard working maritime-mobile on 3.5 Mc. and RXM is heard on 3.85-Mc. maritime-mobile. RSL is Rochester outlet on Traffic Exchange Net on 7150 kc. UTF is Rochester station in Eastern Shuttle Net and also is editor of the net bulletin. New officers of Rochester Amateur Radio Association are QY, pres.; WPY, vice-pres.; TEX, secy.; and NES, treas. Syracuse Amateur Radio Club re-elected NCK as secretary and PKL as treasurer, and elected PXA, WIX, and ZSG to its board of directors at the recent club banquet. PPR, RLV, and FBA are active on 50 Mc. UTH is experimenting with corner reflector on 144 Mc. and improving sensitivity of BC-624 receiver. NES and UTH have been appointed OES. Traffic: (June) W2RSL 47, HQB 36, WFU 32, WZQ 19. (May) W2YGW 150, RSL 51, WFU 29.

WESTERN PENNSYLVANIA — SCM, Ernest J. Hlinsky, W3KWL — This year's Field Day was packed with Western Penn. club participants. If we put our hearts into it Western Penna. could make a clean sweep of any ARRL contest. Look at the past SS scores, all from W. Penna. — thirty-six of 'em and GJY on top. Congrats, John, and also to OEW, HXA, MKH, etc. The same goes for LQX, AER, KQU, OIU, ORP, and LIW for those tremendous 'phone contacts. Bouquets to RUE, KWH, and all who took part in the VHF Party. UVD is new OO. NJH, ORP, KQU, and OIT participated in Operations Comet for the Army maneuvers. NJH traded his Mon-Key for a he-man's Vibroplex. ORP owns a new Collins 310-B rig. BWL has applied for ORS appointment. The following helped the Army Organized Reserve on Operations Comet: RYN, LJQ, OJX, and KJU. POZ, POO, and POP are new stations in Altoona. KQD and LJQ put on a fine 144-Mc. demonstration for the Boy Scouts. TXQ still is engineering his new rig. The Altoona gang made 169 contacts in Field Day. RYN and LJQ had 13 QSOs in three sections of the V.H.F. Contest. The Steel City Radio Club reports via club paper. DNO and MPO had luncheon with Division Director QV.

(Continued on page 70)



IF OUR OWN SITUATION can be considered typical, many a ham has in his household a dominating female who, every so often, insists he clean up "that pig pen you call a radio shack." Of course, we evade the issue as long as possible but eventually the time arrives when compliance is the only alternative to a domestic explosion. Once we have started to clean up the heap, our resistance to the project drops rapidly and, as work progresses, nothing less than a complete job of cleaning and polishing will satisfy our own critical inspection; we even dust out the "insides" of the rig and take care of those minor maintenance jobs which have been so long postponed. The receiver, of course, gets particular attention, for we are in the business of making them and if ours looks shabby or doesn't perform as it should our ego gets somewhat dented when visiting hams rib us about it.

Having just completed one of these periodic clean-ups, we had occasion the other day to look over several of the receivers in our Service Department. The woeful condition of some of them gave us the idea that National owners might like to have a little dope "straight from the horse's mouth" on how to care for their receivers in a manner which will preserve their appearance and operating efficiency.

Naturally, your receiver will keep that "new" look longer if you do not park ash trays, beer glasses, or other equipment on top of it. For cleaning the smooth gray cabinets of the NC-173, NC-183, NC-57, etc., we have found that Simoniz Kleener, followed by an application of Simoniz polish or Johnson No. 100 wax, does a beautiful job without endangering the finish. A better job can be done if all control knobs are removed first. Be sure to use soft cloths, free from grit, for cleaning and polishing, and avoid undue pressure on the aluminum speaker grilles of the NC-57, NC-33 and HFS. The plastic dial windows are treated at the factory with an anti-static compound called "Carbo-wax"; unfortunately, this treatment is not permanent and you may notice small particles of dust and lint clinging to the window should it become charged. These and also finger marks are best removed by breathing on the window and wiping with a slightly dampened *very soft* cloth. Do not use cleaning fluids or abrasives for they may permanently fog or scratch the plastic. Remember, too, that abrasive cleansers should not be used on etched nameplates and calibration charts.

To clean cabinets finished in wrinkle enamel, either black or gray, we have found it best to remove them and scrub well with soap and warm water, using a fairly stiff brush. Rinse thoroughly with clear hot water and dry behind the stove or in the sun. A coat of wax may then be applied and rubbed up with a soft brush such as is used to polish shoes. Do not try to use rags for cleaning or polishing wrinkle paint, for the rough surface may tear them to shreds leaving large quantities of lint deposited on the surface.

For dusting the chassis and components mounted on it, we have found nothing better than a small paint brush such as may be purchased at any dime store. Such a brush is also convenient for occasional dusting of the front panel and control knobs. If the dust will not yield to dry brushing, the brush may be dipped in carbon tetrachloride (Carbona or Pyrene). Carbon tetrachloride should be used only after all loose stuff has been brushed off dry. If you have compressed air available, it is a great convenience for blowing out condenser plates and other inaccessible nooks and crannies.

During the clean-up process and while the knobs are off, it is a good idea to check the nuts that hold the operating controls to see that they are tight; it is also a good time to replace any variable resistors or potentiometers which have become noisy in operation. Condenser rotor brushes and band switch contacts should be cleaned with carbon tetrachloride applied with an artist's brush or a pipe-cleaner. After cleaning, a very thin coat of "Lubriplate" or "Vaseline" should be applied to provide lubrication and retard oxidation. Apply the lubricant sparingly, for too much of it will gather dirt rapidly and the contacts will become noisy in a very short time.

A final word of warning: keep solvents such as paint thinner, lighter fluid, turpentine, etc., away from your receiver, for they can ruin it. The products mentioned in the paragraphs above will do a good job and will not harm your receiver if properly used.

ROBERT J. MURRAY, W1FSN

ECO is gaining back his health. NRQ finds n.f.m. on 14 Mc. working well. MPO, RIK, and NRQ have volunteered to string up new 14-Mc. antenna for club. LAT and RUE operated portable-mobile using 6J6 with 2 watts and worked three states on 144 Mc. VZA and PAP are at QTH in Ingram. The South Hills Brass Pounders and Modulators have new club site and new call, PIQ. LSS wants to know what happened to the Steel City 28-Mc. Net. MTY was disappointed in MPO location. His Collins 75A receiver didn't help work those VKs and ZLs. OMA is EC for Pittsburgh area. NKM can be heard regularly on 144 Mc. in Farrell. AER has crystals so he can QSY in 6-kc. steps. PJV received membership into RCC Club. IYR is building mobile rig. NCJ reports that DLK worked a VK on 7 Mc. with 45 watts. KSP, KWA, and YDJ worked in Field Day activity. LSS found his first participation in Field Day a new thrill. NGB has 814 on 7-Mc. c.w. PIX has new p.p. 807 on 28 Mc. AU will be heard on 144 Mc. again. Traffic: (June) W3AER 19, NCJ 19, NUG 10, PJV 2. (May) W3GEG 94.

CENTRAL DIVISION

ILLINOIS — SCM, Lloyd E. Hopkins, W9EVJ — From reports received it is apparent that a record number of Illinois clubs actively participated in Field Day. QIL toured the Southland visiting with 4PL and others along the way. YTV is readying a BC-458 for 7 Mc. WEA and NN are busy installing Subraco 27-28-Mc. mobile units for summer vacations. Midwest VHF Club new officers are CZR, pres.; MMV, vice-pres.; VX, secy. NIU reports no QSL cards from FCC after the club used his call for Field Day. BRX says the local boys are in the midst of the summer slump. HKA was pleased with AEC activity in Iroquois County on Field Day. BXK had a change of heart and went v.h.f. QIE has new Clapp VFO for 3.5 Mc. and 160 meters. BUK was active Field Day and reports the local code class is ready for exams. FKI reports 20 144-Mc. men at Weldon Springs picnic. EBX says the TXN Net is going FB with 15 regular stations on 7150 kc. EEK is active on TXN and is running 106 watts to ARC-5. OQZ is hemmed in by apartment buildings but works good DX. ILH again is among those active. FJD is a new ham in Roodhouse. PHE has new Collins 75A. KPC was up a pole fixing 30,000-volt transformer when his assistant threw the switch, bringing him down. A broken ankle was the only harm done. DO went 'phone after 30 years. (T.V.I. did it!) NDA has nice 35 w.p.m. fist. UAK moved to the country. TDJ moved to Beardstown. MFY is a proud papa again. BUD has T.V.I. complex now. GFF is working DX on 14 Mc. for a change. VES is graduating from U. of I. PSR is experimenting with new beams and 14-Mc. n.f.m. CBT is running up big light bills during high school vacation. RJM has new Clapp VFO working FB. TOM has 120 watts on 7 and 14 Mc. CIA now is past the 200 country mark. TRD, of the *Callbook*, gets on 14- and 28-Mc. c.w. now and then. ZQS is trying 3.85-Mc. 'phone. ALI built a new shack and is DXing through the summer. GMO has BC-375 on 7 Mc. EVA bought a house in the Chicago suburbs. EVJ and QLZ worked Field Day together from NIU/9. ACJ reports IVRA had a very successful Field Day. ZHB furnished the power and worked Kansas on 144 Mc. PEK got up in the wee hours of the morning to meet EVJ and his XYL at the train to welcome them to the Weldon Springs picnic. The picnic was a huge success and included a talk by Jack Doyle, our Director. QLZ obtained seven new ECs during the day. We are well on our way toward having half of the counties in Illinois represented by ECs. How about yours? Write QLZ if you think you can help us in this important work. Traffic: W9EBX 722, QIL 515, BRD 21, EEK 16, BUK 10, HKA 2, QIE 1.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — The first issue of the *WIN Newsletter* has been distributed to all members of the net. Edited by DJV, it is an excellent net bulletin. Congrats to DJV for an FB job. CWZ's new photo QSL gives a nice view of station and operator. ESJ spent vacation in northern Wisconsin with visits to QIX, RQM, and others, plus a chance for 4-Mc. mobile operation en route. While rebuilding, YCV uses exciter unit to operate on the net. FCF completed a new bandswitched rig for all bands. FXA has received WAS and 20-w.p.m. Code Proficiency certificates. HDZ, a new ham at Fond du Lac, reports into both BEN and WIN with 34 watts to a 6L6. RQM finally got 102 cards together to make DXCC. Although QRL this summer, CIH is planning a busy OO season this fall. With the arrival of two ZP cards, all that KXK needs is FY8 to finish South America. IVE is newly-appointed EC for the Appleton, Neenah, Menasha Area. LZU spent two weeks at Camp McCoy with National Guard. 144-Mc. DX at JBF includes QSO with BBU at Elgin, Ill. RSR put in $10 a.c. line to rig. GMY and others in Superior are working out emergency communication with local Red Cross. WJH enjoyed Field Day operation. WEN has been QRL with newly-acquired taxicab business. Active on 160 meters are TOA, OAE, and LDO. QJW put out a two-page issue of Marshfield and Rapids club bulletin. Milwaukee School of Engineering Club (HHX) elected new officers: IWT, pres.; FSU, vice-pres.; FTW, treas.; CXG, secy. Reports of Field Day activity were received from Racine (UDU) 530 contacts, 3 transmitters; Madison (SWQ) 5 transmitters; Wausau (RQM) 710 contacts, 2 transmitters; LaCrosse (SFL); Milwaukee (ESJ) 4 transmitters, 590 contacts; Milwaukee (LVR) 2 transmitters; Fond du Lac (BQM) 1 transmitter; Beaver Dam (APU). 8ARJ is now at Menomonie Falls. EIZ is newly-appointed OO at Antigo. Traffic: W9ESJ 186, YCV 32, EIZ 16, CWZ 12, PM 10, RQM 10, FCF 6, DND 5, FXA 3, MUM 2.

DAKOTA DIVISION

NORTH DAKOTA — SCM, Paul M. Bossoletti, WØGZD — North Dakota Hamboree Picnic at Mayville brought together WFO, KHG, LHB, NQY, VSK, UNU, HAI, EOZ, YIZ, NBS, TNL, NMB, PQW, OCI, NMV, OEL, EXO, GZD, RGT, JWL, MYD, IKD, LHS, OYM, GHN, YSJ, VAZ, SKI, FCA, SWB, PHH, ZPH, CKE, CGM, JPW, ONM, BZJ, DM, TUF, JXX, AAU, GSP, PRZ, ZUS, IEI, GSR, PRU, DAO, UZC, WIQ, PUJ, BJG, CAQ, HIV, BIH, SHI, UGM, WZQ, PVS, FX, WBL, JNP, NCI, and HSR. DM and SKI have new HQ-129 receivers. RGT put up five-element 28-Mc. beam on a 40-ft. all-steel tower. VAZ sold DM his 28-Mc. beam. The Forx Club went out on Field Day with only one rig parked on 7-Mc. c.w. at a kw. input. The Fargo Club used plenty of ammunition and a couple of rigs. PVS visited GZD and the Forks gang recently. May I thank the members of this section for the consideration and coöperation extended during my term as SCM. North Dakota has maintained high standards in amateur radio activities and will continue to set the pace.

SOUTH DAKOTA — SCM, J. S. Foasberg, WØNGM — VIW is a new call in Hot Springs, issued in June with BLK as the examiner. Huron has three new mobile units on 28 Mc. which no doubt will be of great help in case of an emergency. CJS now has WAS on 50 Mc. Field Day saw a lot of activity throughout the State. The following are known to have been operating as clubs or groups: Milbank, Watertown, Sioux Falls, Mitchell, Huron, and Rapid City. Most of the clubs operated the full 24 hours even though short-staffed in some cases. A few of the clubs had a training period the night before Field Day, but no Silent Keys due to the test have been reported to your SCM. QRN and other activities have made the intra-state QSOs very sparse. Also many have gone to 14 and 28 Mc. to get away from the static. UVL still is in the building stage. OXC has regular schedules with his son in Georgia on 7 and 14 Mc. Both of his sons have their tickets.

MINNESOTA — SCM, John B. Morgan, WØRA — Asst. SCM, Jean E. Walter, KYE. SEC: BOL. RM: RJF. SMT pulled off an impressive bit of work at the last hidden transmitter hunt of the St. Paul Radio Club. Using a new loop DF unit which had been carefully calibrated and a large map of the city on a heavy cardboard base, Harold rode in on the transmitter fully 15 minutes ahead of his nearest competitor. His map showed that three out of four of the "sights" taken had intersected within 200 yards of the target, and the first one was shot from over three miles away. The field-strength-meter boys will have to look to their laurels. BOL reports 116 active AEC members, of which 38 are mobiles. Transmitter hunts, Red Cross tests, and group tests are being held frequently. HNS is up to 33 states from his mobile rig. Slow-speed c.w. traffic men are wanted to man a new State net to start before October 1st. Contact RA for time and frequency. Those interested in state-wide traffic work at 20 w.p.m. or over will be welcome in the Minnesota State Net on 3795 kc. at 1900 daily except Sunday. The State 'Phone Net meets on 3960 kc. at 1205 and 1800 daily and 0900 Sundays. The assistance of all traffic men, both 'phone and c.w., is urgently needed to activate the National Traffic Net, which begins operation officially October 1st. Please contact RA for full details. Traffic: WØRJF 26, BGY 20, MXC 12, CWB 7, BOL 4, RA 3.

DELTA DIVISION

MISSISSIPPI — SCM, J. C. Wallis, W5DLA — On Field Day FFF and the gang, fifteen in number, worked 3.5, 3.85, 7, 28, and 50 Mc. Three transmitters were used, and they were active throughout the meet. FGE and the Hattiesburg gang had two rigs on during Field Day at Lake Shelby. Seven operators were on the job. They worked 3.85- and 14-Mc. 'phone and 7-Mc. c.w. with continuous activity throughout the meet. Belated congrats to DEJ and FFF on the arrival of new jr. operators. DEJ says he will have the rig on 50 Mc. soon. FFF and CUU make 144-Mc. schedules hoping to complete the Meridian, Jackson, Lexington, Memphis loop. QEP is new call for Carl Schlegle on the Gulf Coast. QDC is new call for E. H. Hughes at Jackson. CUU, at Meridian, has been reappointed EC. MJL lost his beam and tower in a wind storm on July 2nd. JHS has 16-watt emergency rig that packs a wallop on 3.85 Mc., as was demonstrated on the Magnolia Emergency Net. That's all from Hurricane Bend. Traffic: W5JHS 5.

TENNESSEE — SCM, Ward Buhrman, W4QT — After considerable silence, FCF comes up with some news of Memphis. We learn that AQR has DXCC. Will he retire from the field and leave a hole in the 14-Mc. band, or push on to the second hundred? Our sympathies to GC, whose

(Continued on page 72)

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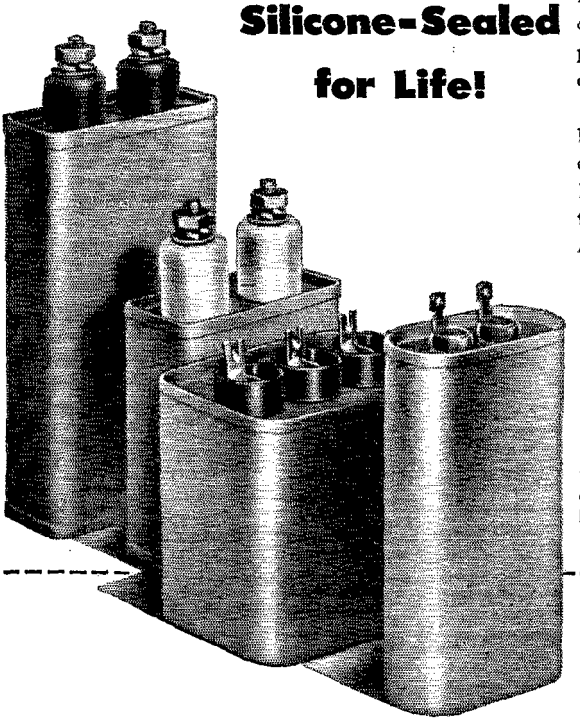

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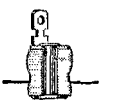
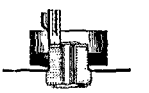
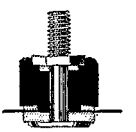


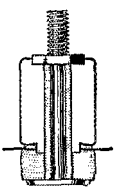
Silicone bushings used with capacitors 660-v a-c, or 1500-v d-c and lower.



Silicone bushings and plastic cups used with capacitors 660-v a-c, or 1500-v d-c and lower.



Silicone gaskets and plastic stand-offs used with capacitors rated 2000-v d-c and lower.



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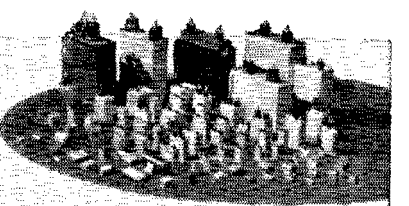


AND MANY OTHER APPLICATIONS

illness prevents enjoyment of a new HRO. A cross-town QSO rewarded GPH and DIY for their labors on 420 Mc. HHK heard Nevada on 144 Mc.; confirmed it by landline. GLL is in new home. LVW and BAQ are mobiling on 28 Mc. ESZ plans renewal of activity with 7-Mc. rig. Field Day was a big success, according to the many fine reports received from all over the section. FDF, our SEC, is doing a fine job and has the coöperation and support of an enthusiastic AEC group. All he lacks is a modulator. We are writing a letter to Santa Claus about this little matter and hope something will come of it. Benton apologizes for his lowest traffic total in some months; the result of absence on a camping trip around Field Day time. NNJ says observing is a worth while enterprise and inquires about enlisting some additional appointments. We concur. FLW visited his friend Charlie in Portland and took Field Day equipment along. How about that ticket, Charlie? The Kingsport Club is busy with new club house. ETN is taking time out to rebuild during the lull on 3.5 Mc. The c.w. net is badly in need of some new members, particularly in Nashville and Knoxville. Traffic: W4PL 891, NNJ 16, NXR 15.

GREAT LAKES DIVISION

KENTUCKY — SCM, W. C. Alcock, W4CDA — Hot weather in June really wilted the traffic totals, and no wonder! Maybe we need air-conditioned radio shacks! Mammoth Cave's Hamfest was attended by a large group, but the SCM was in the Army at the time — for two days! BAZ says attendance on KY Net from Oct. 1948 to May 1949 totaled 169 stations for 1,726 report-ins. He may cook up a Kentucky QSO Party after Labor Day. JRA, on the 7200-kc. "KYF" Net, handled 10 messages this month. NWQ is firing up an 850-watt rig. FKM really ran into bad luck. In a fall, he broke his wrist, fractured his spine, spent a week in the hospital, had a cast on his arm and a brace on his back. He's getting along OK now. NAR, OOD, PDC, and PDB visited CDA this month. ALR invested in a new Collins rig. The Blue Grass Amateur Radio Club will resume meetings in September, with a hamfest being planned. The club bulletin says, "YCC is working on an 813 rig, PDB went to Texas for a vacation, OBG's new push-pull 813 rig on 28 Mc. sounds good, ISL has a new jr. operator, LXA needs two more for WAS on 28 Mc. and PJC got on 50 Mc." NJD says that the 50-Mc. band is "hot as the attic" these days! CDA still is interested in 28-Mc. 'phone, but can't get to it because other equipment needs attention. Your present SCM hereby announces he does not choose to run for reëlection in October, so pick your man now for the fall election. Traffic: W4NWQ 27, JRA 10, CDA 3.

MICHIGAN — SCM, Robert B. Cooper, W8AQA — SEC: GJH. PAM: YNG. New appointments: Asst. SCM, c.w. activities, to SCW, OPS to YFI, and OO Class IV to AYV. NOH continues as high traffic man and makes BPL again this month. RJC and TRN also make BPL by delivery credits. A tally of the stations reporting into the 7 P.M. QMN Net last season shows UES topped the list with 110 QNIs, followed by IV with 105, SCW 99, TRN 90, WXO 84, GSJ 77, and DPE 75. Hats off to these outstanding regular traffic operators. The list of Field Day stations and data available at this date shows ZZ/8 with 477 contacts and a possible score of 4518; FM/8 with 25 operators and a possible score of 4028; YMO/8 with 2 transmitters made 282 contacts; AW/8 made 31 contacts; VY operated on four bands with fourteen operators; LME/8 used a battery-powered rig and had one operator; PVB/8 also operated a one-operator station; ACW/8 operated on three bands with fourteen operators; OJT/8 had three operators; ZUI had nine operators; YIZ/8 had fifteen operators and it is thought their score also will be high; EEY used twelve operators. REU/8 operated with four operators; MRM/8 had fifteen operators. Congratulations to the Iron Mountain Radio Club on its action to affiliate with the ARRL and best wishes to the new officers. The secretary of the Muskegon Club is proudly using his new call, EKU. Congratulations to WAK and his new 9-lb. boy. YMO divides his time between summer school and construction work on that new rig with a pair of 812s in the final. KPL reports some DX on 14 Mc. with a rhombic. ZHB also reports divided activities because of work on commercial ticket. WVL has a 35-w.p.m. sticker for his Code Proficiency certificate. Hope BLR continues to recover from that siege of illness. His list of stations reporting into the QMT on 28.8 Mc. after 9:45 P.M. Saturday night leaves little to be desired in the line of attendance. ZWC is the newest member of the QMT Net and uses that outlet for his AEC work. The Buzzard Roost/Michigan Emergency Net held its annual picnic in the Grand Rapids Area and enjoyed a very fine turnout and proved to be a mecca for 3.85-Mc. mobile rigs. The new officers for the ensuing year are LR, pres.; AQA, secy.-treas. HM was chosen MEN manager while ZBT will have charge of time signals. Traffic: W8NOH 458, RJC 226, TRN 144, AQA 56, LU 30, CPY 27, UGD 15, UFH 6, YNG 6, YMO 5, DED 4, SCW 3, ZHB 3, BLR 2, CRH 2, EGI 2, FX 1, ZZ 1.

OHIO — SCM, Dr. Harold E. Stricker, W8WZ — Asst. SCMs, Charles Lohner, 8RN, and C. D. Hall, 8PUN. SEC: UPB. RM: PMJ. PAM: PUN. Station activity reports fell off this month. It probably was due to the heat, and it was plenty hot sitting here typing up this report. Hi! New appointments are DXO as OBS and OPS and WYH as EC for Columbus and vicinity. We welcome the Ohio Valley Amateur Radio Association and the Portsmouth Radio Club as the newest affiliates with ARRL. From the *Carascope:* IVC has moved to his new home in Worthington. BMP is putting up a 14-Mc. beam. HAM and JHE have taken their portable-mobile rigs west and north respectively. WRN reports the 50-Mc. band wide open; he has rebuilt his 144-Mc. beam. UZ has 30 states worked on 50 Mc. Had a nice visit with RN and his XYL, who dropped in while on their vacation. From the *Voice-Coil:* The Conneaut and Erie Clubs held a joint picnic on July 30th at the Conneaut Country Club. Along with Lighthouse Larry there were movie films from G.E., talks on television, boat rides, prizes, and a banquet. There were many in attendance and a swell time was had by all. We regret the passing away of UKA on June 16th. OYQ is using 3.85-Mc. mobile. The MVARA had tough luck on Field Day. The 7-Mc. antenna was found to have an open line and a transmitter broke down, so most of the work was done on 3.5 Mc. HVK has completed his final and works 3.5 and 28 Mc. A beam-erecting party attended by IOO, DGE, DKF, ETN, CQL, WEN, FDP, ZEV, and PWH put up a 28-Mc. beam for DXO, who is a new OPS and OBS. These hams are from Youngstown. CUI has new 28-Mc. mobile. GZ made BPL again. AI has moved to Connecticut. ICD has started to handle traffic. CBI is rebuilding rig. JIN is building new tower for 14-Mc. antenna. CLM is in charge of the u.h.f. police equipment. The Piqua Radio Club picnic was held Aug. 7th. LBH has worked 36 states on 50 Mc. AQ has new folded dipole on 7 Mc. WAB has joined the Franklin County 144-Mc. net with a 522. HOX is rebuilding his h.f. and v.h.f. rig. The Cleveland Brass Pounders. BWA/8, made 7758 points in Field Day activity. Don't forget to send in your certificates for signature when they are due. A lot of you fellows wrote on your activity reports just one word — *HOT*. FJX made DXCC. BVN has new 40-foot tower. Traffic: W8GZ 117, RN 56, DAE 27, QIE 27, TIH 11, AQ 8, ICD 8, IVC 7, ROX 7, DZO 6, BUM 4, CBI 2, HOX 2, YFJ 2, ICC 1.

HUDSON DIVISION

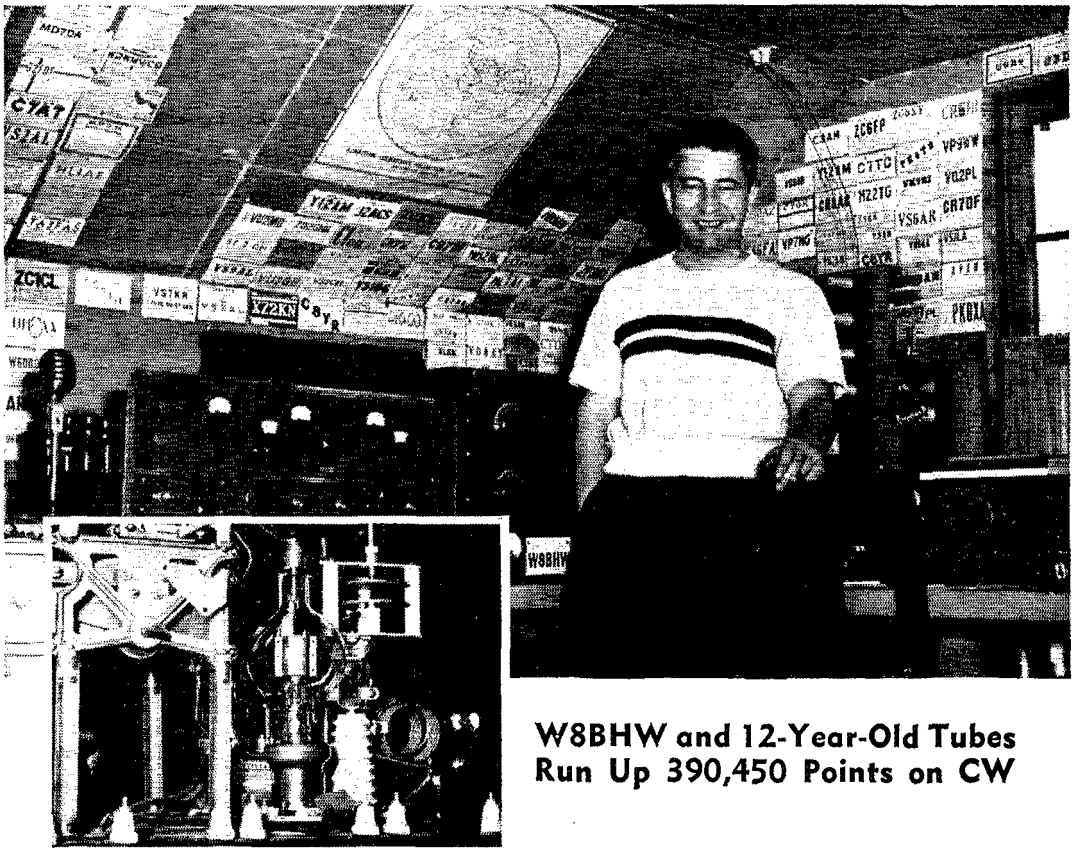
EASTERN NEW YORK — SCM, Fred Skinner, W2EQD — SEC: G. W. Sleeper, CLL. New appointment as EC for Columbia County is HUM. ECs still are needed for Dutchess and Ulster Counties. BSH and CJP are investigating loop antennas for transmitting using about 25 watts on 3700 kc. and would appreciate any reports if heard over 500 miles from Schenectady. They both had a fine time at the Portland Hamfest and will be at New Hampshire Hamfest in Manchester. LRW now is working at WRGB-T.V. mostly nights, and ham activity has suffered; he put up three-element close-spaced beam for 14- and 28-Mc. and ran up to 76 counties. PHO keeps listening on NYS Net but no activity; he has been checking into T/O Net to clear traffic. EQD is busy painting the house but keeps three MARS Net schedules per week on 6997.5 kc. and usually listens on 7005 kc. for any calls after the Net is closed on Tuesday, Thursday, and Friday. BSH schedules ZLL and Pine Tree Net. PHO schedules OUS. CLL schedules T/O. News has dropped this month so the summer slump must have set in. Traffic: W2CLL 51, EQD 49, LRW 38, TYC 33, PHO 12, BSH 3.

NEW YORK CITY AND LONG ISLAND — SCM, Charles Ham, jr., W2KDC — Summer doldrums got us again. This was the smallest batch of mail in five long years. NUP is back from Palestine after eight months with the U.N. Whatever happened to BSP, Joe? RQJ is QRL with gear trouble. Don't fret about ORS, Joe. VNJ made A-1 Operator's Club. Vic also sparks the S.S.N. bulletin and does a great job as Net Manager. All Long Island clubs are resting after a colossal Field Day and are making the usual bigger and better plans for 1950. BFC is welcomed to Brooklyn. Pete's first few contacts garnered him his RCC certificate on 28-Mc. 'phone. BO is off to California for three weeks plus. What a job Mac has! TUK is on 3.85-Mc. 'phone. "Invading it," says Harry, "with 10 watts." RTZ/4, now /2 at Quogue, L. I., managed to slip the QRP rig in her vanity while Ma was not looking. Hope did a swell job on Field Day with Lake Success Radio Club. Send me the 47k resistor now. OBU says the NYC-LI Net closed for the summer. George likes his HQ-129X very much and will be all set for fall traffic. PF is leaving for a two-months business trip to Puerto Rico. TYU has groundplane antenna on 144 Mc. Traffic: W2TYU 286, VNJ 221, BO 119, OBU 78, TUK 17, RQJ 16, QBS 10.

NORTHERN NEW JERSEY — SCM, Thomas J. Lydon, W2ANW — SEC: IIN. RMs: CGG, LFR, and NKD. PAM: DRA. A new net is being formed on 3900 kc., operating between 6 and 8 P.M. daily, using emergency power. All stations with emergency power are invited to report in. EGM is NCS. The N.N.J. C.W. Net meets daily except Sunday at 7 P.M. on 3600 kc. J.N. meets on the same frequency at 9 P.M. Monday through Friday. JKH has new QTH in Hackensack. VJN recently returned from Florida, where he was active on 144-Mc. mobile and 7-Mc. portable.

(*Continued on page 74*)

THE CHOICE OF LEADING AMATEURS



W8BHW and 12-Year-Old Tubes Run Up 390,450 Points on CW

Rolf "Lindy" Lindenhayn, W8BHW, from Harrison, Ohio, earned top honors with a score of 390,450 points in the last ARRL DX contest. Lindy, consistently in the upper DX bracket, operates with a couple of 12-year-old Eimac 250T's in the final amplifier of his rig.

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ZEP received his 25 w.p.m. Code Proficiency certificate. OUS is active on 160 meters. N.N.J. had approximately 50 stations in the field on Field Day. JPK is running 500 watts on 28 Mc. YOZ is working on v.h.f. gear at Fort Monmouth. LFR has started work on extension for new shack. KPO is getting set up for mobile. BFP is new station in Bogota. YYB is working 14-Mc. DX with 40 watts. NIY gave up ham radio for a garden during the summer. Traffic: W2EWZ 31, NKD 30. ZEP 15, OXL 9, LFR 7, OUS 7, VJN 7, NIY 6, NWA 6, CWK 2.

MIDWEST DIVISION

IOWA — SCM, William G. Davis, WØPP — Must be the hot weather! Your reports are conspicuous by their absence. Field Day activity was very high. CGY reports the Davenport gang out, JAD reports for Clinton, FZO reports that twenty-three operators were active at Sioux City with no AEC members. WML reports five operators out at Newton, three being ECs. Three groups were out at Cedar Rapids, UCU reporting four operators, GM reporting 12 operators (no AEC members) operating three transmitters and receivers on all bands, SW1 reporting two operators, both AEC. AFQ reports great success for Burlington in Field Day activity. GEP reports working 61 Field Day stations. ATA reports 66 contacts on c.w. and 111 on 'phone for North Iowa Club. RFT reports six, three being AEC, active at airport near Waterloo. YWW reports four operators, all AEC, at Ottumwa. FKB and KAH are working from Iowa Great Lakes Region mobile and marine with 5 LCZ taking part. Good publicity was given Field Day activities by the newspapers over Iowa. The Sioux City Club has fine club paper called *CLIX*. UKF is a new ham at Waterloo. It seems you boys have retained me as your SCM. I need not remind you that my success in handling the job is dependent on your coöperation. I'm going to assume it will be forthcoming as soon as hamming weather returns. Thanks for your confidence, fellows. Let's build from here. Traffic: WØHMM 98, SCA 63, GEP 16, AFQ 4, NYX 3.

KANSAS — SCM, Earl N. Johnston, WØICV — The Eldorado Amateur Radio Club now is officially affiliated with ARRL. The Club has an emergency net set-up on 29.6 Mc. with two mobile units and another under construction; also a weekly round table each Thursday night at 8:00 P.M. on 1980 kc. Congratulations to BNU, Chanute, who won the 'Phone Sweepstakes for 1948. Christy's Picnic at Osage City June 26th, attended by hams from Missouri, Oklahoma, and Kansas, was a great success. Eats, prizes, and personal rag chews were enjoyed by the 100 that attended. The boys on 50 Mc. are having a Field Day this year. IPI has 34 states. BPL has 36 states, 4 VE districts, and 1 XE since Mar. 1, 1949. KRZ has 38 states, 2 VE districts, and one XE. No reports from others on 50 Mc. this month. IZJ has new HFS National receiver. OUU has new Mon-Key. KVRC, Topeka, had five stations on Field Day. Power supply troubles, transmitter troubles, and receiver troubles, and a better score than in previous years made the outing different and more interesting. WGM and OZF had FB vacations at Lake of Ozarks with rigs on 3.85 and 28 Mc. The XYLs did the fishing. ECF and ZMC are very active on 28-Mc. mobile, with ECF taking on a bit of DX now and then. HBL now is mobile on 28 Mc. making seven active stations for emergency use. 9HS, ex-ØBQW, has moved back to Topeka. Hope you get your old call back, Auggie. Traffic: WØNIY 29, ICV 6, LIX 1.

MISSOURI — SCM, Ben. H. Wendt, WØICD — Appointments and renewals: ICP as Assistant Section Communications Manager, OMG as PAM, DU as ORS, WAP as ORS, OUD as ORS, OMG as OPS, NIY as Assistant Midwest Division Director, and ICD as Assistant Midwest Division Director. The Missouri Emergency Net has agreed to affiliate with the Amateur Emergency Corps and all future members of the Net must become members of the AEC. The Net is operating throughout the summer months with an average membership of 45. The MON Net, 3755 kc., will resume activities as soon as the school term begins. Our Director, Len Collett, has QSYed to St. Louis, Mo., and can be contacted at ECA until such time as he has made permanent quarters there. DU now has 156 countries to his credit. YSS says, "Keep your eyes on TNX." WAP has moved to Liberty, Mo. In using a Clapp oscillator Mac was having trouble with jumpy frequency shift. The trouble was found in a variable condenser which apparently was secure. Since the oscillator has been de-fleaed stable 200-watt operation is maintained. OMG is using a BC-654A with a PE-103A plus a 6-volt Edison battery for emergency gear. ZZB, CEX, and PTG are using 3.85 Mc. mobile gear. A vacuum tube keyer is being used by GNX. Among those reporting as operating on Field Day are RVG, OMG, IAC, OZS, PMI, CEX, PLJ, PTG, EHN, CZI, RGF, and NNH. Traffic: WØQXO 304, YSS 110, WAP 24, ICD 19, SOM 6, DU 5.

NEBRASKA — SCM, William T. Gemmer, WØRQK — WGB is using TBS-50 while vacation-bound. 9EET/Ø is located at Lincoln during vacation. AUS/Ø, YOD, and VEC are looking for DX on 144 Mc. HBS is firing up an Abbott T4 transceiver on 144-Mc. mobile. DNW has ARC-5 converted and is building a rotary beam for 144 Mc. DMQ is building narrow-band speech amplifier and has a new rack-mounted 'scope. RDN is working over the parasites in his p.p. 807s. FGU moved to Milford and has 400 watts on 28 Mc. VEC is conducting code practice nightly on 28 Mc. BDQ is converting 522 for 50 Mc. RQK racked up 19 states and 3 Canadian districts on 50 Mc. during the month. The SENRC met at Auburn with AFH and JHT as hosts. Four RCA films were shown and the lowdown on e.c.o. and reactance modulation were given by Sam Findone of World Radio. SENRC operated an HT-9 on 3.85-Mc. 'phone and 32V-1 on 14-Mc. 'phone and c.w. from a 6-kw. generator as LPU/Ø at Nemaha Cemetery during Field Day. OKQ spent Field Day at Ft. Kearney. The QRM Club had 8 operators on duty Field Day and all power supplies were independent of public mains. UGK, 60 years young, is new ham in Chadron on 28 Mc. with BC-610E, Plumber's Delight, S-38 converter into BC-348. HBQ has Globe Trotter on 28 Mc. IJB is on 28 Mc. with TBS-50A and Skybuddy receiver. HBS is on 28-Mc. 'phone with a Hammarlund 4-20 transmitter and 4-11 modulator and converter working into Crosley b.c. set. FHA is on 7-Mc. c.w. with battery-operated BC-459A and 348H receiver when REA will furnish an a.c. outlet. IAJ has Utah transmitter with p.p. T55s on 14-Mc. c.w. Traffic: WØFMW 5.

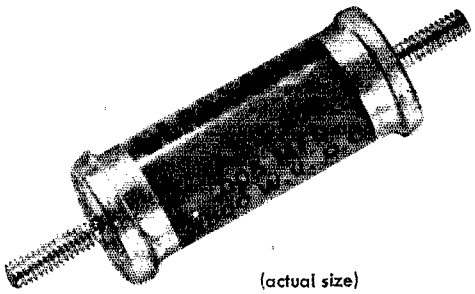
NEW ENGLAND DIVISION

CONNECTICUT — SCM, Walter L. Glover, W1VB — LKF, Connecticut SEC, has announced that the statewide emergency frequency for mobile use has been established as 29.680 Mc. All inactive EC appointments are being cancelled, and new appointments are being made gradually. New appointments to date are as follows: CTI, Norwalk; LIH, Bloomfield; CGD, Hartford MSB, Hamden; BVB, Waterford. Anyone interested in becoming a member of an active emergency organization, drop Pete a line. Field Day was a huge success in the section, judging from the reports received. VW again leads the section in accuracy in Frequency Measuring Tests. UGX is planning a "V" auteuna for 14 Mc., and is boning up for a commercial ticket. RUP is rebuilding with an 813 in final. RWS is looking for more DX, and now has 61 countries worked. IIN is looking for chess games on 3.5 Mc. AW schedules 4PL and 7CZY. BVB is working traffic on 7 Mc., but expects to be back on 3.5 Mc. in the fall. CTI reports hook-up with Red Cross with emergency station at their headquarters. MBK has resigned as EC. By the time this is in print, next season's activities will be in the process of organization. It is hoped that all interested c.w. men will get in touch with ORP for membership in the CN Net; with VW for the 'Phone Net, and LKF for CTN. Let's put Connecticut on the map with a bang this winter. Traffic: (June) W1IIN 514, AW 276, RWS 78, LKF 48, BIH 47, KV 38, NJM 24, BVB 12, CTI 6. (May) W1NJM 27.

MAINE — SCM, Manley W. Haskell, W1VV — Two hundred and fifty amateurs attended the Downeast Hamfest sponsored by the Portland Amateur Wireless Assn. at Portland, June 25th. "Ed" Handy and "Doc" Hayes were present from ARRL. Many of the Maine hams met them for the first time. Contests were run off, two skits presented and a large amount of prizes came to the holders of lucky tickets. IE, "Hal," or "Hot Wire" Castner, GE, "Joe" Rogers, MPP, "Eunice" Randall, FV, "Ray" Pratt, and 4BU/1, "Jim" Nicholson, were among the old-timers who attended the first Maine Hamfest in 1921 and were present at this one in 1949. PU, also a "1921" ham, brought along his trumpet and gave several renditions of his famous technique. ZE was unable to be there but sent a telegram that was read at the banquet. It is hoped to hold a convention sponsored by ARRL on the same date next year. NGV is rebuilding his rig with an 813 final for an input of 250 watts. The Pine Tree Net has reopened with RM NXX as NCS on Mondays, NGV on Wednesdays, and OIL on Fridays. On Tuesdays BWR is NCS and on Thursdays LKP takes over. The time is 8 P.M. EDST and the frequency is 3550 kc. PTN works into NHN, NTL, and T/O. QUA reports that much traffic concerning the Hamfest was handled on the nets, making for speedy deliveries. Traffic: W1LKP 55, NGV 34, VV 19, NXX 15, QUA 11.

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — The following have had their appointments endorsed: BDU and JCK as ORS; BBL and QIU as ECs: LQQ as OPS; BB as OO. We are sorry to have to announce the death of PLS, of Sharon. ENW, OEF, and MBQ are on 144 Mc.; GPZ is on with a fifteen-element beam. NR is on 3.5-Mc. c.w. CMM and JDD are on 28 Mc. LI is on 14 Mc. K1NAR is on 14-Mc. 'phone. BHW says he is settled at his new QTH. NBS is now living in Cambridge and will be on the air soon. The Quannapowitt Radio Assn. now is affiliated with the ARRL. The Yankee Radio Club held its first annual banquet on June 16th at the Willey House in Swampscott. The Club will have an exhibit at the Essex County Fair at Topsfield. NLU has a new Collins 75-A receiver. MCC is on his way to the Philippines and may be on mobile marine. SBS is a new ham in Salem. The Newton Amateur Radio Club held its monthly drill on 144 Mc. with RM, OMU, KVF, and LMU. They were on portable from Waban Hill in Newton during Field Day on 144 Mc. and 3.5-Mc. c.w. The QRA also was on Field Day with the call GAG/1. KVF has a 348-P. PBM has a 3-30 Gon-Set converter in his car. LMU is

(Continued on page 76)



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LSG501.....	.0005	19/32" x 1-3/16"	.15	.5	1.6	3.0
LSG102.....	.001	19/32" x 1-9/16"	.31	.94	2.5	4.5
LSG202.....	.002	3/4" x 1-9/16"	.62	1.9	4.5	7.0
LSG502.....	.005	3/4" x 1-3/4"	1.6	3.1	6.0	7.0
LSG602.....	.006	29/32" x 1-9/16"	1.9	3.5	6.2	7.0
LSG103.....	.01	29/32" x 1-3/4"	3.1	5.0	7.0	7.0

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putting an 829 on 50 Mc. OOP is writing an article on his 144-Mc. converter for *QST*. RM has portable a.c. supply. QMJ is putting up new antenna for 14 Mc. and has a car for himself. He still is working some DX with 66 countries on 7 Mc. Dorchester Emergency Net held a drill, and had a mobile unit operating in front of the State House in Boston. Headquarters of the Southeastern Mass. Radio Club, the New Bedford YMCA, had a fire. WU is QRL work. QJB is going to take portable rig to New Jersey on his vacation to keep traffic schedules. RBK has a new VFO. Eastern Mass. Amateur Radio Assn. held its final meeting with a talk by Ed Tilton, HDQ, on "Noise Generator Techniques." Following are the Club's new officers: OFT, pres.; SS, vice-pres.; PBM, secy; RFE, treas.; CLS, JNX, and HSV, directors. BGW is rebuilding. The QRA had Director Noble and Alternate Director Gordon at its final meeting. The South Shore Club held its final meeting of the season but will hold one informal meeting on the 3rd Friday of each summer month. The T-9 Radio Club went to Sagamore Hill, Hamilton, on Field Day, also held a meeting at HMC's QTH, and is making plans for a beach party and boat ride. ILN is off the air for the summer. The Brockton Club held its final meeting. 9HON is spending his vacation in Maine and then is going back home. QGJ, in Woburn, has a 4-125A HRO and Collins 75-A receiver, is on all bands, and is going to have a 5-kw. gas plant. The Eastern Mass. Amateur Radio Assn. and the South Shore Amateur Radio Club voted not to run a Boston Hamfest this year. KTU has a new baby YL and worked 2KTU on 144 Mc. PEO and SFV, in Dorchester, are on 144 Mc. HIL is on 144 Mc. at Sagamore on week ends. BDF is at Nantucket. PMC is on 144 Mc. The 144-Mc. band is very active at noon with as many as 14 on at times. If any of you hams think that this band is dead give it a try at noon. Traffic: (June) W1LM 112, QMJ 100, TY 42, QJB 41, RBK 14, MDU 13, PYM 5, LMU 2, WU 2, MCR 1, (May) W1QMJ 135, PYM 29, ILN 13.

WESTERN MASSACHUSETTS — SCM, Prentiss M. Bailey, W1AZW — SEC: UD. RM: BVR. This month's news is on the down side. The hot WX and summer activities are no doubt the main reasons. RHU craves a 7-Mc. Western Mass. Net. How many would be interested in a 7-Mc. net? Drop me a line and we will see what the gang wants to do about it. BVR is willing to keep it in line. JGY now has a country per watt, namely 39. LX, UC2, UB5, CX, and GC are the latest additions. BVR spoke at Down East Hamfest at Portland, Me., and Quannapowitt Radio Assn. at Greenwood, Mass. QQO/RLQ have new lattice-tower. EOB has moved to new QTH at 26 Denton Circle, Springfield 4, Mass. The rig now will be in the basement. Vic has new exciter which was used during Field Day. JYH finally got over the 200 country mark with XZ2FK, MS4UU and VK1RA came as a bonus. Rog has just finished a new bandswitching exciter and new final using 4-125As! No wonder the JAs come so easy, Rog! The plate of my little ole 807 has nearly all dripped away to gather up 100 countries so far. Hi! A JA would make it rejuvenate with joy. *Zero Beat*, the official news publication of the Hampden County Radio Club, was practically devoted to Field Day doings this month so there is not much personal news from down that way. BDV/1 is using BC-696A with 4 watts and gets good reports all around. GZ wants North Dakota for that WAS. Good luck, Nes! RHU schedules 4PL each morning and really gets around on several nets. His traffic total shows plenty of activity. Traffic: W1RHU 113, GZ 42, BVR 13, GVJ 12, RZG 11, JYH 10, BDV/1 2.

NEW HAMPSHIRE — Acting SCM, Clifton R. Wilkinson, W1CRW — A reminder — ARRL Convention, Manchester, Sept. 17. The Concord Brasspounders are sponsoring the third New Hampshire QSO Party to take place Oct. 8-9. All interested amateurs are invited to take part. For further information see October *QST*, or write to the club, Box 312, Concord. BWR, a good traffic man, has moved to Maine. We will still hear from him from his new location. TA will be in the NHN by fall. EWF runs a kw. to a pair of 810s on 14 and 28 Mc. and is working lots of DX. KYG has new transmitter running high power. He also does some photography. His XYL, QJY, still likes low power. QGU is on the air from Hanover again and reports to NHN. SAL is a regular NHN operator. Among the N. H. gang who attended the Portland, Maine, Hamfest were QJY, KYG, FTJ, BFT, BWR, and CRW. Everybody had a wonderful time. I, CRW, would like to hear from every New Hampshire ham and will answer each letter personally. Reports are needed to make this column, so let's hear from you. I wonder if it's the bugs in the garden or the 'phone bug that has gotten MXP. POK, OO-4, reports regularly. Be sure to keep your ORS appointment up to date and send your certificate to me for endorsement. Traffic: (June) W1CRW 151, BWR 24, QJY 7. (May) W1QJY 17.

RHODE ISLAND — SCM, Roy B. Fuller, W1CJH — The AQ gang reported on Field Day activity with four operators in the field. We understand that the PRA also was active. The NAARO went all out this year with five transmitters and 18 operators. A total of 750 contacts was realized and a great deal of emergency experience was gained. Many new amateurs have been heard in the section and if any of them should be interested in traffic they are requested to get in touch with the SCM or RM as the

(Continued on page 78)

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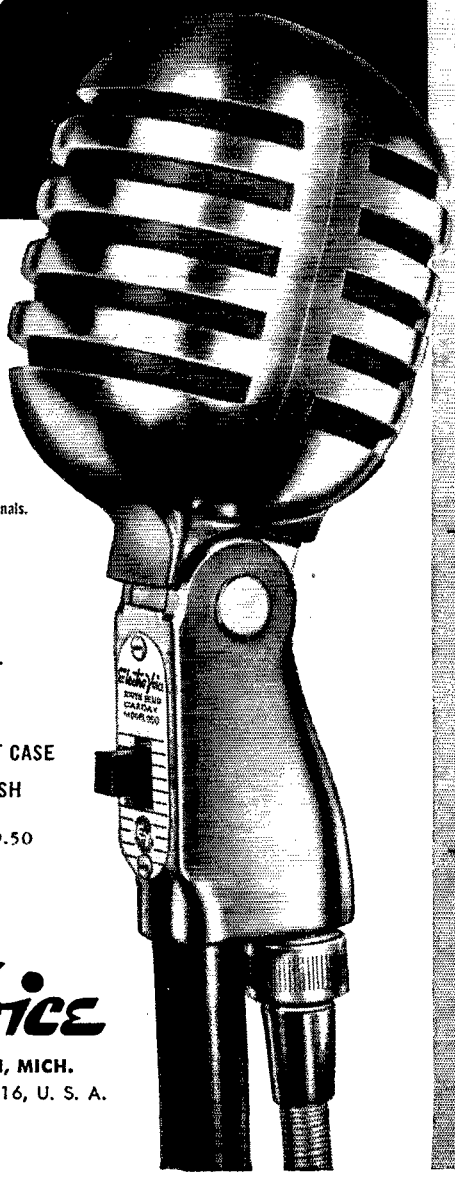

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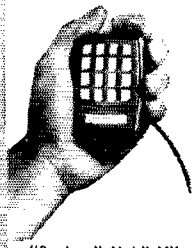

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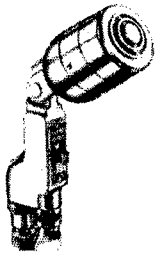

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traffic season is nearing. QOG is star pitcher on the NAARO softball team coached by BFB and SWL Doc Harris. SAW, a new ham, received his travel orders from the Navy. MJL has taken to surf fishing. KHZ, LFE, NCX, and the other 28-Mc. regulars report good short skip contacts. HRC reports that the T.V.I. has been cured in his locality. How does he cure T.V. QRM in his HRO? Special attention is called to all active amateurs that no reports have been in the last two issues of *QST* because of the fact that there have not been any received here. I will gladly furnish post cards if you will use them to make this space more enjoyable to all, and more informative to your section officials. Traffic: W1CJH/1, 9, HRC 5.

VERMONT — SCM, Burtis W. Dean, W1NLO — Vermont hams took part in the annual ARRL Field Day. MEP and NH operated on top Mt. Equinox; AEA and KJG from Lake Elmore; BJP, BLC, CUN, IT, RNA, TJ, and VE2LM from Lake Carmi; AZV, CGX, FPS, NHJ, and PRE on Hogback Mountain; and 7JSG and NLO in Colchester. CUN has worked New York City on 144 Mc. 3EEB and family are spending summer vacation at Lake Willoughby. NLO recently visited AEA, CUN, FRT, JPZ, CGV, MMV, NDB, and NDL. BRO, of Williston, is second graduate of BARC's code and theory classes. AEA is flying with CAP. Your SCM visited MMN's and OAK's antenna farm. George has "V" beam on 3.5 and 7 Mc. with 535 feet on each leg. KRV, LYM, MMN, OLM, and RSG are members of MARS. PTB and his XYL are the proud parents of a jr. operator. 2FMQ is spending the summer at Chittenden. SCE is building a kw. rig. SEL has three-element Hylite and VFO on 29-Mc. 'phone. VE2IP recently visited NLO, PDR, QNM, QQN, QVS, RMX, RPR, ROJ, and SEL. Traffic: W1AVP 10, NLO 2.

NORTHWESTERN DIVISION

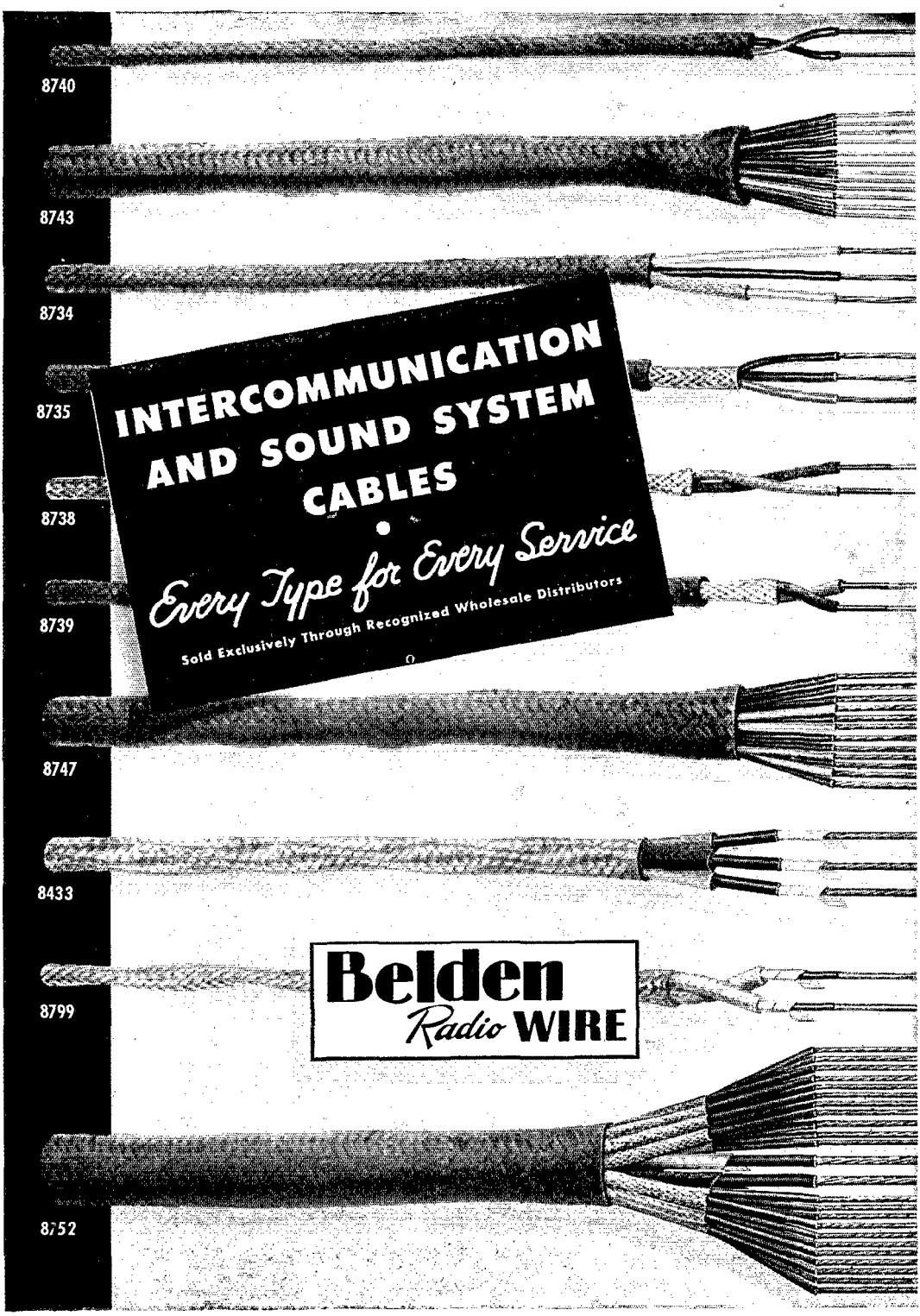
ALASKA — SCM, Charles M. Gray, KL7IG — There are two new OOs in this area, AB and CZ. AB has a new rig going with a pair of 811s in the final modulated by another pair of 811s. The receiver is an NC-120X. CZ has a single 811 in the final running 150 watts and using an SX-25 receiver. GV is on the air with a pair of 813s with 500 watts input. GV is using a hopped-up SX-28 with a DB-20 preselector and a 453 for receiving. W7AF is Skipper on the P.A.F. Tug *Karluk* and will be operating portable with a TBS-50 at Kasan. RI has left the Territory for Washington. Among the first XYLs to receive a ticket in Fairbanks is Lucille Spargo, whose OM is KL7VG. She now is KL7ZQ and will be heard on 28-Mc. mobile when the band opens this fall.

IDAHO — SCM, Alan K. Ross, W7IWU — Twin Falls: Field Day went over big with most of the gang taking part. MFC worked a KH6 on 7 Mc. with six watts. Moscow: MVA/7 is at Elk River for the summer with the Potlatch Protective Timber Assn. Boise: The Radio Club is having monthly picnics. Plenty of mobile activity is present. DOH and IWU have Command (454-B) receivers mounted under the dashboards. Will have more information on our 7155-kc. net next month. The following appointments are in effect: Official Relay Stations — EMT (RM), BAA, JMH, IWU, BEO, MVA, and BDL. *Official Phone Stations* — ETU, GTN, DMZ, and FRM. Emergency Coördinators — KEK, FRM, ELH, and ETU. (Note: We need more ECs. If your area is not represented, please write.) Official Observers: EMT, WJT, and IWU. Official Bulletin Stations: JMX, IYG, and GTN. Traffic: W7EMT 17, IWU 12, MVA 11, BAA 10, GHT 6.

MONTANA — SCM, Fred B. Tintinger, W7EGN — CT reports a small turnout for Field Day but four operators kept things rolling for CT/7. According to radiograms received Butte boasted two Field Day station locations. One message was from CJN/7, five miles north of Butte, and another message was received from FLB/7, seven miles south of Butte. ABT/7 was at Lake Blaine, near Kalispell, on Field Day and worked 137 stations with less than 30 watts. NME is a new call in Lewistown and is found on 7-Mc. c.w. QB is maintenance technician for CAA in Lewistown. CAL is 3.85-Mc. mobile. HBM is busy recruiting for CAP. BYX is building new ham shack. KAQ's father has received the call NGO. They are spending the summer at Apgar (in Glacier Park) with portable ham gear and fishing tackle. KAQ has a new 14- and 28-Mc. stacked beam at Dutton, his home QTH. DPK, CJB, and HBM of the CAP have registered station equipment with the AEC. Also DPK, communications officer of the CAP, has registered as a group all CAP stations in Montana. The Montana 'Phone Net resumes operation at 7:30 P.M. Sept. 5th on 3995 kc. and MSN (c.w.) at 8:30 P.M. Sept. 4th on 3520 kc. Traffic: W7CT 39.

OREGON — SCM, J. E. Roden, W7MQ — Astoria: BOO is Net Control on OEN one day a week. Bend: GNJ and the other Club members were hosts at a big OEN picnic. ECs from all over the State were present, making future plans for AEC activities. Eugene: FKS, Mildred, is new RM. She has plans for more power if UJ gets some time. Grants Pass: MGO says that a Cubical Quad on 7 Mc. is not impossible and he is working on the project. Klamath Falls: HVD reports that KQD is making an earnest endeavor to make WAZ, WAC, or "sumpin," as he

(Continued on page 80)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Radio WIRE

is buying up a lot of international reply coupons. LaGrande: HBO is new EC for LaGrande Area. KVG is new ORS. NFF is newly-licensed ham. Medford: HLF, the SEC, is active on 3.85-Mc. 'phone. Oswego: WEN seems to be having trouble finding out just when some of the Portland Radio Clubs meet. WEN has been recommended for the A-1 Operator Club by W8EGI. They have maintained consistent schedules for the past several years. Pendleton: BDN reports hearing no Oregon stations from Oakland; too many high-powered W6s. ADX is new OO. Class 1-2-3-4. JOG is new OBS on 160-meter 'phone. Portland: ESJ is new ORS. GM is mobile on 3.85-Mc. 'phone. His kw. now will show signs of rusting. FU seems to have the data on correct loading of 3.85-Mc. antennas for mobile use. Philomath APF is active on 3.85-Mc. 'phone with a good signal. Wolf Creek: MIC received his RCC certificate. He also reports 23 countries on 7 Mc. Traffic: W7LSW 64, HDN 43, HVD 42, GNJ 39, DIS 30, JRU 27, FY 26, FKS 17, MQ 17, MIC 12, WEN 9, LWW 8.

WASHINGTON — SCM, Clifford Cavanaugh, W7ACF — SEC: KAA. RM: CZY. PAM: CKT. DGN is back at Manchester for the summer. HWK is hunting for more traffic. CKT makes the BPL again. BG is handling traffic on 28 Mc. JZR says it's too hot in Spokane for traffic. CWN and EOP had a fine time on Field Day trip. ZU says his new sailboat is going to cut into radio this summer. We note that he still had time to make BPL. GEU dropped in on the SCM while over on the Coast reënlisting in the Army. DRA put up new dipole for 3.5 Mc. The Cascade Radio Club at Everett wishes to announce that it is putting on another hamfest this fall. The date is Oct. 2nd. Buy your tickets from EOR, 1701 Walnut St., Everett, Wash. Martha, KCU, makes the BPL again. We wonder how that rig of hers holds together. GP is leaving the State and his job as SEC is being taken over by KAA. We wonder if KAA also will want to leave the State after he holds the job for a while. FRU is putting up a rig at the Pioneers picnic so he can raise his traffic totals. KTL is vacationing. FWR is QRL canning so no time for radio. FWD is putting up 50-foot tower. He is boss in his house — no canning for him. JJK reports the Valley Radio Club had a very successful Field Day — over two hundred contacts. APS can't swim and radio at the same time so he goes swimming. CZY, who handles more schedules than anyone we know, makes the BPL with a very good score for this time of year. LIL is trying out phase modulation. GHI, the EC for Seattle, has done a very FB job of compiling a list of all active hams in the City. It will be used to recruit for AEC. LVB is building new rig with 5514 in final. FIX is busy getting out WSNET operating manual. He has two sections finished and still is going strong. Vic, OM, you're a glutton for work. Note: EYS is the new QSL Manager. His QRA is OK in the call book. AMZ has new VFO to use with his ARC-5. NOF is new XYL in Auburn. She is interested in c.w. traffic work. Her name is Olga. The Walla Walla Radio Club gang had a fine Field Day although the horse-flies gave them a bad time. Traffic: W7CZY 1018, CKT 590, KCU 314, ZU 207, FRU 161, FIX 147, JJK 135, KAA 94, HWK 48, JZR 48, DGN 43, FWD 39, ACF 38, AMZ 28, LIL 18, LVB 17, DRA 14, KTL 11, WY 10, APS 9, CWN 8, BG 5, GHI 5, GEU 2.

PACIFIC DIVISION

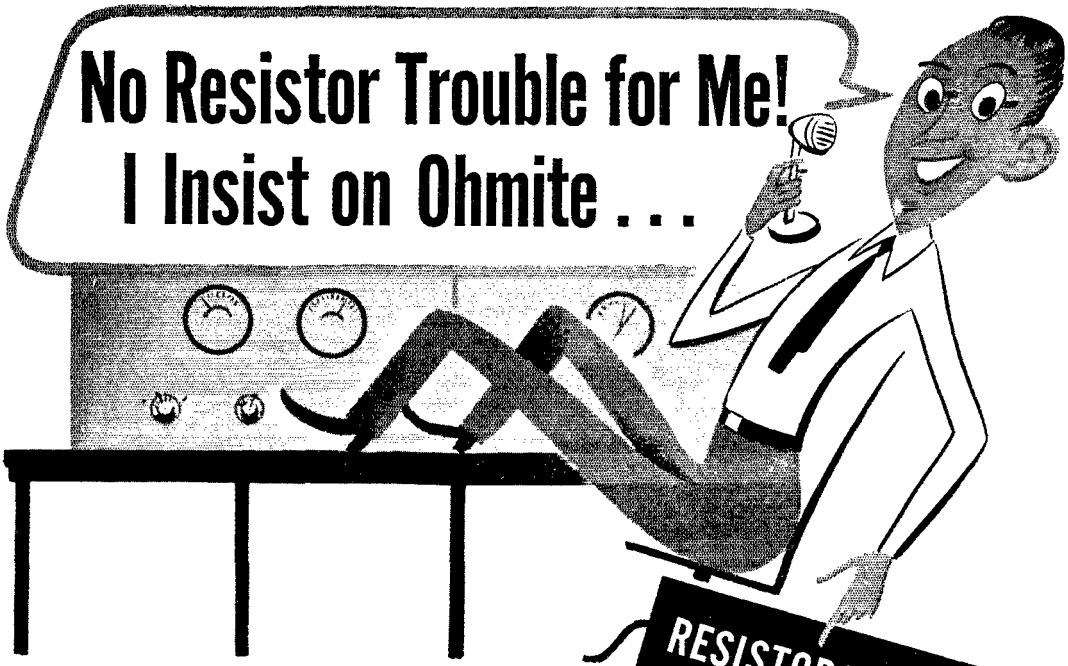
HAWAII — SCM, Dr. Robert Katsuki, KH6HJ — The AEC line-up is unchanged. We still have no ECs for Maui or Hawaii. Interested members please notify AS. BI reports nobody seems to have heard him send official bulletins and at his request he has been relieved of the responsibility. BW, our RM, has reactivated the old "Pine Apple Net" with PL (Maui) and PX (Kauai) the only active stations. Interested c.w. hams are requested to join the net on 3725 kc. at 2000 hours (8 P.M.) on Monday, Wednesday, and Friday. EZ and UL participated in the July yacht race. UL reports traffic total was 110 for June. BW's battery-powered mobile job uses 6V6 final with 6 watts input. Field Day brought out 10 operators on Oahu and 19 operators on Maui. Fellows, please send me some station activity reports.

NEVADA — SCM, N. Arthur Sowle, W7CX — Asst. SCM, Carroll Short, jr., 7BVZ. SEC: JU. ECs: HJ, JVW, JLV, KSR, TJY, QYK, KWZ, and ZT. OBS 28 Mc.: JLV. JU reports SNARC held Field Day and picnic on Mt. Charleston. He is QRL Coast Guard Auxiliary activities. BTJ and MXJ have joined the ranks of the benedicts. JLV and his XYL 28-Mc. mobiled to Chicago and back. LKX, with a kw. on 28 Mc., is very happy about the whole thing — MXJ bought a house adjoining his back yard. JTA and MLK now live in W6 Land. TQZ is operating a new shop in Sparks and getting on the air. EEF has new beam wide-spaced on 14 Mc. using irrigation pipe. GC finally has gotten 110 volts on his line after years of 90 to 100. From the look of his DX score he needs only 90 volts. BYR has a 14-Mc. Cubical Quad. KLK has knocked off a few more states on 50 Mc. NARA, presided over by KHU, is QRL with plans for the coming ARRL Pacific Division Convention to be held in Reno Oct. 22nd. Traffic: W7JU 23.

SANTA CLARA VALLEY — SCM, Roy E. Pinkham

(Continued on page 82)

No Resistor Trouble for Me! I Insist on Ohmite . . .



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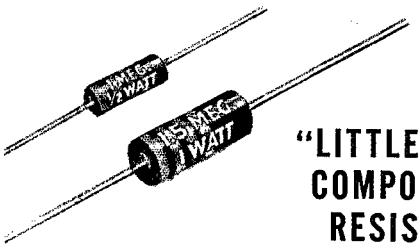

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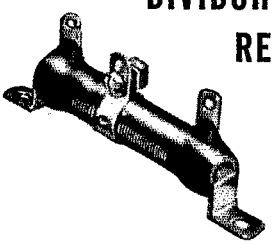

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W6BPT — The Palo Alto Club held its yearly picnic at Floods Park in Menlo Park June 24th. A very good time was had by all who attended. JSB and SYW attended the Mission Trail Hamfest at Coyote. The Santa Clara Valley Net meets Mondays through Fridays at 8:30 P.M. on 3.628 kc. ZRJ is acting as Net Control. All stations in the section are invited to check in. YQN is operating on 3.5-Mc. c.w. and 3.85-Mc. 'phone. GFJ is handling traffic on 3.5-Mc. c.w. While on a vacation trip into Canada WUI heard many of the gang in the section on his mobile receiver. OW is the new president of the Salinas Club. PH has received his WAZ certificate and DXCC with 150 countries postwar. FON is new treasurer of the San Jose Club. LZL is still active on the 29.28-Mc. Valley Net. LXA is building a small rig using 24-Gs throughout. VIQ is working daylight hours and can now attend club meetings. PDS, of Los Angeles, was a visitor at the shack of BPT and VIQ. FBW is back on the bands after a long absence. WGO is on vacation working with mobile rig on 3.85-Mc. 'phone. KIN is dragging in DX on 14-Mc. c.w. KMM, of Los Gatos, is attending Stanford and is on 3.85-Mc. 'phone at times. JTG is raising chickens on his ranch at Morgan Hill. NOE, Santa Cruz County EC, held an emergency drill with very good results. SCCARA station at the Red Cross Headquarters in San Jose has been in operation for several weeks. The Club will build rigs for several bands and hold an emergency test soon. Traffic: W6WJM 96, ZRJ 76, GFJ 54, YQN 18, MMG 17, LZL 5.

EAST BAY — SCM, Horace R. Greer, W6TI — Asst. SCM, Charles P. Henry, 6EJA. SEC: OBJ. ECs: AKB, EHS, NNS, IT, IDY, QDE, WGM. Asst. EC n.h.f.: OJU. RMs: FDR, ZM. With ARRL Field Day now in the moth-balls for another year, reports from all of the clubs that took part show that this year's activity was the biggest, best, and most fun. It is with deep regret we report that on June 11th at 2 A.M. Milt Winsby, 8SN, passed away. His many friends will miss him. Milt's last QSO was on June 11th over ELW by patch panel to 7SS. WII and YDI report that summer has slowed them up. FDR repeats again for the Hammond Memorial Traffic Trophy for the last six-months period with the largest traffic totals reported on time. QXN is QRL summer bug. The Mission Trail gang had a swell time over the 4th of July on its annual outing trip. At last BUY is on the air with a brand-new four-element rotary beam. YI has new 14-Mc. beam that he claims is tops. PB is thinking of rebuilding beam to a four-element job. WP is planning to move to DX Land, the country. OBJ just missed making Silent Keys by a whisker. It seems that on returning from Mt. Diablo over Field Day someone ran him off the road down into a canyon. Although his car did not turn over, Omar received a very bad eye injury and was in the hospital for three days. His Red Cross and medical background kept him from bleeding to death until help arrived. On June 20th some of the Northern California DX Club fellows had the pleasure and fun of working W6IKQ from G5LI in London. Phil is having a great trip. On July 7th Phil helped give some of the boys a new country, San Marino, through I1SN/M1. MHB is about ready to install a three-element job. TI received the Canal Zone Amateur Radio Assn. award for working 25 different KZs postwar. SQ is on the air again and is doing a nice job with low power for the time being. ELW is knocking 'em over on 14-Mc. 'phone. OT still is plugging away. AKB claims to be an expert fisherman. EE is trying to get on high power. EY still is on low power. PWR is causing a big noise on 14-Mc. 'phone and c.w. The Richmond gang is very active along with El Cerrito. MVQ is getting to be a big shot c.w. man. RM is playing with 'phone a little to be doing something different. DYP calls them forever; he never gives up. IT has the Walnut Creek gang interested in emergency work and hopes to keep it that way. Traffic: (June) W6FDR 376, QXN 32, BF 28, WII 11, YDI 5, TI 4. (May) W6OT 24, BF 18.

SAN FRANCISCO — SCM, Samuel C. Van Liew, W6NL — Phone JU 7-6457. SEC: DOT. CEC: BYS, SLX. EQQ now can be found on 3.5-Mc. c.w. BME is trying to get mobile rig on 28 Mc. BBN is building 14-Mc. 'phone rig. FCL is converting BC-375. CWR is rebuilding surplus gear. FBK is trying to take the "hum" bug out of his gear. BWV is taking a whirl at 14-Mc. 'phone. KMH is building new receiver and transmitter. NAO is getting ready for summertime doings. SLX is getting a large emergency net built up. OUT is taking life easy with "hamming." UGE is back from college. He has a new ticket (marriage license). SLX is trying to get on 28 Mc. FBK is building up 50-watt 28-Mc. rig. FYX is going in for h.f., 50 and 144 Mc. Ex-7NP, surrounded by active hams, is getting the bug again. He is club treasurer. ZSE still is building 7-Mc. rig, 20 watts to a doublet. DQA is installing Horse Mt. repeater for U. S. Forest Service plus a lot of mobile installations. VDB is just looking around in Eureka. NAO is spending some time in the country. New hams in Eureka are DOS and VDB. The Humboldt Amateur Radio Club now meets the second and fourth Fridays each month. Everyone is welcome. RBQ continues to improve in health. He is taking life easy and enjoying his t.v. installation. His ham activities for the present consist of 144-Mc. 'phone. NL again is attempting to build a new shack. ADQ made a trip to the Midwest. ATO has new transmitter completed

(*Continued on page 84*)

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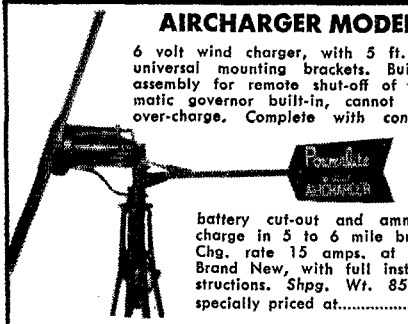

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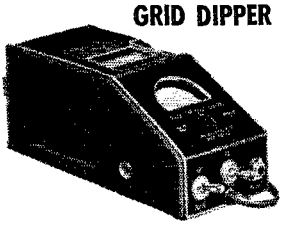

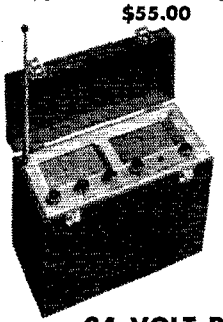

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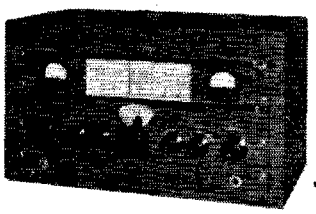

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and again is hunting that elusive DX. ERS again is making a trip into the mountains. He holds nightly schedules through the Pioneer Net to the folks at home. VCG now holds Official Experimental Station appointment. He is interested in amateur radio teletype. JWF is building mobile equipment around surplus ART-13. Field Day brought out many clubs in the area. The Naval Shipyard Radio Club combined with the Golden West High Frequency Club. The San Francisco Radio Club was out and made a good showing at its previous location at Mac Larens Park. As usual many unforeseen incidents added to the operations of Field Day. Summer vacationing has cut down the reports but let's have what you've got. Please turn your reports in early. Traffic: W6NL 133, JWF 60, ADQ 12.

SACRAMENTO VALLEY — SCM, Ronald G. Martin, W6ZF — Asst. SCMs: Northern Area, Ray Jensen, 6REB; Central Area, Willie Van de Camp, 6CKV; Southern Area, Robert Metke, 6SUP. SEC: KME. ECs: MET. SAC., BVK; Walnut Grove, AYZ; Dunsmuir, JDN. RM: REB. OES: PIV. SUP, 511 Oak St., Roseville, is new Asst. SCM for the Southern Area. *Northern Area:* JDN is stirring heavy emergency program at Dunsmuir. GJF is newcomer at Edgewood. RXY is on 28-Mc. 'phone. SXF is at Central Valley. *Central Area:* The Chico Hamfest was a big success! FOD and CKV are rebuilding for 3.5-Mc. mobile. GUV plans mobile competition with CKV. RAQ is hitting the DX spots on 28 Mc. RAQ is putting up new 28-Mc. beam. AF is DXing on 14-Mc. 'phone. *Southern Area:* KKL is on all bands. JN/6 was SARC call for "FD" at Forest Hill. CQK finished 3.5-, 14-, and 7-Mc. antennas 60 feet skyward. BTY is Acting NCS of 29.4 Mc. Emergency Net at 9 P.M. Thurs. ZYV reports excellent results in T.V.I. experiments. AP is NCS of 29.4 Mc. c.w. Emergency Net at 8 P.M. Thurs. with RMP, KRX, PIV, BVK, BTY, GDE, AK, and WTL active. WHG, KME, BVK, ASE, LBJ, AK, and EBM are fully mobile-equipped to tie in with 28-Mc. 'phone net. FMD, from San Francisco, is operating 7-Mc. mobile in this section. MIW is working on new 144-Mc. converter. QDT vacationed with 3.85-Mc. 'phone mobile. PIV has new lathe for turning out material for his OES work. QKJ put up new 7-Mc. ground plane antenna. AK erected new 7- and 14-Mc. antennas. GDO has new 32V-2. GDE is active on 28-Mc. 'phone and c.w. WRD is DXing on 28 Mc. with a couple of Dts. UM is on 3.5 Mc. with new antenna. ZF flew with KME in a winged-puddle-jumper to the Chico Hamfest, as did AK and his XYL in their Aeronca Champion. Traffic: W6REB 318, PIV 67, JDN 44, ZF 25, ZYV 7.

SAN JOAQUIN VALLEY — SCM, Ted R. Souza, W6FKL — Asst. SCM, James F. Wakefield, 6PSQ, SEC: JPS. ECs: VTZ, PHL, WBZ. GD, from Palo Alto, gave a fine talk on antennas at the June SARC meeting. WBZ won the door prize. SF/6 and TO/6 turned in good Field Day scores. PJF/6 did all right until she fell into the arms of Morpheus. FZW is at Ft. Monmouth for a few months of active duty. GJO has a new grid dipper. BNW was up in Yosemite for a while. NDJ works the night baseball games as telegraph operator. VSJ is studying for a 2nd-class telegraph renewal. RWI is the new chief at KCVN. HIP thinks the Field Day was a swell activity. INP acted as chief cook, bottle washer, and baby sitter during Field Day while PJF/6 (his XYL) did the operating. GQZ is the first Stockton ham to work out of the State on 144 Mc. EXH worked so hard on Field Day he got a case of eye strain. EKP got knocked off his scooter by a belligerent automobile. UWY is back on 144 Mc. with 600 watts. QER is quite active on 144 Mc. these days. DWH soon will be on 144 Mc. ERE has been busy building a 28-Mc. rig for the club. DVS operated the radio gear instead of the cooking gear on this year's Field Day. BCL is on 144 and 7 Mc. UWY, EKP, DWH, EXH, GQZ, MDQ, INP, and PJF attended the San Mateo Club picnic. CLU is rebuilding his VFO. JPU is keeping Fresno on the map on 144 Mc. The father, daughter, and son team, EPB, ZKD, and FZR, have been busy handling traffic from the Boy Scout Camp in the high Sierras with FZR at the mountain end.

ROANOKE DIVISION

NORTH CAROLINA — SCM, W. J. Wortman, W4CYB — Many thanks to OFO for reporting the activities of the Thomasville Amateur Radio Club. MWN has moved into a new shack — back yard variety. ISP is experimenting with t.v. with cathode ray tubes, and results are said to be doubtful. OFO has beam up higher in anticipation of DX snagging. PAR, the club station at Thomasville, was out on Field Day for its first time with nice results. FXU is busy with farm work. KJS spends time on traffic work when operating — which now is scanty. AEH reports a nice time Field Day for the Alamance Club. Ira, busy on 28 Mc., looks toward 14 Mc. CYY started a quest for DXCC last fall. He now has 100 confirmed in a ten-months period. AJT has a new Collins exciter and a pair of 4-250As for sale. AIT is putting up a 14-Mc. beam. GG and MR snagged another new country. GQU had a lapse of memory and wrapped his feeders around the beam support. He pulled them right through the roof of the shack. The guys around Greensboro are getting T.V.I. blues. Those around

(Continued on page 86)

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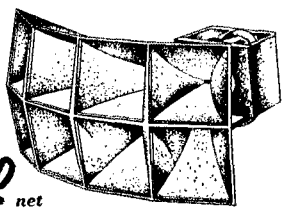

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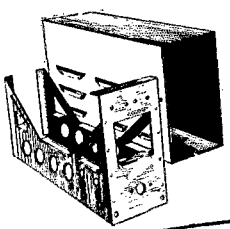

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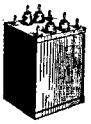

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Charlotte too, I betcha. Club stations BX and BFB at Charlotte had good Field Day trips. NAP still is chasing Utah for a WAS, but has 35 countries confirmed. Some of the gang might help out Dr. Lynn in Dunn, who has taken his exam and needs to assemble a rig. Doc had the misfortune to lose his sight. What say some of you guys down that way? Summer activity is as slow as ever.

SOUTH CAROLINA — SCM, Ted Ferguson, W4BQE/ANG — The Palmetto Amateur Radio Club of Columbia had a very successful Field Day with 189 contacts, working three transmitters of 30 watts or less. Those taking part were BZX, CEL, JGM, BQE, LJJ, NZA, HEV, OFH, OAD, PIL, MAP, and MPS. The event was held on the farm of NZA. Other clubs taking part were Charleston, Rock Hill, and Greenville, but no report was received on their success. OAD reports that he now is running 250 watts to a pair of 24Gs on 28 Mc. Your SCM announces with regret that this is the last report he will make for the section as he has resigned on account of moving from the section. I have enjoyed serving you fellows very much and assure you that it was a pleasure that I long will remember. I shall be pleased to have you look me up if you are in Atlanta. Best of luck to all. Your reports in the future should be mailed to T. H. Wood, W4ANK, Acting SCM, Route 6, Box 690, Naval Base, S. C.

VIRGINIA — SCM, Victor C. Clark, W4KFC — MID reports Falls Church Club's Field Day outing a huge success with 24 operators on hand to man six transmitters at PAY/4. Twenty-six Virginia, Maryland, and D. C. hams made the trip to Eastern Penna. to operate 4KFC/3 under the PVRC banner. Messages received by the SCM indicate that 3LTR/4 operated at Bluemont and 3DIM/4, the Capitol Mike and Key Club, at Dunfried, Va., during Field Day. The Peninsula Amateur Radio Club, KEK, staged a Hidden Transmitter Hunt July 17th, with transmitters operating on 3.5, 28, and 144 Mc. Results are unavailable at this writing. IPC, PHL, JCV, JDS, KAV, LMB, ZV, LMP, K4AF, and K4USA participated in the Va.-W. Va. flood emergency activities, assisting D. C. and W. Va. amateurs in maintaining contact with the stricken area. PHM, ex-3LTB, is in Arlington and plans to fire up his p.p. 813 rig shortly. RQR moved to the base at Quantico and is busy erecting skywires for fall and winter activities. He reports that PFC is the new call of the Quantico Marine Corps School Radio Club, with OMK as trustee. EFV will be missed from VN as he has been transferred to the Marine Corps Reserve Signal Co. in Brooklyn. 9DXO/4 left for Florida. KVM reports that OVH is now on 14-Mc. c.w. with p.p. 807 and that IPS returned from California. LAP is oiling up his gear for net and traffic activities this fall. MQM is now at Gunter AFB, Montgomery, Ala. KP4FM/4, now stationed in the Norfolk area, is petitioning FCC for new W4 call. NJV is new ORS. YEJ has 800 watts on 3.85-, 14-, and 28-Mc. 'phone. DX stations will exhibit greater appreciation for calls from NNN when they learn that the OM must rush to the bathroom, jump in the tub, and lean out a window to rotate his beam to the proper azimuth prior to calling! KA reports that the Falls Church Club acquired grid dip oscillator for use in running down T.V.I. KA is erecting new three-element 14-Mc. beam. NQV carted off first prize in jr. division at recent National Capital Model Airplane Contest, using his radio-controlled job and other models. Traffic: W4KVM 41, KFC 12, KA 9, IA 6.

WEST VIRGINIA — SCM, Donald B. Morris, W8JM — West Virginia amateurs found their Field Day becoming a reality with the Petersburg Flood striking the same day. EYV and HSC were the first two amateurs to enter the stricken area, followed by YGL and ESQ. The following did notable work: OXO, DOU, YDN, ILK, YIE, UEB, CLX, WKP, and GSN. Operating CLX/8 in Field Day the KVARA made more than 550 contacts and supplied men and equipment for Petersburg. The MARA used SP/8 for the first time during Field Day and had MIT and 2PEG as visitors. BDD has new mobile rig on 14 Mc. and keeps schedule with KG6FP and KX6AF. BOK, ESQ, YGL, and JM appeared on local b.c. station, WVVW, reporting on amateur radio's part in Petersburg Flood. QG was visited by 7FS/MM. OSZ and PNR have switched to 14 from 3.85 Mc. The Charleston Radio Club, using 8COE/8 in Field Day, appears to have walked off with top honors in West Virginia with over 700 contacts. BWD, JKN, and TDJ continue their tests on 50 Mc. each Monday evening. West Virginia C.W. Net on 3770 kc. and 'Phone Net on 3890 kc. are set to open on Oct. 3rd. New stations are welcomed to either Net. GBF and HUK can assist if you have any questions. Traffic: W8OXO 56, GBF 10, CLX/8 1, SP/8 1.

ROCKY MOUNTAIN DIVISION

COLORADO — SCM, M. W. Mitchell, WØIQZ — SEC: KHQ. RM: IC. IC advises that he is NCS for Colorado for MARS/AF and FOU is Alternate NCS. The IUN will begin operations September 12th at 1930 MST (7 P.M.) Monday through Friday. RM IC urges all Colorado stations to report in at that time and date. ZJO is high traffic man this month with a total of 453; he would like a Denver contact for traffic. ZJO, at Delta, is installing f.m. gear

(*Continued on page 88*)

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for the local R.E.A. CUG is in Milwaukee for the summer. MOM has new bug and now is trying for the A-1 Operator's Club. SFS is experimenting with a Cubical Quad. OTG is on 3.85-Mc. mobile. ODW operates mobile on the Navajo reservation with good results. DYS spent vacation in Canon City. SGG is new EC for Colorado Springs. SGG and DYS made the A-1 Operator's Club. IQZ had to purchase an electric range for the XYL to justify his purchase of ham gear. Yours Truly is going to visit his old Navy Chief and buddy, 5CEE, at Hobbs, New Mexico, and will be there by the time this is in print. He also plans a flying trip via United Airlines to Los Angeles. That's all there is, there ain't no more. Traffic: W0ZJO 453, MOM 16, OWP 8, ODW 3.

SOUTHEASTERN DIVISION

ALABAMA — SCM, Dr. Arthur W. Woods, W4GJW — ELA is on 3.85 Mc. with a converted ART/13. PBJ is Anniston's newest call. He is 15 years old. BCU, GBP, and LEN are on 144 Mc. Forty or fifty people attended the harmfest sponsored by the Auburn gang at Chewacla State Park. GSO is in new QRH with masts. LTR is working on Million exciter. HDF uses push/pull parallel 2A03s on 28 Mc. KTP runs 400 watts on 28 Mc. with Workshop beam. NIK uses Gon-Set converter ahead of receiver. OJJ needs help to install beam on 28 Mc. LUT has a new Jr. operator. DMV is on 14 Mc. MJG is working on a 28-Mc. beam. NLB is working DX on 7 Mc. The Dothan Club already is looking forward to the 1950 Field Day. The Mobile gang and the Anniston group both distinguished themselves by sharp operating in the recent Field Day.

EASTERN FLORIDA — SCM, John W. Hollister, jr., W4FWZ — Is your emergency gear ready for National Simulated Emergency Test and the storm season? Have you checked with your EC? Have you checked into one of the nets? Why wait? This is September, time for action. Recent appointments: OPS: GZV, LMG, and NAK. ORS: OBW, OES: AYX. Nets: 3675 kc., 7:30 P.M. daily, except Saturday and Sunday; 7290 kc., same time; 3910 kc., Tues., 6:15 P.M.; and 3960 kc., 7 A.M. daily except Sunday; Brooksville: MNT, with visitor NIJ, put in a long week end of DX and fun. Mac is doing an FB job as RM for Gator Net. Jax: New officials for JARS are AWE, CGG, EHU, and IPL. EID reports over 100 QSOs on 50 and 144 Mc. Some nice DX, too, on 50 Mc. FWZ is trying to master a Mon-Key. HWA is working on the rig for mobile 3.85 Mc. as companion to mobile 28 Mc. DU is putting 50-watt rig in boat cruiser. Lakeland is now QTH for CPG. Lake City: IQV now has 500-watts on phone and c.w. Al wants QSOs on 145.7 and 50.4 Mc. Miami: New DEC officials include AZK, IKI, and MKP. RBQ got his DXCC. ILE, FFF, and LVV were among the top scores in the SS. The DRC says try VP5XX on 14,040; LX1AS on 14,035; or GC3ZU on 14,105 kc. New Port Richey: Hats off to KJ for an FB job while M.O.ing for K. of Kc. Orlando: NRE worked VV in Miami on 144 Mc. Congrats to QN for national recognition for cross-band 50-144 Mc. QSO to Texas. West Palm Beach: MVJ, OBW, and AAP are mobile on 28 Mc. HDX is happy with debugged 750-watt crusher. New WPBRC officers are MVJ, BKN, IUJ, TIH, and JQ. FWZ visited JQ, TIH, and MVJ. Clearwater: AYX is finishing 250-watt final for 144 Mc. New Knights of the Kilocycle officers are IQV, AYX, and HUY. Holly Hill: OAV is new traffic outlet on 7290-kc. net. Reminder: DQW is SEC, JQ is PAM, RMs are KP on 3.5 and MNT on 7 Mc. More OPS, ORS, and OOs are needed. Traffic: W4IQV 314, MNT 47, OAV 30, MYJ 9, FWZ 8, AYX 3.

GEORGIA — SCM, Clay Griffin, W4DXI — The Augusta gang was active Field Day using calls AAY, LYG, OKL, and K4NAI. Macon: LXE took part in Field Day at Savannah. PKT is a new ham. ERT has a Collins 30K. FIE is building a new home with plenty of room for antennas. PFA works 7-Mc. c.w. and 28 Mc. PRC is on 7-, 14-, and 28-Mc. c.w. YRE moved to Warner Robins. 9DSN now is 4PCA. The Columbus Radio Club is going well now. TIS was active Field Day. Also, CYC made a swell score with 277 contacts. CBR attended Rotary International Convention in New York, and he carried his portable gear. BOL, BQU, DXI, GGD, and PCB joined forces Field Day and made 288 contacts, operating in the two-transmitter class. The Savannah Club had 101 QSOs Field Day, and worked 46 states. Both the Navy and Army cooperated by furnishing emergency generators. KGP soon will have 50 watts on 3.5 Mc. Atlanta: GTS was active Field Day. LNG winds up his activity here with 42 states on 50 Mc. and 4 states on 144 Mc. Another Georgia QSO Party will be held Sunday, Sept. 11th, from 2 to 4 P.M. Score one point for each different station worked. Look for cross-band QSOs (3.5 and 3.85 to 7 Mc.) especially from 3 to 3:30 P.M. Send reports to the SCM. BYK's traffic total of 12 in last month's column should have been credited to KGI. Traffic: W4KGI 17.

WEST INDIES — SCM, Everett Mayer, KP4KD — DV and JA had KP4ID/KP4 on for Field Day at El Yunque. EZ is up to 106 countries and 106 KP4s worked; Bill is being transferred to Fort Sill, Okla. AM/BE and HR make their final KP4 report before leaving for the

(Continued on page 90)

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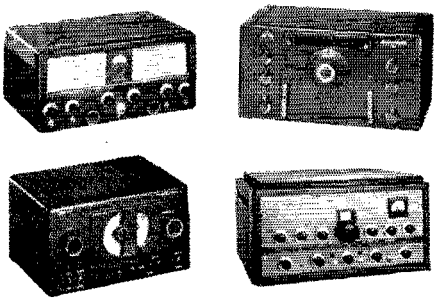

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States. They worked a lot of nice DX with their QRP during two years and eight months as KP4s. The C.W. and 'Phone AEC Nets are well attended, with DJ and ES doing FB jobs as NCS. FQ transferred to the States for reassignment. W4NHG, ex-KP4FD, spent a few days in KP4 Land on CAA business. AM's and HR's jr. operator passed his amateur exams. AK changed QTH and is reinstalling. DR is working out nicely with 14-Mc. n.f.m. DN joins the list of KP4s on CAA payroll. The hurricane season is rapidly approaching. Have you a portable self-powered rig that can be used in emergency? KD blew another PA plate transformer. IE is on 14-Mc. c.w. while 28 Mc. is in the slump period. We still need more reports. Where are you keeping them?

CANAL ZONE — SCM, Everett R. Kimmel, KZ5AW — Canal Zone AEC was commended by Chief of Staff, Caribbean Command, for a communications job well done during the Bolivian troubles in June. Acting SEC, FL, now VFO with rebuilt Meissner De Luxe, schedules W8YGH, W5PEL, W4OEV, W4KRG, W6OER, and OA4OI weekly, in addition to drilling Pacific AEC gang Monday nights. MARS Officer Gregg of AA conducted CZARA on a tour of CAA and military receiver and transmitter installations. AW, CG, CP, MZ, PA, and WD check into West Indies Net Sundays at 0930 on 14,040 kc. with VP3s, 4s, 5s, 6s, KP4s, and KV4s. WJ is rebuilding. MZ is flirting with n.f.m. between OBS duties. GM is building rig with VFO and a flock of 807s ending in an 813. Gus of GM and AA have the two highest QTHs in the Canal Zone. First YL to qualify for ham ticket in KZ5 Land is Angela M. Combs, AC, XYL of PC. CG is on 14 Mc. with a 75A plus audio filters. DXer IP added FK8 and UB5. Traffic: KZ5FL 12, CK 8, GT 6, CG 4, AW 3, WJ 3, IP 1.

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, Vincent J. Haggerty, W6IOX — Asst. SCMs, Irvin O. Hege, 6FYW, and William J. Schuch, 6CMN. SEC: ESR. PAM: MVK. Along with 'Phone Activities Manager MVK's report, Tom included a picture of his beams topped with a 32-element 144-Mc. array 63 feet up. FMO is DXing on 28 Mc. and doing well with low power; his mobile rig at 2.4 watts input has netted 32 countries. QUK has a Tilton four-element beam on 50 Mc. DPP is the call of Glendale High Radio Club. FEX has a new jr. operator. NZP is president of the YL Club of Los Angeles. YRL and NAZ have been mailing out copies of the new "Directory of the YLRL," a callbook of all YLRL members. VAQ operated solo on Field Day from Signal Hill; his score might have been higher, says he, if inquisitive cops hadn't questioned his activities up there. VAW is secretary of the Mid-Cities Amateur Radio Club of Compton, a recent ARRL affiliate. Traffic reports by radio came from CE, CMN, DDE, JQB, QAE, RXT, ZMZ, and ZQV. CE enhanced his efficient station by completion of a triple bandswitching rig encompassing VFO and crystal control with an increase in power. DDE made the BPL on deliveries. BHG won a sixteen-element 144-Mc. beam in the Two Meter and Down Club QSO Contest. TFC has a new rig on 50 Mc. DGA got a new bug which he will put on the air when he trains it not to send Morse code. DLR is trying out a pair of 807s in Taylor Super-Mod. system. DBY is on 7 Mc. and had a 30-minute QSO with KG6CX while using low power. SEC ESR reports the setting up of a station in Red Cross Headquarters in Los Angeles for monthly AEC drills; RIT will be in charge of the station. Further details on this development will be announced later. Traffic: W6CE 1244, DDE 382, IOX 178, YLZ 88, CMN 84, BHG 59, JQB 35, TFC 35, QAE 26, RXT 24, ZMZ 18, ZQV 11, DGA 7, EYH 5, AM 4, FYW 3, ZOJ 1.

ARIZONA — SCM, Gladden Elliott, W7MLL — Arizona regrets the passing of RRX and JGW, two swell fellows. Compliments to OMH for his fine work in keeping them on the air for a long period preceding their passing. Arizona hams had their greatest turnout on Field Day. Clubs participating, with approximate scores, are: Radio Club of Arizona, 2900, 5 rigs; Sahuaro Radio Club, 3700, 4 rigs; Tucson Radio Club, 3300, 2 rigs. Individual groups: LHI and KFS. The Northern Arizona Radio Club is our newest ham organization. It is open to all Northern Arizona hams. Officers are NEV, pres.; LYS, vice-pres. and act. mgr.; KQV, secy.-treas. MHE now is in Phoenix with a kw. on 28 Mc. KUZ is running a ham class for Boy Scouts. New calls: NNT, Murusa; NPW, Bouchard; NNV, Kinnison; NOA, Finley; NOD, Weaver; NNO, Buchheit; NNG, Scott; NPL, Carmack. RNB is mobile on 3.5-, 7-, and 14-Mc. c.w. KAE bought JMQ's 3.85-Mc. mobile rig. 6PPL is operating 28-Mc. portable at Davis-Monthan Field. FGG worked the 144-Mc. gang from KRC's location in Nogales with good results both ways on the 70-mile haul. MEK keeps regular 28-Mc. schedules with ZLs. RJN is on 3.85- and 14-Mc. 'phone with 70 watts. Traffic: W7RJN 32.

SAN DIEGO — SCM, Dale S. Bose, W6BWO — Asst. SCMs, Shelley E. Trotter, 6BAM, and Gordon W. Brown, 6APG. SEC: DUP, RM: BGF. Your SCM was unable to participate in Field Day because of conflicting engagements but did manage to get on the air from the home location for one hour and gave some of the boys and girls a few contacts.

(*Continued on page 98*)

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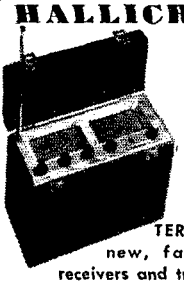

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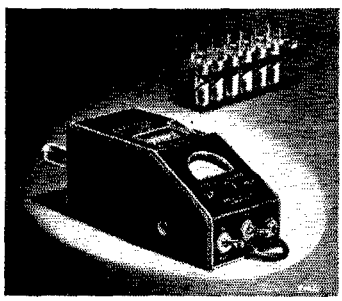

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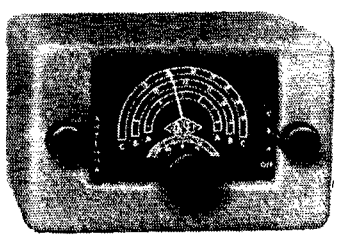

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From all reports it was a huge success and everyone who did get in on it had a swell time. The San Diego YLs had an excellent set-up and really put their club on the map. The Soledad Radio Club had a very complete and well-planned program headed by YXE. Incidentally, it is the newest affiliated club in this section. Congratulations! PQM, with brand-new ORS and OPS appointments, came up with the highest traffic score for the month. Anyone knowing the present whereabouts of OBD, please drop a card to your SCM. The Southern Border Net shifted to 7285 kc. on July 7th. Time: 8:30 P.M. PST. An excellent picnic was held by the Old Goats Net at Doheney Park, near Capistrano, June 5th, and was attended by over 100 persons. The San Diego Amateur Emergency Corps Net still meets each Tuesday at 8:00 P.M. on 29.5 Mc. Everyone is welcome to check in. The summer months seem to be taking their usual toll of activity but I hope things will pick up shortly. 3.85-Mc. mobile operation is increasing daily and seems to be ideally suited to local emergency work. How about a nationally-recognized mobile frequency? There seem to be two frequencies here in Southern California where most of the mobile operation takes place. These are 3950 and 3965 kc. Any suggestions? Traffic: W6PQM 62, BAM 25, BGF 17, BWO 1.

WEST GULF DIVISION

NORTHERN TEXAS — SCM, Joe G. Buch, W5CDU — About the time this report reaches your mail box many of you will be packing and getting ready for the big ARRL West Gulf Convention at the Baker Hotel, Dallas. It is going to be a golden opportunity to meet the fellows you have been QSOing for a long time but have not had the pleasure of meeting in person. You'll regret it if you don't meet the gang in Dallas on Aug. 27th and 28th. Special meetings for EC and traffic net members are on the agenda. A special get-together is planned for CAA personnel. The XYLs are promised a special program of unusual interest. Headquarters representatives will be here to meet and greet you. We'll be looking for you. QDF is a new ham in Clarendon and is working 7-Mc. c.w. with an ARC-5. Too much work is QRMing the activities of BKH. Mr. and Mrs. IZO have a new daughter. KUP flew to New York for a vacation and made the return trip in his new Studebaker. MAW has worked all districts except W1 on 50 Mc. and keeps daily schedule with Houston on 50 and 144 Mc. DAS claims 16 miles as DX on 420 Mc. FQK is active on 3.85-Mc. 'phone. BEF keeps schedules with his son, BYF, and his brother, BSC. AYC is on 3.85-Mc. 'phone. GZU again makes BPL for the fifth consecutive month — a real record. AAO, our SEC, has made the following EC appointments: FFX, ICB, FPH, DXR, KWH, IWQ, and FTK. Traffic: W5GZU 724, BKH 7, LGY 3.

OKLAHOMA — SCM, Frank E. Fisher, W5AHT/AST — SEC: HGC. RM: MBV. My apologies to the gang for missing last month's report — too much business QRM. Because of light attendance OLZ goes on a three-day schedule in July, Tuesday, Thursday, and Saturday, with free net procedure. (YJ has a new rig on 7 Mc. with push-pull 813s.) K5NRJ schedules GZU and W4PL on 7 Mc. to clear traffic for OLZ. OWV has been pinch-hitting as NCS for OLZ and doing a nice job. New net members are 6CHA/5 at Jay; MEZ, Ardmore; and GPD, Tulsa. MBV is reported leaving Ft. Sill in October. GCM will be a DL4 before long. We will miss him and his work as EC for Comanche County. PML, with 50 watts on 28-Mc. 'phone, needs only Vermont and Kentucky for WAS. He was elected secretary of Lawton-Ft. Sill Club, replacing GCM. 5LGI/3 is on 14,020 kc. looking for old buddies from W5 Land. EHC has new MARS call, AF5EHC, and spent fifteen days active duty with the Air Force. IRB is moving to Salt Lake City where he will be instructor in the University there. HVL is leaving for Germany soon. PVC is leaving for his home in Baltimore soon. MSP is building a new rig with 829 final. QAE and PWN have been operating 14 Mc. for a good start. KVF is in the hospital with polio. We're wishing you a speedy recovery, Odville. KL7WQ is back from Alaska. QDT recently received his ticket. OSE and family spent vacation in Maryland. New officers of Bartlesville ARC are MRK, pres.; OOZ, secy.-treas. Traffic: (June) W5MBV 329, K5NRJ 157, W5OWV 84. (May) K5NRJ 794, W5FOM 368, MBV 358, PA 102, OWV 77, NMM 43, AST 34, ADB 11, EHC 7.

SOUTHERN TEXAS — SCM, Ammon O. Young, W5BDI — DAA, BAJ, EVL, IIK, and FPH were active in the Field Day Contest. DAA is going mobile. NIY is on 3.5- and 14-Mc. c.w. PLE has one of the Federal transmitters on 28-Mc. 'phone. IX has new 28-Mc. 'phone job. LRD is trying to get his c.w. speed up. MRV now is Class A and will be on 14-Mc. with a three-element beam. PS, ex-1NAO, is building a de luxe receiver. MK is using the same transmitter in his car and his plane. ACL is on 28-Mc. 'phone. FNI is trying to eliminate T.V.I. LNB will be operating from KL7 this summer and fall. Traffic: W5DAA 5, MN 4.

NEW MEXICO — SCM, Lawrence R. Walsh, W5SMA — SEC: ZU. RM: NXE. PAM: FAG. The Los Alamos Radio Club elected the following officers this month: OXC, pres.; UVA, vice-pres. and act. mgr.; OII, secy.-treas. NXE took a vacation back to Indiana this month. NRP and his XYL visited SMA and his XYL at Los Alamos. The Sandia Radio Club has volunteered to organize the State Hamfest

(Continued on page 94)

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again this year. Soupy Groves, our Director, has promised to attend if at all possible. The New Mexico August Field Day event will be a contest with prizes for the winners in the energency-powered class and the commercially-powered class stations. For details write the RM, NXE. (Acting SEC while Mert is on the West Coast.) FAG is moving to Socorro. BIW and his XYL, DRA, now have a new steel desk from which to operate! PKI is building a mobile rig for his car. NNE and his bride are back in Albuquerque. LGS is helping Fitz put up a three-element beam. LGS now has 135 countries with YJIAA, VR3C, and Burma being his latest.

CANADA
MARITIME DIVISION

MARITIME — SCM, A. M. Crowell, VE1DQ — SEC: FQ. RM: GL. KS, new PAM, now is OO. High traffic man this month is BK with a total of 150. VY recently got his ticket and is on 28-Mc. 'phone and 3.5-Mc. c.w. UZ, one of our gals, now has Class A ticket and is on 3.8-Mc. 'phone as well as 14 and 28 Mc. ZM has been elected District Chairman for Canada for the YLRL for the current year. UT was recent visitor to the shack of KS. GH is on 3.8-Mc. 'phone again with about 300 watts. Sorry to hear that RP has been ill. We hear that OK now is sporting a DXCC certificate and that PQ is expecting his soon. In addition to those reported in Field Day work last month we note that the PCARC was quite active with 15 operators at Roy's Island. The HARC boys now have a technical information service in charge of HJ. Turn in your problems to Ralph, who operates the Question Box. 2DJ has arrived back home after visiting some of the local boys. HT is now an O.M.M. (Old Married Man). We snooped in on the Maritime Net ('phone on 3760 kc.) a few nights ago and heard some nice operating. How about some news, fellows? BCNU at the Convention in Halifax. Traffic: VE1BK 150, MK 50, PZ 22, YO 10, FQ 8, KS 1.

ONTARIO DIVISION

ONTARIO — SCM, Thomas Hunter, jr., VE3CP — Asst. SCM, M. J. McMonagle, 3AWJ. SEC: KM. RMs: ATR, AWE, BUR, DU, GI, BMG, TM, and WX. PAMs: DD, FQ, and RG. New appointments include MJ and CAR as OPS, BMG as RM, and CAR as OBS. BZ is having receiver trouble. AKS has another daughter. BUG is after ORS appointment. BWK has 813 on 28-Mc. 'phone. BSX is using three-element rotary on 28 Mc. OR can be heard on any of the 'phone bands. AEJ finally settled in new home. BIA has CP certificate. AWJ has 7-Mc. "V" antennas and is back on from Toronto. BUR is on T/O and Beaver Nets regularly. DH is now located at No. 6 Repair Depot, R.C.A.F., Trenton. BVR is after ORS ticket. FT is after his degree from MacMasters and has very little time for operating. TG is forced to give up ORS appointment as he is too busy at the store. AXB did a fine job as "master of stunts" at the Sudbury Hamfest. PH won an FB frequency meter at the Sudbury Hamfest. ABP is hard after DXCC, along with BNQ, QO, BDB, and KE, who only needs one more confirmed for his ticket on c.w. ZM was very close to obtaining his DXCC when he was electrocuted while operating his rig. It is now my sad duty to list him in Silent Keys. The insulation on his monitoring pick-up coil broke down with his mike resting on his chest. Mac was a great guy — liked by all who met him either on the air or in person. Floral tributes were sent from VKs, Gs, the Ontario 'Phone Club, and the Ontario Beaver Net. It would be time well spent if we all looked over our own wiring and installed protective measures both on the rig and the antennas. YJ and ADB have mobile rigs on 3.8 Mc. AHL is mobile on all 'phone bands. APM, ADR, BMG, and VU are controllers for the AFARS in Ontario. AG has been using the same call for 22 years. SWITCH TO SAFETY. Traffic: (June) VE3WK 41, BUR 30, ATR 27, BBM 27, APS 26, NI 21, BVR 18, BMG 15, WY 13, CP 6, FQ 4, IL 2, KM 2. (May) VE3AKJ 70, APS 68, BYH 4.

QUEBEC DIVISION

QUEBEC — SCM, Gordon A. Lynn, VE2GL — EC was the only one heard from this month. He reports that the Quebec 'Phone Net continues to operate at 8:15 A.M. and 12:15 P.M. daily except Sunday with EV, OD, JZ, JAM, AT, AEM, ADC, and AIM taking part. ZG worked eight Ws in an hour on his 50-Mc. mobile job. Five of these were W4s. ADX, in Outremont, has 70 watts to an 807 on 7 and 14 Mc. with an AR-6 receiver. UW, finding the going tough on 28 Mc., is trying his hand at 3.5-Mc. c.w. again with 40 watts. RI has Sonar exciter unit on 28 Mc. which he is trying on 14 Mc. with fair success. RS has 814 final on 3.5 Mc. running about 150 watts. AK has a pair of 810s on 3.8 Mc. and puts a potent signal into Montreal. AD, on 3.8-Mc. 'phone, is located close to Ottawa, but in VE2 Land. GP holds down 3.8-Mc. 'phone from Hull, RM, ZL, and LZ continue quite active from Quebec and all have good signals in Montreal on 3.8 Mc. during the daytime as well as evenings. Field Day was a great success.

(Continued on page 96)

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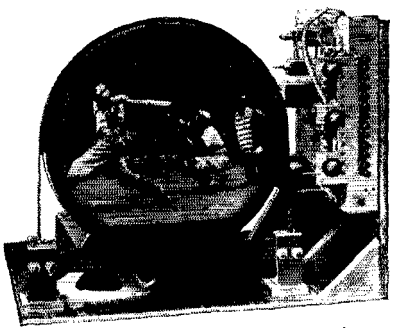

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$259.50

Model 513

10" Plastic Cabinet

New 10" table model in modern plastic cabinet. 56 sq. in. picture with rounded sides utilizing full width of TV tube. 19 tubes plus 3 rectifiers and picture tube. Shpg. Wt. 98 lbs...**ONLY**

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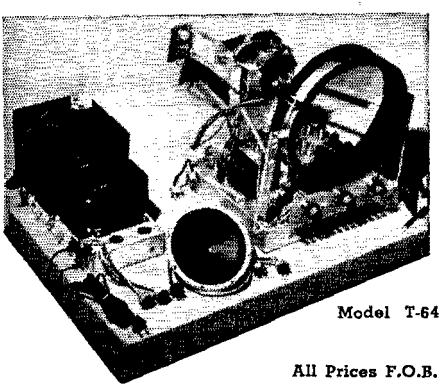

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12" Custom TV Chassis Complete With Picture Tube

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with a good number of turnouts. SA has his s.s.s.c. working FB on 3.8 Mc. He is visiting W Land during vacation and intends to include W1AW in his visits. XA burned out modulation transformer and is using n.f.m., a thing which he vowed he would never do! AJ, TH, XD, XO, and GL are frequently on the high end of 3.8-Mc. 'phone and enjoy many QSOs with W stations despite the fact that it is said that Canadians haven't a ghost of a chance to work in that end of the band. Let's have some reports, gang. Traffic: VE2EC 56.

VANALTA DIVISION

BRITISH COLUMBIA — Acting SCM, Ralph O. Norman, VE7ID — No unsolicited activities reports were received this month. How about coöperation, you VE7s? New appointments this month are: ORS — AC, TF; OBS — AC; OPS — FB; OO — AOQ. Listen for bulletins from US at one minute after midnight on 3800 kc. Field Day saw KI, SR, and ND report in for extra points. Thirteen members of the Totem Club were 1000 ft. up Capilano, and — you're right! — the APU went unserviceable! However, the Air Force balloon (real skyhook is that thing!) gave Totem a wonderful vertical antenna. EP had a station at Boundary, while ACS worked from their University site. Victoria treated itself to another "Disaster Day" under Emergency Coördinator TG. At Red Cross HQ Station were XX and SW, along with TG. Air Force Amateur Radio Service has a fast and slow net on Mondays and Tuesdays respectively at 2045 hours on 3715 kc. YZ edits the monthly *AFARS News*. ID is license holder for the Air Force amateur station, ADA, at 4050 West 4th Ave. A B.C. Net has been organized with YI as NCS. YI has whipped the net into good shape and it can handle all and any traffic. Listen nightly at 2200 hours on 3655 kc. for an invitation to break in with traffic. Route your traffic through the BCN. Members include AEU (RM), AKI, ALP, AOQ, EH, ID, ME, MX, OD, OL, PM, TF, VG, XA, XX, and YI(NCS). Traffic: VE7OD 49, YI 18, AKI 12, ID 10, AEU 8, JM 6, MJ 4, AC 3.

PRAIRIE DIVISION

MANITOBA — SCM, A. W. Morley, VE4AM — RO is not satisfied with reports from Asia so has new "V" beam with 320 feet to the leg. XO is using n.f.m. while rebuilding the a.m. modulator. A new three-element Hammond beam also is used. NN is using n.f.m. on 3.8 Mc. and 14-Mc. 'phone. MO and SR are heard working mobile on 14-Mc. 'phone. The number of portable rigs in Winnipeg is at least six. Three of these are AEC members. What about the rest of you? QV and NI still have their round tables on 14 Mc. QD has his 813 on all bands now. An SX-18 pulls the signals in. FG is back on 7 Mc. after spending the year at U. of S. in Saskatoon. KW is not heard on much because of Ylitis. SS started rebuilding a year ago but because of Ylitis has not been back on yet. RX is in new QTH with room for antennas for 160 meters. A jr. operator was a welcome addition a short while ago. DF is practicing with a new electronic bug. RM says 28 Mc. has gone sour and is on 14-Mc. 'phone and c.w. TJ is in new QTH. The WARC operated on Field Day and made a fair showing for their first time out. The BARC ran into continual rains on their third effort. W2WPT is spending a few months in St. Vital. SCM Jones, VE6MJ, spent time at RCAF camp at Gimli.

SASKATCHEWAN — SCM, J. H. Goodridge, VE5DW — RB is pleased with 160 meters and reports hearing DT, QB, JI, and NG. CJ is building new 28-Mc. beam. DR has set aside n.f.m. and is working out with screen modulation. EE is experimenting with Taylor modulation. UC has a real hot mobile job. OB is erecting a new antenna while RJ is testing out 3-stacked antenna. AJ reports he is rebuilding his 10 over 20 beam. LV, EW, and DR joined the 'phone net, which is functioning despite summer QRN. CE made a trip to VE2 Land to visit his brother, whom he works consistently on 14-Mc. 'phone. LV visited VE6 Land. The SARC station, AA, was active during Field Day.

National Traffic Plan

(*Continued from page 51*)

gional net convenes again, and the area-net representative returns to distribute whatever traffic he has received to the proper section representative, and these representatives at 2200 carry the traffic into their section nets for transmission to delivery points.

In the area nets, the net manager also arranges for stations to report into the net for the specific purpose of carrying traffic to area nets to the west, which meet at later hours (see diagram).

(*Continued on page 98*)

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C-81	10	C-88	4–16	200	$3.82
C-82	10	C-89	4–16	250	$5.29
C-83	8	C-90	3–14	300	$5.59

All above 3000 Volts Insulation

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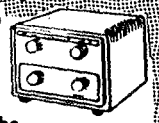

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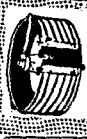

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115 V.A.C. 60 cycle #C-78246. Can be used to turn small antennas or as indicators. Size 3½" x 3½". Price per pair..... **$6.95**

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For Small Transmitters. DC Voltage Ratings are Approx. Values Obtained at Output of a 2 section Choke input Filter. Using Mercury Vapor Rectifier Tubes Pri. is for 115 V. 60 cy.

Type No.	Sec. Rms. Volts	Sec. DC Volts	Sec. DC MA.	Dimensions H.	W.	D.	Price Each
P 57	660–660†	500	250	4⅝	3½	4⅜	$ 6.76
	550–550	400					
P 58	1080–1080	1000*	125	4⅝	3½	5	8.23
	500–500	400	150				
P 59	900–900	750	225	4⅝	3½	5⅛	7.94
	800–800	600					
P 67	1450–1450	1200	300	5¾	6⅛	4	19.84
	1175–1175	1000					
P 68	2100–2100	1750	300	5¾	6⅛	4¼	24.99
	1800–1800	1500					

* For dual operation with simultaneous use of both sec ratings. † Has 40-volt bias tap.

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Type 940 2.5VCT @ 10 Amps. 7500V Ins	$2.79
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Type 948 6.3VCT @ 10 Amps. 2500V Ins	$3.67
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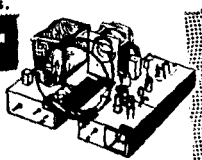
NATIONAL TELEVISION chassis



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1700V. RMS @ 2 Ma D.C.—6.3V. @ 9 amps tapped at 2.5V. @ 2 amps; 2.5V. @ 2 amps; Type P-3170 ..... $5.14

2 Hys @ 250 Ma D.C. 50 ohms type C-2991 ..... $1.62

2 Hys @ 200 Ma D.C. 50 ohms type C-2974 ..... $1.92

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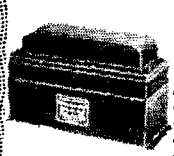

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115V, 60 cycle primary
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116 for table mtg 7.5 amps	23.00
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75 Vesey Street — Dept. QS 8
COrtlandt 7-2612 — New York City 7

This of course will not be necessary in the Pacific-area net, although representatives from the Pacific Islands will be welcomed on this net. Thus the Eastern-area net will need three such representatives, the Central-area net two and the Mountain-area net one. If a shortage of stations for this purpose should exist, one station could of course handle the whole job, but different stations should be used if possible.

Needless to say, traffic in the area nets, and to a lesser extent in the regional nets, will have to be handled at high speed and high efficiency, and the most proficient operators available will be needed. Our present crop of high-speed operators fit very nicely into this picture; lower-speed and beginner operators can fit in at lower levels, acquiring proficiency until they, too, can take an active part in higher-level nets.

There are several things you can do to help, regardless of your status as a traffic-handler:

(1) Participate in your section traffic net, if it has one. The section traffic net is the foundation of the whole system. If there is none in your section, get after your section leaders (SCM, RM, PAM) to get one started, or request permission of the leaders of an adjoining section to become a member of *their* traffic net. If your section traffic net is too fast, get a slow-speed net started, or ask your section-net manager to slow down to your speed. If most of the section interest is on 'phone, *use* 'phone. Listen to acquaint yourself with net procedure. ARRL will send you a list of "QN" signals upon request, or you will find them in *Operating an Amateur Radio Station.*

(2) Originate some traffic. If every active station originated one message every day, we would have plenty of good traffic to keep us all busy. No traffic system can function without traffic to handle, and a busy net is a progressive net.

(3) Volunteer to your section-net manager to report into a higher net, if you have the time and feel you can maintain the pace. He will appreciate your services, and you need make yourself available only when you have some free time.

(4) Talk over the plan at your radio club and get more recruits for your section net(s), 'phone or c.w., low or high speed.

There is more to it than just this, of course. Many questions will need answering. If you have read this far you must be interested, and in that case you should drop us a line for a copy of the mimeographed details. The ARRL National Traffic Plan is something new, absurdly simple in its basic concept and yet completely workable into an integrated national organization better than any we have ever had. But no traffic organization, however perfect on paper, will work without support. Have we yours?

SUN RADIO'S ANNUAL CLEARANCE!

CRYSTALS!

All crystals have Army MC harmonic ratings but Sun encloses directions for deriving the correct fundamental frequency in kilocycles.

JUST ARRIVED! NEW FREQUENCY CRYSTALS FOR HAM AND GENERAL USE
—FT-243 Holders, ½" pin spacing
(Fractions Omitted)

GENERAL USE			HAM USE 2, 6, 10, 11, 20, 40 METERS				
6006	6208	7873	5305	5825	6273	6606	7240	7640
6025	6773	7906	5675	5840	6340	6640	7306	7673
6040	6840	7925	5677	5850	6373	6673	7340	7706
6073	6873	7940	5700	5873	6406	6706	7373	8000
6075	6906	7950	5706	5875	6425	6740	7406	8040
6100	6940	7973	5725	5900	6440	6806	7440	8050
6106	6973	7975	5740	5906	6450	7040	7473	8073
6140	7740	8240	5750	5925	6473	7073	7506	8100
6150	7773	8273	5760	5940	6475	7106	7540	8173
6173	7806	8306	5773	5973	6506	7140	7573	8175
6206	7840		5775	5975	6540	7173	7606	8340
			5806	6000	6573	7206		

49c each 10 for $4.50

99c each 10 for $9.00

CRYSTALS WITH A MILLION USES

Fractions Omitted

kc	kc	kc	kc	kc	kc	kc	kc	kc	kc	kc	kc
412	422	433	442	462	477	490	498	504	508	515	519
413	423	434	443	466	479	491	501	505	509	516	522
414	424	435	444	468	481	492	502	506	511	518	523
415	425	436	445	470	483	493	503	507	512		
416	426	437	446	472	484	494					
418	427	438	447	473	485	495					
419	429	440	448	474	487	496					
420	431	441	451	475	488	497					

49c each

Xtal. Freq. Stan. 3-prong holder 98,356Kc

Easily altered for 100kc Standard. Mounted in low loss 3 prong holder.

$3.89 each

For Crystal Controlled Signal Generators Ft. 241-525Kc

526,388	533,333	537,500
527,777	534,722	538,888
529,166	536,111	
530,555		**99c each**
531,944		

I.F. Frequency Standards

kc	kc	
450	461,111	**99c**
451,388	464,815	
452,777	465,277	**each**

200 KC CRYSTALS

Without Holders 2 21/32" x 2 21/32". **Each 69c**

3 for $2.00

Assorted Miscellaneous Crystals Fractions Omitted

370kc	377kc	384kc	387kc
372	379	386	388
374	380		**39c**
375	381		**Each**
376	383		

priced at a fraction of the cost of their holders alone.

For Ham and General Use Fractions Omitted

390kc	396kc	403kc	408kc
391	397	404	409
392	398	405	411
393	400	407	
394	401		**79c each**
395	402		

CRYSTALS FOR SCR 522

5910kc	7480
6370	7580
6450	7810
6610	7930
7350	

$1.29 each

CRYSTALS FOR HAM USE

FT-243 Holder ½" Spacing

ea.

3735 KC...**69c**
4190 KC...**39c**
5030 KC...**39c**
5485 KC...**39c**

Crystals from BC 610 ¾" Spacing—2 Banana Plugs

2045	2305	3202	3550
2105	2320	3215	3570
2125	2360	3237	3580
2145	2390	3250	3945
2155	2415	3322	3955
2220	2435	3510	3995
2258	2442	3520	
2260	2532		**$1.29**
2282	2545		**each**
2300	2557		

• Payments must accompany order. Enclose 20c for postage and handling. Minimum order — $2.00 plus postage.

Crystals are shipped packed in cloth bags inasmuch as they are shock mounted. All shipments guaranteed.

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OF WASHINGTON, D. C.

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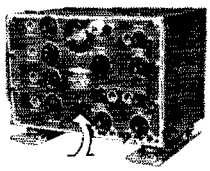
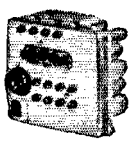
ODDS AND ENDS WAR SURPLUS EQUIPMENT



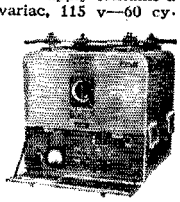
100-WATT TRANSMITTER, Bendix TA-12, 4 ECO's, tubes: 3–807, 4–12SK7, with complete conversion instructions for 10, 20, 40, 80 meters. Like New **$39.95** Used **$29.95**

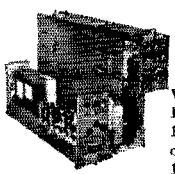
PORTABLE AMPLIFYING MEGAPHONE, battery operation, portable P. A. system, use at athletic events, etc. Throws voice ½ mile; complete with carrying case, tripod, extra mike.....**$29.95**



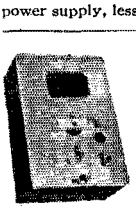
PUSH BUTTON RECEIVER, BC-728A, 2–6 mc, 4 push buttons, easily set to any frequency in range, operates from 3 volts "A" and 67½ v. "B". Used — with speaker, **$9.95**

RADAR TRANSMITTER, BC-1072A, 150–210 mc, in addition to tubes and 115v—60 cy. power supply contains a G.R. 1 amp. variac, 115 v—60 cy. blower unit, 0–1 MA DC 3" meter, 15 amp. circuit breaker, hi-voltage condensers and many other parts, complete with tubes. **$19.95**





WAVEMETER, BC-1073A, 150–210 mc, cavity resonator, 115v—60 cy. power supply, less tubes.....**$12.95**



TRANSMITTER, VHF, 80–105 mc, CW, battery operated, with two 1G4 tubes, less batteries.....**$6.95**

WALKIE-TALKIES, SCR-195, 52–65 mc for mobile or portable use, maximum range 25 miles, brand new with spare parts. Per pair....**$139.90**

SPERRY AMPLIFIER, 4-tube, Elevator Servo-Amplifier, used as voltage amp. to operate relay. Complete with tubes. New.....**$3.95**

12" CATHODE RAY TUBE, 12GP7, electrostatic, long persistance, same socket at 7JP4, may be used for TV with blue filter.....**$12.95**

PHONOGRAPH, Portable windup type, heavy spring motor, adjustable speed, in sturdy carrying case, brand new.....**$9.95**

INTERCOM AMPLIFIER, AM–26, 2–12A6, 2–12J5 tubes, 28v. dynamotor, instructions for conversion to a Hi-Fi mike and phono amp included. Brand new.....**$4.95**

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OSCILLOSCOPE, 2" Waterman Pocketscope, Regular $66.50. Only **$39.95**

GONSET, 20-meter converter. Regular $39.95. Only.....**$29.95**
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FAMOUS MAKE BUTTERFLY TRANSMITTING CONDENSERS
SPLIT STATOR
All New—Boxed—Below Cost

.500 spacing Cap. per. sec.	Price	.375 spacing Cap. per. sec.	Price	.250 spacing Cap. per. sec.	Price
11 MMF	$8.35	11 MMF	$8.15	13 MMF	$7.95
30	11.85	22	9.95	30	9.80
40	13.20	34	11.30	46	11.20
59	16.20	45	12.90	62	12.55
68	17.80	58	14.35	78	13.95
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87	20.65	82	17.20	111	16.80
96	22.15	94	18.75	127	18.25
105	23.80	106	20.15	143	19.85
115	25.20	118	21.60	159	21.00
124	26.65	130	23.10	175	22.50
		141	24.50	192	23.95
		153	25.95	208	25.25

LONG-PLAYING RECORD PLAYERS, 33⅓, Caliphone, manually operated, attach to radio.....**$9.88**

SPECIAL BUY ON POTENTIOMETERS. Assorted, singles, duals, long and short shaft, RCA, WIRT and many other famous makes. 10 for **$1.99**

AUTOMATIC RECORD CHANGERS, G.I. Play 10–12" or 12–10" records, new. Regular $29.95. Only **$10.88**

V.M. Single speed intermix, removed from new console combinations. Regular $39.95. Only.....**$14.95**

SIGNAL GENERATOR, Approved A-200, 100 kc—25 mc, on fundamentals, RF & AF output. Regular $47.50. Only.....**$24.95**

AMPLIFIER, for musical instruments, two inputs, AC operated, built-in speaker. Regular $69.95. Only..**$24.95**

20 WATT P A AMPLIFIER, P.P. 6L6 output, mike and phono inputs, volume and tone controls. Regular $65.00. Only.....**$24.95**

TERMS All items F.O.B., Washington, D. C. All orders $30.00 or less, cash with order. Above $30.00, 25 per cent with order, balance C.O.D. Foreign orders cash with orders, plus exchange rate.

Audio Image Rejection

(Continued from page 19)

In receivers using diode detectors it is also necessary to connect the low side of the last i.f. transformer secondary directly to chassis. This short-circuits the diode load resistor and prevents an audio voltage from appearing across it because of ordinary rectification in the detector in the adapter. An audio voltage so developed is independent of the desired detector action, and will get into the audio circuits to obscure the operation of the phasing system. In the NC-57 this short circuit was made automatic, on inserting the plug in the accessory socket, by running a wire from the i.f. transformer secondary to an unused contact on the accessory socket, the actual ground then being made through the cable plug. The filament and plate voltages for the adapter are taken from the receiver through the same socket. The plate current is only a few milliamperes and any receiver is capable of supplying it. The filament current is 1.2 amp., which may be a little heavy for some receivers. Actually, the increased filament drain is 0.9 amp., since the set's regular detector, which normally takes 0.3 amp., is removed.

With the adapter in operation the receiver's a.v.c. is inoperative, as is also the noise limiter (if the receiver has one), but neither of these is of much use in c.w. reception. To restore normal operation it is only necessary to replace the detector tube in the receiver and open the short between the low side of the i.f. transformer secondary and ground. 'Phone signals can of course be received on the adapter by shutting off the b.f.o., but without a.v.c.

All the components fit quite nicely in a 2 by 4 by 4 box. To facilitate wiring the box is sawed through at diagonally opposite corners.[5] One half is fastened to the end plate on which the tube sockets and i.f. transformer are mounted, forming a "chassis." All parts are easily accessible before assembling the other half and second end plate.

Aside from the desirability of matching the values of R_5 and R_7, as well as the values of C_8 and C_9, there are no especially critical values anywhere in the circuit. The unit specified for R_8, the rejection control, has a tapered resistance curve, which is desirable because a linear curve tends to cramp the operating range at one end of the control. The end with the slow resistance change should be connected to ground. The i.f. transformer, T_1, is preferably of a type that has good electrical stability, since a drift in tuning will affect the r.f. phasing. Incidentally, the receiver's b.f.o. should be allowed to warm up thoroughly before the detector is aligned, because a change in b.f.o. frequency also affects the phasing.

The alignment procedure with the adapter is exactly as described earlier. The audio signal for aligning the phasing circuit should be applied to

(Continued on page 102)

[5] This idea was borrowed from the construction of a selective audio amplifier soon to be described in *QST* by W6QYT.

NEWARK VALUES LEAD THE FIELD

Sensational Buy! **Nationally Famous**

10-Tube AM-FM RECEIVER

In Bakelite Case

$44.50

Complete with Tubes

LIMITED QUANTITY!

Terrific Value! Made by North American-Phillips Co. to Sell for Over $100.00! Designed for rural operation, for high quality performance on both AM and FM. Extra sensitive-selective! Superbly built superhet with Genuine Armstrong FM circuit, finest components. Amazingly realistic reproduction. Uses separate IF channels for AM and FM. 10 tubes including rect. and tuning eye: 3-6AU6, 7F8, 6BE6, 6BA6, 6SG8GT, 6V6GT, 6E5 and 5Y3 rect. Covers 550-1650 Kc on AM, and 87.6 — 108.4 Mc on FM. Controls: Off/On/Tone, Volume, FM/AM/Phono, Tuning. Speaker is 7" PM. Built-in loop with connection for external FM antenna. Phono jack. Cabinet is brown bakelite. Size: 16½ x 11¼ x 7½"D. For 110 V, 60 cps AC. **A deluxe receiver at LESS THAN WHOLESALE COST! All Brand New — Perfect!** 15 lbs.
No. S-1186.....Only $44.50

Newark Scoop!

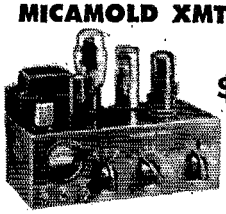
BC-221 FREQUENCY METERS

$99.50

WHILE THEY LAST!

FULLY RECONDITIONED! We have what may be the last 200 of these Famous Frequency Meters available for 200 lucky buyers! They're All in Perfect Operating Condition...All Fully Guaranteed! Each unit has been electrically and physically inspected, reconditioned, and tested. They're lettered from BC-221K and upward. Latest models go to the early birds! Crystal-calibrated in all ranges: 125-250 and 200-400 Kc. Ideal for use as Signal Generator and VFO. Complete with Tubes, Crystal, and Calibration Book. **No. S-1196.....$99.50**

Price Slashed **FAMOUS MICAMOLD XMTR KIT**



Now

$19.95

Reg. $34.00

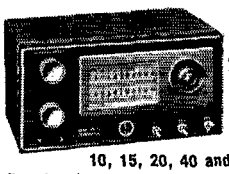
Model XTR-1

SAVE $14.05

Smashing Reduction on this Popular 45 Watt Telegraph Xmitter Kit! Complete from power supply to antenna matching network. A flip of the switch puts you on 3.5, 7, or 14 mc, with suitable crystal. No Coils to Plug in... No Extra Coils to Buy! The 6AG7 crystal oscillator is extremely stable and easy on the crystal, resulting in a clean-cut signal. Band switch controls both broad-tuned oscillator plate coil and final output circuit. Pi-network final will match any antenna. Uses 6AG7, 83 and 6L6. Less tubes, crystal, key. 10 lbs. **No. S-1132. $19.95**

Big Reduction on

HALLICRAFTERS HT-17 XMITTERS



REDUCED TO

$39.50

COMPLETE WITH ALL COILS FOR 10, 15, 20, 40 and 80 Meters

Regular $71.50 Value! Save $32.00 on this famous Hallicrafters 10 Watt Transmitter! You get a complete set of coils too! Also works beautifully on 160 meters with proper crystal and a B & W 160 JEL coil in final. Uses 6V6GT xtal oscillator, 5U4G rect., and 807 final. 12⅞ x 7⅜ x 8⅝". For 110 V, 50/60 cps AC. Complete with tubes, set of coils, instructions. Less crystal and meter. 25 lbs. **No. A2056....Special $39.50**

B & W 160JEL Coils, No. 11915 Each $1.38

Peterson Z-2 Crystal for 160 mtrs. (Specify freq.).....**Each $2.75**

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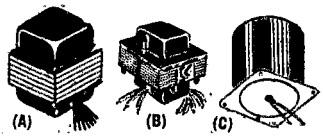
Big Bargains! Perfect for building a rugged power supply. Conservatively rated. Built for continuous operation.



(A) POWER XFORMER — Primary: 120 V, tapped @ 110 V, 60 cycles. Secondary: 768 V, CT @ 305 ma, electrostatically shielded. Flush mtg. 4⅞ x 3⅞ x 5¼"H overall. Shpg. Wt. 12 lbs. **No. S-851 .....Special $2.95**

(B) FILAMENT XFORMER — Primary: 117 V AC. Secondaries: (1) 5 V @ 6 amp., (2) 6.3 V, CT @ 6 amps. 3½ x 3¼ x 3½" H overall. Shpg. Wt. 5 lbs. **No. S-852.....Special $1.49**

(C) FILTER CHOKE — 4.2 Hy @ 300 Ma. DC Resist. 78 ohms. 2500 V breakdown. 3½" dia. x 4½" H. Base 4" sq. 9 lbs. **No. S-853 Special $2.49**

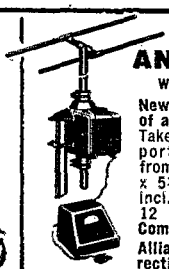
316A DOORKNOB TUBES 29¢ 6 for $1.50

3CP1/S1	$0.89	805	3.65
3 for $2.25		2 for $6.95	
211	.29	813	6.95
6 for $1.59		2 for $12.95	
803	3.65	815	1.39
2 for $6.95		2 for $2.59	

Famous Make CRYSTAL MIKE

$5.45

Brand New! High Imped. High Output Level. For Amateur, PA, Recording Use. For hand, table or floor stand. No. S-518.



NEW! ALLIANCE ANTENNA ROTATOR

with built-in Direction Indicator

New Model! Meter indicates position of antenna at any time. Turns 360°. Takes mast up to 1⅜" dia. — supports up to 20 lbs. Operates from 110 v, 60 cps AC. Rotor: 7¾ x 5¼ x 8". Control Box: 5 x 5". Incl. instructions. Less 4-wire cable. 12 lbs. **No. A16182, Complete..... $29.37**

Alliance "Tenna-Rotor" without Direction Indicator. No. 16180..... $23.49

4-Conductor Cable, for Alliance Rotator. **No. 41616, Per Foot..... 3½¢**

10% Down — One Year to Pay for Anything Over $75

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3 GREAT STORES! Uptown at **115 West 45th Street** and Downtown at **212 Fulton Street** in **NEW YORK** **323 West Madison Street** in the heart of **CHICAGO**

MAIL ORDER DIVISIONS: 242 West 55th St., N.Y. 19 and 323 West Madison Street, Chicago 6, Illinois

Include Postage

All Prices F.O.B. New York or Chicago

Enclose 20% Deposit with C.O.D. Orders

the left-hand contacts of S_1, during which time the connections between S_1 and the detector should be removed. These connections may be restored after the audio alignment is completed and prior to the detector alignment.

The ability to phase out a signal on the other side of zero beat is a feature that becomes more appreciated with continued use. Combined with audio selectivity, with the rejection control set to take out a signal having the same beat tone on the other side of zero beat, the single-signal effect is very marked. The combination is a worth-while addition to any "straight" superhet and, with a reasonably sharp audio peak, the selectivity in c.w. reception will give good competition to sets having crystal filters.

The Gamma Match

(*Continued from page 21*)

The whole arrangement seems to work equally well at all points in the ten-meter 'phone band. The match at the antenna was made at 29.1 Mc. Element lengths were taken from graphs in the 1949 *Handbook*. The element spacing is approximately 0.2R–0.15D, to make full use of the 12-foot 2 by 2 aluminum boom on hand. The elements are ¾-inch diameter, with ⅝-inch diameter pieces telescoped in the ends. A leftover piece of the ⅝-inch tubing was used for the Gamma match. An extra ground wire was run from the aluminum mast direct to a good ground outside the house, for lightning protection.

I like the Gamma match fine — it's so very simple to build and adjust!

450 Watts on V. H. F.

(*Continued from page 27*)

The amplifier is tested for 144-Mc. operation with the 50-Mc. plate coil removed and with the shorting bar across the resonant lines. The one addition to the test procedure outlined above is adjustment of the screen tuning condenser. This is done prior to the check for self-oscillation. After applying filament voltage and excitation, the condenser is adjusted for minimum feed-through as indicated by a sensitive rectifier-type wavemeter coupled to the plate lines. A second, and perhaps more simple method, is to remove the excitation, apply the plate voltage and then tune for zero grid current. The setting of the screen control is very critical, but with care a position can be found which will hold over most of the 144-Mc. band. The most accurate way of setting the adjustment is to try for a position where maximum grid current and minimum plate current occur at the same setting of the plate tuning condenser.

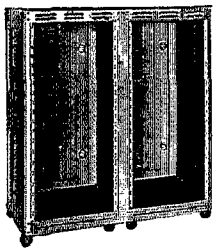
An output of 250 watts is readily obtainable at 50 Mc. and about 200 watts on 144 Mc. Such power is probably all you will ever need or want on either band, and most of the time you'll be content to let the tetrodes loaf at an input 200 watts or so.

ELECTRONIC WHOLESALERS, INC.

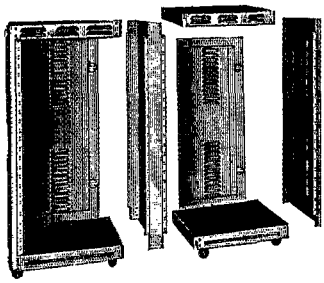
PRESENTS

New Bud Add-A-Rack Series

More Panel Space . . . Less Floor Area . . . AT LOWER COST



Now you no longer need to buy a whole new cabinet when you want additional panel space. Through new and exclusive Add-a-Rack series, BUD not only offers additional racks at a lower cost, but provides you with a sturdier, better looking assembly!



Add-A-Rack Unit	To Add-a-Rack to	Panel Space	Price
AR-1778	CR-1774	36¾"	$26.25
AR-1775	CR-1771	42 "	32.50
AR-1776	CR-1772	61¼"	40.75
AR-1777	CR-1773	77 "	48.00

Prices are 10% higher west of the Mississippi River

Complete unit, consisting of the knocked-down parts necessary for two relay racks coupled together.

	Dealer Cost
CR-1779 • Two coupled relay racks same size as CR-1774	$54.75
CR-1780 • Two coupled relay racks same size as CR-1771	67.95
CR-1786 • Two coupled relay racks same size as CR-1772	83.05
CR-1799 • Two coupled relay racks same size as CR-1773	98.40

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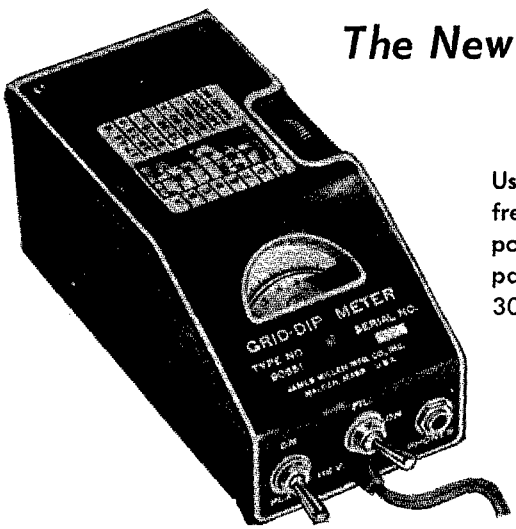

The New Millen Grid Dip Meters with 100 applications!

Use it to align receiver tuned circuits, determine frequency of transmitter tuned circuits with power off, transmitter neutralization, find parasitic oscillations. Frequency Range: 1.7 to 300 megacycles in seven overlapping ranges.

No. 90651 • Grip Dip Meter complete with 7 inductors, rack and tube. **$55.00**

MAIL ORDERS ACCEPTED

Electronic wholesalers, inc.

2010 14th STREET, N. W. • WASHINGTON 9, D. C.

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Happenings

(*Continued from page 28*)

that if a candidate's membership was interrupted by reason of service in the armed forces of the United States or Canada between September 1, 1939, and May 3, 1947, he shall not be deemed to be disqualified so far as concerns continuity of membership if within those dates he resumed his League membership within the 90 days following his release from active military duty. He must be without commercial radio connections: he may not be commercially engaged in the manufacture, selling or renting of radio apparatus normally capable of being used in radio communication or experimentation, nor commercially engaged in the publication of radio literature intended, in whole or part, for consumption by licensed radio amateurs. Further details concerning eligibility are given in By-Law 12. His complete name and address should be stated. The same requirements obtain for alternate as for director. All such petitions must be filed at the headquarters office of the League in West Hartford Conn., by noon EDST of the 20th day of September, 1949. There is no limit to the number of petitions that may be filed on behalf of a given candidate but no member shall append his signature to more than one petition for the office of director and one petition for the office of alternate. To be valid, a petition must have the signature of at least ten Full Members in good standing; that is to say, ten or more Full Members must join in executing a single document; a candidate is not nominated by one petition bearing six valid signatures and another bearing four. Petitioners are urged to have an ample number of signatures, since nominators are occasionally found not to be Full Members in good standing. It is not necessary that a petition name candidates both for director and for alternate but members are urged to interest themselves equally in the two offices.

League members are classified as Full Members and Associate Members. Only those possessing Full Membership may nominate candidates or stand as candidates; members holding Associate Membership are not eligible to either function.

Present directors and alternates for these divisions are as follows: Canadian General Manager, Alex Reid, VE2BE; Alternate Canadian General Manager, Leonard W. Mitchell, VE3AZ. Atlantic Division: director, Walter Bradley Martin, W3QV; alternate, Henry W. Wickenhiser, jr., W3KWA. Dakota Division: director, Goodwin L. Dosland, WØTSN; alternate, Robert A. Kimber, WØBLK. Delta Division: director, Victor Canfield, W5BSR; alternate, James W. Watkins, W4FLS. Great Lakes Division: director, Harold C. Bird, W8DPE; alternate, John H. Brabb, W8SPF. Midwest Division: director, Leonard Collett, WØDEA; alternate, Alvin G. Keyes, WØKTQ. Pacific Division: director, William A. Ladley, W6RBQ; alternate, Kenneth E. Hughes, W6CIS. Southeastern Division: director, William C. Shelton, W4ASR; alternate, William P. Sides, W4AUP.

Full Members are urged to take the initiative and to file nomination petitions immediately.

For the Board of Directors:

A. L. BUDLONG
Secretary

July 1, 1949

Single Sideband

(*Continued from page 34*)

a consistent Oceania contact. From VK3UM we learn that **VK7LE** and **VK4WI** are on the air with single sideband, but dope on the rigs isn't available for this edition.

Dale of **W7JCU** has moved from Montana to Eugene, Ore., where he is still carrying on with single sideband on 75. Plans call for a try at 20 after the big final is shipped to the new location.

A new one in New England is **W1SHN** at Winchester, Mass. Jim, ex-W2SMA, ex-W4ECP, runs 700 watts peak to a pair of 810s on 75. The exciter is patterned after that of **W2UNJ**. Activity so far has been mostly early evening round-

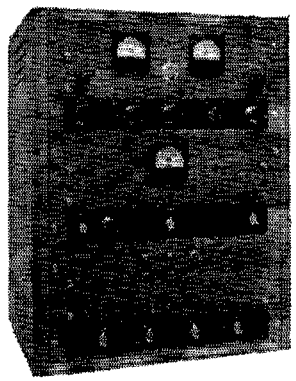
(*Continued on page 106*)

FULL YEAR GUARANTEE!

WHY BEAT YOUR BRAINS OUT

trying to build your own XMTR? Here's a rig for less than $1.00 per watt with a full year GUARANTEE! It doesn't pay to build your own — save money with me!

LEO I. MEYERSON
WØGFQ



THE NEW WRL "400" GLOBE KING

The new versatile, advanced design transmitter that Hams all over the world are talking about. Brilliant performance on all bands from 10 to 160 on phone and CW. 350 watt phone 100% modulated, and 400 watt CW make this XMTR the outstanding buy on the market. Provisions for ECO. Complete with one set of coils.

$399.45 WIRED $379.45 KIT FORM

Detailed specification sheet furnished on request.

MY GUARANTEE

I guarantee my new WRL "400" Globe King for one full year from purchase date against all defects in workmanship or materials. I unconditionally guarantee all parts except tubes and crystals.

★ **10 DAY FREE TRIAL.** Let me send you the New WRL "400" Globe King; so you can install it in your shack and give it a real test. If at the end of 10 days you don't think it's the best XMTR you've ever worked, ship it back to me — AT MY EXPENSE.

★ **E-Z PAYMENT PLAN.** If you want to keep your Globe King — and I'll bet dollars to doughnuts you will — it'll take only a 20% down payment with the balance payable to suit **your** convenience. It costs less to deal with me because I finance my own paper.

★ **LIBERAL TRADE-IN ALLOWANCE.** Let me know what equipment you want to trade and I'll work out a deal for you that you won't be able to beat anywhere.

GIANT RADIO REFERENCE MAP

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

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

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WORLD RADIO LABORATORIES, INC. Q-9
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Council Bluffs, Iowa

Please send me:
☐ NEW CATALOG
☐ RADIO MAP
☐ LIST OF NEW EQUIPMENT
☐ INFO ON 10 DAY TRIAL PLAN

Name_____

Address_____

City_____ State_____

table work on 3880 kc. He has a switch on the usual "Your n.f.m. is out of adjustment" routine. Some not-too-polite-but-uninformed operator who complained of the "splashing" (not having read " . . . The Other Foot" in the April, 1949, *QST*) said that "Single sideband is unfair" and that he "Didn't care for the presence of W1SHN on the air." The complainant is so right — single sideband is unfair. It gets through when a.m. won't! And a.m. is unfair to n.f.m. And n.f.m. is unfair to BCI. A very vicious circle!

Radio is going to leave you far behind if you don't keep up with these single-sideband techniques. Take a look, for example, at that c.w. reception method of W1DF described in this issue. It's an outgrowth of these methods, and we suspect that there will be a few more before wireless is perfected. — *B. G.*

I.A.R.U. News

(*Continued from page 40*)

It will not be necessary to send QSLs unless especially requested; log extracts will be sufficient. A fee of 5/– ($1.00 in U. S. currency) is required for each certificate. These awards are being made from 1946 on. Decisions of the R.S.E.A. award committee shall be final. Your applications should be forwarded in an envelope marked "Special Award" to P. B. Dodd, VQ5PBD, Special Awards Manager, c/o East Africa QSL Bureau, P. O. Box 1313, Nairobi, Kenya Colony, British East Africa.

FINLAND

The *Suomen Radioamatooriliitto*, Finnish amateur radio society, is sponsoring a DX competition among its members, from July 1st to the end of the year. A handsome silver cup, donated by OH7NF, is to be awarded the winner. Scoring is based on the number of prefixes and call areas worked, with additional points for making WAC on the various amateur bands, both 'phone and c.w The S.R.A.L. hopes that fellow-amateurs throughout the world will coöperate by QSOing as many OH hams as possible.

DX Contest

(*Continued from page 44*)

Union of South Africa		*Hong Kong*	
ZS5FE	6,516- 18-121-A-26	VS6BA	900- 5- 60-A-
ZS6OS	3,509- 11-109-A-12		
ZS1BF	3,332- 34- 34--- -	*India*	
ZS5BW	432- 4- 36-A- 7	VU2LJ	3,864- 14- 92-A- 8
ZS6HM	174- 6- 10-A-21		
ZS2G*	32- 4- 9--- -	*Israel*	
ZS2IW	27- 3- 3--- -	4X4CZ	5,712- 14-136-B-17
		4X4RE	3,516- 12-101-A-30
		Iwo Jima	
ASIA		W3CHH/IWO	68,932- 38-606-C-
China		*Malaya*	
C1JH	36,342- 27-451-B-41	VS2CN	300- 2- 50---
C1CH	1,692- 9- 64-A- 5		
		Japan	
Formosa		JA3AA	286,626-69-1385--- -
WØMCF/C3	17,180- 20-287-C- -	JA2KG	167,454-63- 886-C-48

(*Continued on page 108*)

Macao

CR9AG	62,464-	32-651-B-	-		

Transjordan

ZC1CL	56,482-	31-616-B-49			

EUROPE

Austria

OE1CD	47,012-	28-562-B-55			
OE1AD	46,864-	29-540---	-		
OE1RR	5,008-	16-107-A-	-		
OE1FF	730-	10- 25---	-		

Belgium

ON4AZ	80,539-	43-629-A-36			
ON4DB	78,276-	44-602-A-	-		
ON4VE	35,945-	35-344-A-30			
ON4PN	63-	3- 7---	-		

Czechoslovakia

OK1JM	52,806-	39-460-B-68			
OK1RW	50,148-	36-470-A-53			
OK1UF	40,470-	38-361-A-49			
OK3JL	25,014-	33-255-A-38			
OK2LO	24,064-	32-254-A-25			
OK3SP	22,950-	30-258-A-47			
OK2DD	20,468-	28-254-B-43			
OK2XH	8694-	14-208-A-22			
OK1QD	6258-	21-101-A-15			
OK1CX	5832-	24- 82-B-	-		
OK2SO	4480-	20- 76-A-10			
OK1WX	2772-	21- 46-A-18			
OK1GT	2160-	12- 62-A-	8		
OK1QZ	1781-	13- 48-A-22			
OK1ZQ	1690-	13- 47-A-	-		
OK1DW	1339-	13- 35-A-	6		
OK1ZM	459-	9- 17-A-	-		
OK3RR	371-	7- 18-A-	4		
OK1LU	282-	6- 16-A-	-		
OK1ZS	264-	8- 12-A-	3		
OK1UY	60-	4- 5-A-17			

Denmark

OZ7G	96,350-	41-789-A-85			
OZ3FL	67,199-	41-560-A-80			
OZ2LX	44,832-	32-467-A-	-		
OZ7ON	12,915-	21-205-A-	-		
OZ7X	10,512-	24-146---	-		
OZ5A	10,200-	25-138-A-	-		
OZ7BO	3836-	14- 92---	-		
OZ9AX	948-	12- 27-A-	-		

Eire

EI4Q	233,508-	58-1345-B-80			
EI9J	143,660-	55- 875-B-44			
EI5F	21,384-	27- 264-B-	-		
EI8A	16,731-	33- 171-A-41			
EI8D	11,908-	26- 153---	-		
EI5G	11,310-	29- 135-A-21			

England

G2EC	130,442-	58-764-B-67			
G8KG	99,120-	56-590-B-65			
G5BZ	72,960-	48-510-B-88			
G4CP	65,424-	48-457-B-58			
G2MI	62,480-	44-481-B-	-		
G8IP	47,273-	41-385-B-58			
G6RB	43,240-	47-308-B-73			
G6GN	40,940-	46-300-A-70			
G2VD	24,612-	42-200-B-46			
G6CL	13,676-	26-178-B-	-		
G6QS	10,166-	26-133-A-32			
G5CR	3611-	23- 54-B-23			
G5WI	3078-	19- 55-A-65			
G8TK	3021-	19- 53-A-13			
G3EIZ	1836-	18- 34-A-12			
G3HK	1512-	14- 37-A-	-		
G3SB*	1014-	13- 26-B-	4		
G3AIM	952-	14- 23---	-		
G8BM*	720-	12- 20---	-		
G2GK	513-	9- 20-A-	5		
G4JZ	240-	5- 16-A-	-		
G2AOL	138-	6- 8-A-	-		
G3AJP*	135-	5- 9-A-	-		
G5OJ*	96-	4- 8-A-	-		
G6AH*	27-	3- 3---	-		
G6CJ (G3SU)	130,036-	58-746-B-96			
G6LX (ZS6YF)	128,645-	55-774-B-90			

Finland

OH6NZ	40,890-	30-459-A-38			
OH6NR	40,560-	30-460-A-44			
OH5NF	25,488-	27-316-A-52			
OH2PK	1750-	14- 42---	-		

France

F8TM	95,004-	52-615-A-68			
F9BO	24,300-	30-270-A-	-		
F8EJ	17,568-	32-183-A-	-		
F8VJ	15,717-	31-171-A-19			
F3MS	12,528-	29-144-A-25			
F3CX	10,788-	29-124-A-27			
F8TQ	10,166-	23-150---	-		
F8OL	8850-	20-149-A-	-		
F8XK	7659-	23-116-A-15			
F9BB	6748-	14-161-A-	-		
F8HL	2584-	17- 51---	-		
F3II	891-	11- 27-A-	9		
F3IB	660-	10- 22-A-	-		
F8LD	392-	8- 17---	-		
F9BU	250-	5- 17---	-		
F9DW	216-	8- 9-A-	8		

Germany

DL4ON	77,973-	47-555-B-40			
DL4LN	39,840-	40-336-B-23			
DL5AJ	1476-	12- 41-A-	-		

Hungary

HA5B	203,550-	59-1150---	-		
HA1KK	5886-	18- 109-A-16			

Iceland

TF3EA	49,470-	34-489-B-	-		
TF3MB	19,650-	25-266-A-32			
TF3SF	16,770-	26-216-A-37			
TF3AB	5130-	15-114-A-32			
TF3AR	2364-	12- 67-A-	5		

Italy

I1PL	83,720-	40-698-A-	-		
I1US	77,364-	42-626-A-53			
I1LT	75,416-	44-579-A-62			
I1BEY	72,423-	39-620-A-76			
I1LD	52,756-	44-393-A-40			
I1ALU	52,338-	33-540-A-70			
I1NT	21,350-	25-287-A-31			
I1OJ*	216-	8- 9-A-	4		

Luxembourg

LX1JW[2]	2024-	11- 62---			

Malta

ZB1Q*	534-	6- 30-A-	-		

Netherlands

PAØUN	218,625-	53-1376-A-83			
PAØOO	103,584-	52- 664---	-		
PAØEP	70,110-	38- 615-A-85			
PAØCB	56,610-	51- 370-A-47			
PAØDD	50,190-	42- 425-A-85			
PAØVB	40,050-	45- 298-A-70			
PAØWJ	34,416-	36- 322-B-41			
PAØCG	32,109-	33- 327---	-		
PAØPN	24,738-	31- 266-A-13			
PAØDA	16,120-	26- 207-A-25			
PAØLX	12,384-	32- 131-A-56			
PAØJR	7722-	22- 117-A-22			
PAØJX	5610-	22- 85-A-16			
PAØNW	4428-	18- 82-A-72			
PAØIF	3731-	13- 97-A-	8		
PAØDC	3348-	18- 64-A-30			
PAØSI	1380-	10- 47-A-14			
PAØSU	780-	10- 26-A-	8		
PAØZF	90-	5- 6-A-	-		
PAØBK*	12-	2- 2-A-	-		

Northern Ireland

GI2FHN	31,990-	35-316-B-40			
GI4RY*	9519-	19-167---	-		
GI5TK*	324-	9- 12---	-		

Norway

LA7Y	143,000-	55-876---	70		
LA3GA	51,204-	34-510-A-43			
LA4P	33,524-	34-329-A-42			
LA2B	28,490-	37-257-B-	-		
LA6U	23,225-	25-315-A-	-		
LA5N	18,112-	32-195-A-37			
LA7WA	10,802-	22-163-A-25			
LA8J	5540-	20- 94-A-	-		
LA7MB	2574-	18- 48---	-		
LA8RB	1251-	9- 48-A-	9		
LA9T	1122-	11- 34-A-	9		
LA7Y	927-	9- 35---	6		
LA5WA	660-	12- 20-A-	6		
LA6O	500-	10- 17---	-		
LA3MB	126-	6- 7-A-	8		
LA2UA*	84-	4- 7-A-	1		
LA4K	27-	3- 3-A-			

Portugal

CT1IT	8346-	13-217---	-		
CT1SQ	1224-	12- 34-A-	3		

Roumania

YR5A	30,614-	29-368---	-		
YR5R	1464-	12- 43-A-17			

Sardinia

IS1AHK	25,770-	30-293-A-25			
IS1AFM	9240-	20-154-A-12			
IS1FIC	1134-	9- 43-A-	5		

Scotland

GM2FHH	73,788-	44-563-B-52			
GM2FJT	19,170-	27-242-A-70			
GM3AVO	14,925-	25-203-B-11			
GM5CL	7245-	15-161-A-24			
GM2NH	5502-	14-131-A-15			
GM6IZ	3562-	13- 92-A-19			
GM5IR	2250-	15- 50-A-30			
GM8SQ	1188-	12- 33-A-	-		

Spain

EA4LQ	143,840-	58-832-B-54			
EA1AB	23,696-	16-497-A-32			
EA3WM	192-	4- 16-A-	-		

Sweden

SM6UT	69,564-	44-527-B-59			
SM1LO	50,728-	34-505-B-79			
SM5KX	25,920-	27-320---	72		
SM2VP	22,008-	28-262-B-39			
SM5CV	20,358-	27-253-B-58			
SM4SS	17,610-	30-199-B-31			

[2] Log returned to LX1JW so data not available for DXCC credits.

(Continued on page 110)

SM5PV	16,767- 27-210-A-35	
SM3DT	14,820- 26-192-B-45	
SM4UJ	14,450- 25-194-A-21	
SM3ANG	13,000- 25-174-B-67	
SM6ID	8856- 27-110-A-29	
SM5IZ	8712- 18-163-A-50	
SM5YS	8496- 16-180-B-12	
SM3FY	6900- 23-103-A-30	
SM5HT	6860- 20-116--- -	
SM5NU	3060- 12- 86-A- 8	
SM5UU	2280- 20- 51-A-18	
SM5WI	2232- 12- 62--- -	
SM5OL	1248- 13- 32-A-19	
SM6DA	576- 8- 25-A- 8	
SM6PF	318- 6- 18-A- 7	
SM5AUP	12- 2- 2--- 5	
Switzerland		
HB9AW	188,309-53-1213--- 84	
HB9EU	178,512-48-1241-B-78	
HB9BX	11,732- 28-142-A-15	
HB9P (HB9s EX, FY, IK, RDX, REF)	182,976-48-1307-B-96	
Trieste		
I1NU/Trieste	3616- 16- 76-A-12	
Wales		
GW5SL	64,512- 42-519-B-48	
GW8UH	34,314- 38-339-B-40	
GW3AHN	6120- 18-115-A-13	
GW5BI	720- 12- 20-B- 6	
GW5PH	36- 3- 4-B- 2	
GW3ALV	18- 2- 3-B- 1	
GW5VX	18- 2- 3-B- 2	
GW3CRX*	3- 1- 1---	

NORTH AMERICA

Alaska	
KL7HI	325,243-79-1373-B-62
KL7FM	146,090-70- 698-B-43
KL7CZ	103,704-58- 600-A-61
KL7LL	11,286-18- 211-B-26
KL7RT	584- 8- 25-A-30
Barbados	
VP6SJ	70,512-39- 612-A-30
VP6TB*	4104-19- 72-B- 6
Bermuda	
VP9CC	105,534-41- 864-A-56
Canal Zone	
KZ5MB	343,359-81-1413-A- -
KZ5AX	132,426-63- 702-A-43
KZ5PA	116,580-58- 670-A-61
KZ5XJ	5004-12- 139-A- 3
KZ5ER (KZ5s AY, EL, EW)	307,840-80-1318-B-87
Cuba	
CM9AB	495,840-80-2066-B-75
CM3CS	39,804-31- 431-B-24
Costa Rica	
TI2KP	93,450-50- 217-B-21
Guatemala	
TG9JK	74,196-54- 458--- -
Greenland	
OX3BC	97,356-42- 773--- -
Mexico	
XF1A	796,311-87-3051--- 46
Newfoundland & Labrador	
VO6J	231,190-61-1278-B-55
VO1B	146,874-42-1166-B-49
VO2RF	123,144-56- 735-A-46
VO2CX*	1422- 9- 53--- -
VO6EP	12- 1- 4--- -
Panama	
HP1BR	56,763-53- 359-A-25
Puerto Rico	
KP4DV	235,440-72-1090-C-32
KP4KD	168,773-67- 840-B-35
KP4DJ*	3- 1- 1--- -
Virgin Islands	
KV4AA	491-222-79-2085-B-77
Trinidad	
VP4TY	1800- 9- 67-A- 3

OCEANIA

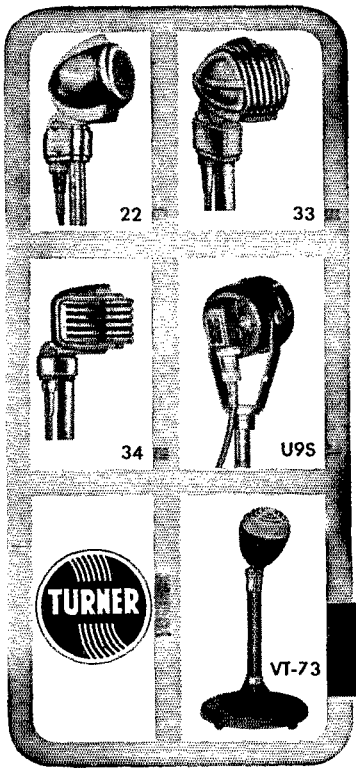
Australia	
VK2EO	313,398-69-1514-A-
VK2GW	65,520-52- 420--- -
VK5FM	52,200-40- 435-A-34
VK5KO	32,984-62- 178-B-23
VK5FH	32,776-34- 325-A-39
VK2RA	20,511-53- 129-A-11
VK7LZ	14,091-33- 143-A- -
VK3XK	13,716-36- 128-A-11
VK2YC	7770-14- 185-A-21
VK2QL*	4860-36- 136--- -
VK4RF*	2844-12- 79--- -
VK3UM	2486-11- 77-A-14
VK3OJ	2400-16- 50-A- 7
VK4RC	2128-16- 45-A- -
VK3PG	1404-13- 36-A- -
VK3ABA*	1104-16- 23-A- -
VK2HZ	384- 8- 16-A- 8
VK2OW*	336- 8- 14-A- -
VK3XB*	84- 4- 7-A- 1
VK5RX*	60- 4- 5--- -
VK5LG	3- 1- 1-A- 1
French Oceania	
FO8AC	8928-12- 248---
Marianas	
KG6DI	167,832-63- 888-B-35
KG6DG	29,040-30- 326-C-16
W3CHH/KG6	1331-11- 41-B- -
Hawaiian Islands	
KH6IJ	338,985-81-1395-C-50
KH6MG	188,182-74- 863-B-51
KH6NE	107,236-68- 539-B-37
KH6BA	20,160-40- 169-C- 8
New Zealand	
ZL1MB	250,743-53-1577--- -
ZL1BQ	172,278-51-1128--- -
ZL1MQ	74,535-41- 606-A-59
ZL3AB	46,527-30- 402-A-23
ZL1QW	162- 6- 9-A- 2
Palmyra Group	
KP6AB	247,452-68-1213-B-32
Sumatra	
PK4DA	9042-22- 137-A- -
Tonga	
VR5PL	3726-18- 69-A- -
Western Samoa	
ZM6AF	2013-11- 62--- -

SO. AMERICA

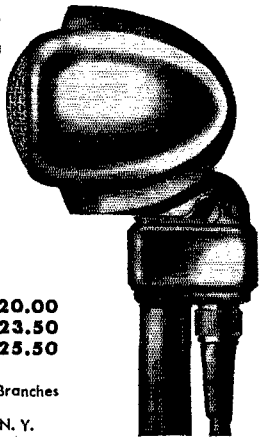
Argentina	
LU3EL	75,560-40-633- B - -
LU5BM	61,535-31-662- B - -
Brazil	
PY2AC	446,544-84-1772-C-86
PY1GJ	107,240-56- 639-B-62
PY2OE	57,195-41- 466-B-46
PY7WS	19,650-25- 262--- -
PY1DH	2210-17- 44-B- -
PY1FH	294- 7- 14-A-10
Bolivia	
CP1AQ	50,820-44- 288-B-36
Chile	
CE4AD	100,286-41- 817-B-43
Columbia	
HK3CT	40,775-35- 395-B-38
Ecuador	
HC1JB	275,100-75-1234-C-69
Peru	
OA4DX	33,696-27- 420-A-44
Uruguay	
CX1NE	2925-13- 75--- -
CX1DZ	1800-10- 61-A- -
CX6AD	1320-10- 44---

Strays

Corrections, Sweepstakes results: In the 15th SS scores appearing in August *QST*, K9AAY was listed as the winner of the club 'phone certificate in the Greater Cincinnati Amateur Radio Association; W8NCV, with 27,279 points, was the winner in that group. The c.w. score of W2NQW was inadvertently listed in the N.Y.C.-L.I. section; his entry should have appeared in 7th place under Eastern New York. In the Eastern Florida listing, the score of W4IYT was credited in error to W4IKU; W4IYT was an assisting operator at W4IKU and the entry was therefore in the multi-operator category. The calls of W9BCC, Wisconsin, and VE4YO, Manitoba, were incorrectly shown as W9BBC and VE4AYO. We extend our sincere apologies to all concerned.



You'll tell the world it's a TURNER 22



Maybe you are getting good reports but you might get better with a Turner 22. Plenty of amateurs tell us so. They like its looks. They like its style. They think it's tops — and you will too. Get a Turner 22 for your rig now. Your choice of crystal or dynamic circuits.

Ask your dealer

22x Crystal. List.....**$20.00**
22D Dynamic. 50 ohms. List.....**$23.50**
200, 500 ohms, or hi-impedance. List **$25.50**

In Canada:
Canadian Marconi Co. Ltd., Montreal, P. Q. and Branches
Export:
Ad. Auriema, Inc., 89 Broad Street, New York 4, N. Y.

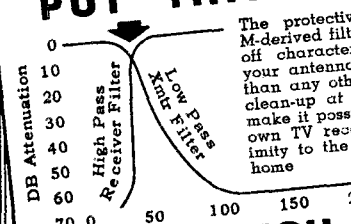
THE TURNER COMPANY

917 17th Street, N. E. Cedar Rapids, Iowa

Microphones by TURNER

Microphones licensed under U S. patents of the American Telephone and Telegraph Company, and Western Electric Company, Incorporated. Crystals licensed under patents of the Brush Development Company.

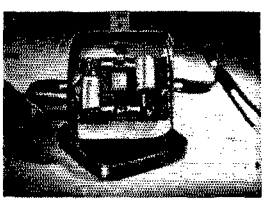
PUT THIS NOTCH



The protective notch of these M-derived filters with sharp cut-off characteristics will reduce your antenna-coupled TVI more than any other cure. Additional clean-up at the transmitter will make it possible to operate your own TV receiver in close proximity to the transmitter in your home

between YOU and TV

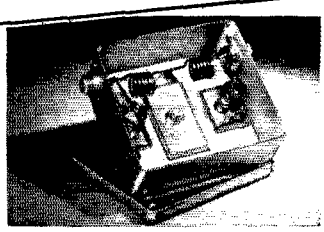
Drake TV-300-50HP High Pass TV RECEIVER FILTER



Amateur, Net **$3.57**

Add 25¢ for postage anywhere in U.S.A.

Provides high attenuation at all low frequencies — more than 60 db down at the TV I.F. frequencies. This receiver filter will improve TV reception to a remarkable degree by rejecting low frequency interference (below 50 mc.) from amateur and short-wave broadcast, diathermy, QRN and other noise. This small filter with attached ground strap may be easily installed *near the TV Tuner for best possible* results. Will not reduce the strength of the TV signal.



Drake TV-52-40LP Low Pass TRANSMITTER FILTER

Amateur Net **$12.95**

Add 40¢ for postage anywhere in U.S.A.

Inserted in 52-ohm coax transmission line or coax link between transmitter and antenna coupler, this filter provides excellent attenuation of all antenna and feed system harmonic radiation above 30 mc. with no reduction in signal strength in the ham bands, 10 meters or below. Handles 1 KW on *reasonably flat lines.* No adjustment required when you QSY or move from band to band.

TERMS: Cash with order, or 25% deposit, balance C.O.D.

SREPCO
Inc.
STANDARD RADIO & ELECTRONIC PRODUCTS
135 E Second St · DAYTON 2, OHIO · Tel. Fulton 2174

How's DX?

(Continued from page 47)

blanks . . . . . C1JH maintains a 100% policy and, because of erratic postal conditions in the Shanghai area, receipt of his pasteboards may be slow but will be sure . . . . . Some of the gang have been on the receiving end of YV4AW QSLs and are wondering just how to reach him with their own. We are advised that the chap is one of those rare individuals who QSLs all contacts and yet desires no confirmation in return. [*Rare?* — you mean all but extinct, boss. — *Jeeves*]

— • • • —

While "rotten operating" (to employ the so apt term of the immortal Old Man) may cause some to snap off the switches in favor of a perusal of *Mekeel's* philatelic gazette, W2WGV waxes poetic in a slightly satiric vein. We quote, then.

LAMENT A LA HAM

When you throw on all the switches
And your bug hand burns and itches
And you start to dig for rare DX on twenty —

When your ears burst from the churning
To catch the call returning
And it's rare DX for whom you've yearned aplenty —

Ain't it great to have some droop
With a skywire full of soup
And a note that's very definitely *blah*

With its chirpy, whiney wheezes
Clinking up and down the breezes
Making *dah dit di-di-dit daaa-a-ah* — BAH!

[Any reflection on persons living or dead is purely. — *Ed.*]

V.H.F. QSO Party

(Continued from page 52)

Mc., using permitted modes of operation.

3) Contest score must represent points earned from operation exclusively within a given ARRL section.

4) Fixed-, portable- or mobile-station operation *under one call* and by one operator is permitted.

5) The band your transmitter is on determines whether a QSO counts 1 or 5 points. Cross-band work shall not count.

6) A "contestant" is a single operator working without the help of any other person. Results may be presented with names of all participating persons, for listing, but only single-operator scores will be considered for certificates.

7) Scoring: *1 point* for completed two-way section exchanges on 50 or 144 Mc.; *5 points* for completed two-way section exchanges on the higher v.h.f. bands. The sum of these points will be multiplied by the number of *different* ARRL sections worked, i.e., those with which at least one point has been earned. Reworking sections on additional bands for extra section credits is permitted.

8) A contact *per band* may be counted for each different station worked. Example: W1JSM (E. Mass.) works W1MEP (Vt.) on 50, 144 and 220 Mc. for complete exchanges. This gives W1JSM 7 points (1 + 1 + 5 = 7) and also 3 section-multiplier credits. (If more Vermont stations are subsequently contacted on these bands they do not add to the multiplier but they do pay off in additional contact points.)

9) Each section multiplier requires actual completed exchanges with *at least* one station. The same section can provide another multiplier point only when contacted on a new v.h.f. band.

10) Award Committee decisions shall be accepted as final.

11) All reports must be postmarked no later than October 10, 1949, to be entered for awards. (See p. 55, May, 1948 *QST*, for form. or a message to Hq. will bring a mimeographed blank for report on this contest.)

Reporting

Submit contest logs to Headquarters immediately, even if your score is small, to help in cross-checking the claims of others. — *F. E. H.*

The Bil Harrison MOBILE TROPHIES

Two large silver loving cups, suitably engraved, to be presented to the first W (or K) amateurs who, with an automobile installation:
Works all continents (WAC)
Works all states from one call area (WAS)
Send for simple rules and entry blank

73, Bil Harrison, W2AVA

SUBRACO MT-15X

Mobile Transmitter

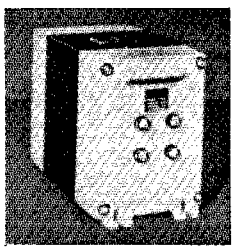
Here's your best mobile transmitter! Compact size (only 4½" x 5½" x 6½" deep) permits mounting in glove compartment or under dash — for finger-tip tuning, metering, and QSY'ing — while you drive. Built-in relay for complete PUSH-TO-TALK control. Stable, crystal controlled oscillator, 2E26 RF amplifier (not a doubler!) can be loaded to 30 watts input, with high output efficiency. Covers 10 and 11 meter bands. Class B Audio for 100% modulation and real battery economy. Ultra-modern in appearance, too! Chrome embossed panel — indirect meter illumination — dark green, slide-in cabinet.

Complete $87.50

(Less tubes and connectors — $79.95)

Subraco DS-400 Dynamotor Pack for MT-15X $59.95

5 KW PLATE TRANSFORMER



Use one of these Broadcast Grade THORDARSON plate transformers for that conservative, cool-running, California Kilowatt. Delivers 3000, 3500, or 4000 volts DC output at 1200 MA!

230 Volt Primary (The superior regulation of 230-volt operation more than justifies asking for a 230 line to the shack). Run it on 115 Volts and get 1500, 1750, or 2000 Volts DC at 1200 MA!! All ratings are for Continuous Commercial Service! 9" x 17¾" x 12½" high, weighs 150 lbs.

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

Quantity limited — first come, first served.

Only $99.75

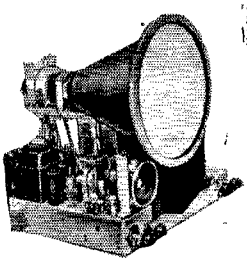
NEWLY ANNOUNCED GEAR

In Stock Now! — Immediate Delivery!

HALLICRAFTERS S-38A. New improved model. Increased performance with no advance in price.	Still $39.95
HALLICRAFTERS S-72 All-Wave Portable, 540 KC-30 MC	$79.95
KILOWATT DPDT Antenna Changeover Relay RL-4	$4.70
PRINTED CIRCUIT KIT (See our August ad)	$7.27
COLLINS 32V-2 No more TVI. Operate at will!	$575.00
COLLINS 35C-1 Transmission line filter	$40.00
STANCOR Filament Transformer 6.3V at 1.2A	.79

TECH-MASTER TV KITS AND CHASSIS

Buy the Best! — Lowest Prices Anywhere!



Famous 630 type circuit, using RCA front end, all RCA tubes and mostly genuine RCA components throughout. RCA schematic diagram, 42-page service manual and simple step-by-step instructions furnished with each kit. Use 10, 12, 15 or 16-inch tubes with Standard or Deluxe kits.

STANDARD KIT 630TK—Complete, less kinescope. $144.50

DELUXE KIT 630TK—All parts mounted! By far the easiest kit to build. Less kinescope. $163.50

SUPER "16" KIT 630TK — Made especially for 15, 16, or 20-inch picture tubes. Uses voltage doubler circuit for clearer, brighter picture. Less kinescope. $177.50

TECH-MASTER WIRED AND TESTED CHASSIS

Ready to Operate — Fully Guaranteed

TECH-MASTER 16" Receiver — 630 type chassis with voltage doubler. Complete with 30 RCA tubes, genuine RCA 16AP4 picture tube, plastic ring and boot. $248.51

TECH-MASTER 10" Receiver — 630 type chassis with RCA 10BP4. Complete — Ready to enjoy! $199.50

LOWEST PRICES ON GENUINE, GUARANTEED RCA KINESCOPES

10BP4 — $27.50 12LP4 — $39.80 16AP4 — $55.80

(Look over the FB TV buys in our new Ham-A-Log)

DX BAIT — A PHONE PATCH!

Just let 'em know you have a phone patch and those elusive ones will wait in line for you! Here are two, well engineered, two-way balanced phone patches which in extensive field tests have given excellent results and no trouble! Automatic in operation — no changeover switch.

DE LUXE MODEL — Complete kit of parts, cabinet, Simpson 4½" VU meter and full instructions. Item MX-5 $49.95

UTILITY MODEL — Complete kit of parts and instructions. (Uses no meter) Item MX-6 $18.95

NEW ALLIANCE TENNA-ROTOR

Popular rotator for TV arrays and light ham beams is now available with built-in direction indicator. Know where your beam points at all times. No guesswork! Complete unit, ready to use, less only connecting cable — $29.29

Tenna-Rotor without direction indicator $23.45

4-Conductor cable 3¢ ft. 100' only $2.50

New Alliance Thrust Bearing Bracket enables the Tenna-Rotor to support and rotate larger TV arrays and heavier ham beams. Use with either model. $4.49

GREATER NEW YORK 19 AMATEUR RADIO SHOW 49
OCTOBER 7-8-9
OF THE ARRL HUDSON DIVISION CONVENTION

HARRISON HAM-A-LOG

Did you get the BIG OUTDOOR ISSUE of our HAM-A-LOG? Mobile rigs — everything for the antenna — a real good 'phone patch — hundreds of FB bargains, etc. etc. If not, send a card today!

NEW MEISSNER SIGNAL SHIFTER!

160-80-40-20-15 and 10 Meters!

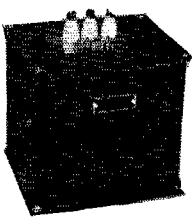
Here's the latest model EX Signal Shifter Kit with coils for all bands, 10 through 160 meters. Even a beginner can assemble in about three hours. Everything is supplied — tubes, power supply, cabinet, coils, wire, solder, and simple pictorial instructions. No comparable exciter can give you such wide frequency coverage!

10 thru 160-Meter Signal Shifter Kit **53.67**

FMX Phase Modulator for EX Shifter $12.00

Kit of tubes for FMX Phase Modulator $3.09

DON'T MISS THESE TREMENDOUS BUYS!



TWO unbeatable plate transformer bargains! Brand new stock in factory sealed cartons! Primary is for 115 volts, 60 cycle AC. All ratings are clearly marked. Both of these transformers are conservatively rated to deliver 400 MA in CONTINUOUS COMMERCIAL SERVICE (CCS). Handsome, sturdy case, (as illustrated), completely shielded and potted, porcelain high voltage terminals! Mounts upright or inverted.

2600-0-2600 V AC AT 550 MA ICAS! — 50 lbs! 7¾" x 7¾" x 8½" high — TP-18 *$28.95*

1750-0-1750 V AC AT 550 MA ICAS! — 37 lbs. 6¾" x 8" x 7½" high — TP-17 $19.95

(Add 85¢ each for crating, if shipped)

HARRISON RADIO CORPORATION
12 WEST BROADWAY, NEW YORK 7

Correspondence

(*Continued from page 59*)

your attention. Some publicity should be given to this subject so that amateurs throughout the United States can contact their local insurance agents and have the proper coverage added to protect their antennas, etc., against future loss.

— *Arthur C. Lyman, W8SPJ*

PLEA

Princess Theater, Winnsboro, La.

Editor, *QST:*

I regret to report the death of one who is known as the "father of amateur radio" in Winnsboro. This devoted and kind technician, Sam Paola, W5KRY, met with violent death on the morning of November 1, 1948, in his home at the hour of 2 A.M. He and his XYL, Mary, were fiendishly murdered from shots fired by an unknown assailant with unerring accuracy. Two fatal bullets were found in each body. Every effort known to law enforcement is being used to track down a motive and a suspect, but no indictment has been made.

As Sam had thousands of amateur radio friends all over the world, I wish to enter a plea to those who talked with Sam to submit any information that he might casually have passed on in a QSO that might lead in some way to a suspect. How a man who spent his life doing good things for others could possibly have an enemy is beyond us.

— *Louis R. Westerburg, W5MUN.*

PULSE-TIME

Hamilton, Ill.

Editor, *QST:*

I was most interested in the opening article in the July issue of *QST*. A number of years ago a somewhat similar article found its way into *QST* but alas! before its time! I believe that in this pulse-time scheme you have something for the amateur which will be worth his attention and which will tickle the interest of at least the experimenters. It also should keep the old timers thinking for it promises in simple language the virtual end of QRM. This is a real goal to shoot at. Keep articles on this subject coming, not too often, just enough to generate interest. For my money, it has single sideband beat all hollow, though of course, we cannot expect pulse-time modulation to do anything for us at the present.

In any event, thanks for putting a fine article in a fine magazine.

— *J. Saugier, jr., W9KSQ*

Strays

Heavy-duty 15,000-volt power transformers using solid silver wire for the windings were constructed during the war as a result of the copper shortage. These million-dollar babies were heavily guarded while in use, but they are now being dismantled, the silver returned to Government vaults, and copper windings substituted.

— *Ohmite News*

—•••—

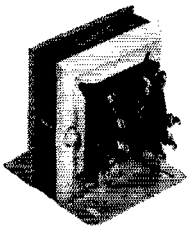
The Amateur

"The word amateur has come by the thousand oddities of language to convey an idea of tepidity; whereas the word itself has the meaning of passion. Nor is this peculiarity confined to the mere form of the word; the actual characteristic of these nameless dilettanti is a genuine fire and reality. A man must love a thing very much if he not only practices it without any hope of fame or money, but even practices it without any hope of doing it well. Such a man must love the toils of the work more than any other man can love the rewards of it."

— *G. K. Chesterton in "Robert Louis Stevenson"*

Outstanding POWER CONVERSION UNITS

for any Voltage and Amperage Rating



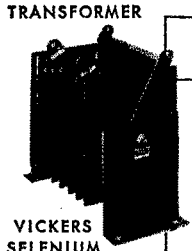
THERMADOR TRANSFORMER

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

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

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

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



VICKERS SELENIUM RECTIFIER

ALL NEW—FULL WAVE VICKERS SELENIUM RECTIFIERS

Code No. Rectifier	d-c Output Volts	Amps.	Ship. Wt. Lbs.	Amateurs Net Pr.
S-295A	14	2	1.25	$ 6.95
S-458A	14	4.5	1.75	7.25
S-167A	14	10	3.75	10.95
S-292A	14	40	12	29.95
S-296A	28	1.8	1.25	5.75
S-344A	28	5	5.75	11.50
S-172A	28	10	6	16.50
S-291A	28	20	12	29.95
S-297A	28	40	23	52.25

ALL NEW—THERMADOR TRANSFORMERS 50/60 Cyc—117 Volt Primary Rating (For Taps, see Note A)

Code No. Transformer	Secondary Volts	Amps.	Ship. Wt. Lbs.	Amateurs Net Pr.
RPS-8883	18	3	3 5	$ 3.75
RPS-8884	18	5.2	5.5	4.25
RPS-8885	18	12	12	6.15
RPS-8886	18	46	35	19.65
RPS-8888	36	2	5	4.15
RPS-8889	36	6	12	6.75
RPS-8892	36	12	25	11.65
RPS-8890	36	23	32	19.25
RPS-8891	36	46	78	51.25

NOTE A: All transformers have 3 extra taps—for example: 20, 19, 18, 17 volts and 38, 37, 36, 35 volts.

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COMMERCIAL RADIO INSTITUTE

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Resident Courses Only • Broadcast, Service, Aeronautical, Television, Radar, Preparatory Mathematics. Frequency Modulation and Marine telegraphy. Classes now forming for fall term Oct. 1st. Entrance examination Sept. 19th.

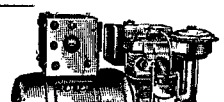
Literature upon request. Veteran training

Dept. B, 38 West Biddle Street, Baltimore 1, Maryland

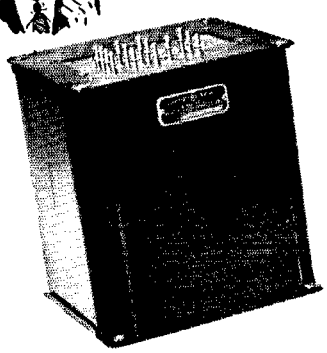
WHAT! NO LIGHTS!

Katolight Plants furnish the same kind of A.C. current as the Highlines. Sizes 500 Watts to 300 Kilowatts. Also manufacturers of Rotary Converters, Frequency Changers, D.C. Motors ¼, ½, and ¾ h.p., A.C. Motors, single phase in 2, 3, and 5 h.p., high frequency Generators.

KATO ENGINEERING CO.
1437 First Avenue
Mankato, Minnesota



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



- Hams *everywhere* specify KENYON "T" Line Transformers! Manufactured under rigid standards, all KENYON transformers are constructed of the finest grades of material plus the skill and long experience of a highly trained competent operating staff.
- All KENYON transformers are checked progressively in the course of manufacture and are laboratory-tested upon completion to insure satisfaction. Yes, KENYON "T" Line Transformers meet the most exacting requirements of critical purchasers. For skillful engineering, progressive design and sound construction — *Specify* KENYON for top performance in your rig!

KENYON TRANSFORMER CO., Inc.

840 BARRY STREET
NEW YORK, U. S. A.

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.
(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others.
(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.
(4) Remittance in full must accompany copy. No cash or contract discount or agency commission will be allowed.
(5) Closing date for Ham-Ads is the 25th of the second month preceding publication date.
(6) A special rate of 7¢ per word will apply to advertising which, in our judgment, is obviously non-commercial in nature and is placed and signed by a member of the American Radio Relay League. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, if by a member of the American Radio Relay League takes 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.

Please note the 7¢ rate on hamads is available to ARRL members only.

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.

QSLs, 100, $1.50 up. Stamp for samples. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore 29, Md.

AMATEUR radio licenses. Complete theory preparation for passing amateur radio examinations. Home study and resident courses. American Radio Institute, 101 West 63rd Street, New York City.

QSL'S. SWL'S. Finest stock. Fairest prices. Fastest service. Dossett, W9BHV QSL Factory, 857 Burlington, Frankfort, Ind.

QSLS! Kromkote cards at a fair price. Dauphinee, W1KMP, Box 219, Cambridge 39, Mass.

QSL Quality cards priced right. Samples. Ferris, W9UTL, 1768 Fruitdale, Indianapolis, Ind.

SUBSCRIPTIONS. Radio publications a specialty. Earl Mead, Huntley, Montana, W7LCM.

DON'S QSL's. "The finest". Samples. 2106 South Sixteenth Avenue, Maywood, Illinois.

CRYSTALS: Precision low drift units. Type 100A in 80, 40, and 20 meter bands. Two units plug in one octal socket. Plus or minus 5 Kc. One dollar each. Exact frequency. $1.95 ea. Rex Bassett, Inc., Ft. Lauderdale, Fla.

DISTINCTIVE SWLS-QSLS. McEachron, 1408 Brentwood, Austin, Texas.

QUARTZ crystals: without holders, highly active, assorted frequencies 5600 to 8400 kilocycles, 6 for $1.00. For FT-243 holders. Holders and mounted crystals available. Breon Laboratories, Williamsport, Penna.

QSLS: Original designs priced to fit hams' pocketbooks. Stamps for samples. Leonard's Print Shop, 854 View, Hagerstown, Md.

FOR sale: TEMCO 500GA transmitter and Collins 75A1 receiver like new. Will sell together or separate. Best cash offer will take. B. O. Reynolds, Lake Geneva, Wisconsin.

GEIGER-Mueller counter tubes. Threshold 900 volts, audio amplification unnecessary. Metal encased. $15.00 postpaid. Radio Specialists Co., 417 West 12th Ave., Denver, Colorado.

RADIOTELETYPE converters for FSK reception. New circuit. 7" x 19" panel. 20 Ma. output. $485.00 F.o.b. Sacramento, California. George J. Maki, W6BE, Route 7, Box 1198.

SURPLUS xtal kit. Two FT — 243 holders, two blanks each in 3.5 and 7 mc range, abrasives, etch fluid. $2.00 postpaid. The Vesto Company, Parkville, Mo.

MOBILE antenna mounts: spring type, whip detachable for garaging, mountable without visible body holes, price, $3.75, postpaid. Wayne, W1PFB, 130 Mount Vernon St., Middletown, Conn.

QSL's. Snappy new line! Stamp for samples. Larry's QSL Shop, Opportunity, Wash.

QSLS: Original designs priced to fit hams' pocketbooks. Stamps for samples. Leonard's Print Shop, 854 View, Hagerstown, Md.

ALUMINUM tubing, etc. Beams for amateurs. TV, FM. Write for lists. Willard Radcliff, Fostoria, Ohio.

SELL: R9'er with tube 10 and 20-meter coils, $15. UTC filament transformer S71 new $8.00. Vibroplex key slightly used, $10. Code practice oscillator 117L7 with speaker in gray cabinet, $4.50. Louis Weber, W4JMG, 109 Watson Court, Frankfort, Ky.

QSLS, SWLS. Those who want the best in QSLs. C. Fritz, 1213 Briargate, Joliet, Ill.

OUR business — buying and selling amateur radio transmitters. Transmitter Exchange, Wakefield, R. I.

HQ-129X, $115. HT-18 VFO NBFM, $75. UTC 150-watt fone/cw xmitter $100. Tate, 363 Van Duzer St., Stapleton, S. I., N. Y.

SELL: New 522 dynamotor, $35.00. Ra-34 power supply, adjustable voltages 0–1100 v.d.c., 10–14 v.a.c., 14.25 amps, 12 v.d.c. 4.25 amps, relays, circuit breakers, voltmeters, $75.00. Onan gasoline driven 110 V.A.C. 60 cycle 350-watt generator, electric or manual starter, 12 volt d.c. 10 amp generator, $135.00. T. Howard, 46 Mt. Vernon St., Boston 8, Mass.

HAM's haven. An amateur's camp for amateur fishermen in Northern Ontario on Eagle Lake. Write J. B. Connor, VE3AFH, Box 238, Dryden, Ont., Canada.

FOR sale: Amateur station W2AFU (1 kw), less receiver. Also numerous parts. Mrs. Elmer Theibault, 309 Caranetta Dr., Lakewood, N. J.

FOR sale: BC-946-A receiver; BC-412 'scope; HS-23 phone inserts; PE-103A dynamotor; BC-645A; National EMC-500 and Cardwell X-750-ES variable condensers; Kenyon T-655 transformers; 3x. 2 μfd 4000 v. condenser; 5BP4; filament transformer 10,000 v. insulation, 304TL tubes. Wanted: 0–1 ma. miniature 1½" meter. E. Dudis, 732 Gondert Ave., Dayton, Ohio.

BC-348 AC job, $48.50. SX-28 & speaker $135.00. Funk, 9915 Cavell Garden City, Mich.

PIERSON KP81 receiver .540 to 40 mc continuous 2 RF and 3 IF stages. ANL and squelch, excellent condition, original owner, sell $225.00. Roger Mace, 1242 Tamarind Ave., Hollywood, Calif.

HQ-129X with speaker, other gear. Must move. John Warner, 1527 Ridge Place, S E Washington, D. C.

SELL BC-611 handie talkie, like new condition, 80-meter phone band with ten spare batteries, also Mallory 400 volt Vibrapak. Gabil, W9UBW, Pontiac, Illinois.

MAGNETIC recording wire. Buy by the pound. Spool it yourself. J. M. Richardson, W2AOP, Box 96, West Brookfield, Mass.

QSLS: Samples for 3¢. Harrison, 8001 Piney Branch Road, Silver Spring, Md. SWLS.

WANT defective power transformers and filter chokes from BC-610. W4KTZ, Clarksville, Tenn.

SWAP: Complete RCA MI-7814 mobile transmitter, modified for ten for Gon-Set, "3–30" converter. Television transmitter and receiver components for SX-42. WØHLX, Grand Island, Nebraska.

WANTED: Following surplus items for radio set SCR-284-A: 3 each of metal mast sections MS-54-55 and 56; six each of counterpoises CP-12 and CP-13, and of antenna mast guys GY-11 and GY-12; three loudspeakers LS-7; three sets of legs LG-13-A; several bags BG-154 and BG-102-A, and BG-58's. Sumner B. Young, WØCO, "Maplewoods", Village of Woodland, Rt. No. 3, Wayzata, Minnesota.

BC-610D complete with speech amplifier, coils 10–80 extra 250TH. Pair 100TH. $500.00. HT-9 complete with coils for 10–80, less than one year old. $250.00 W9IPB, Sol Myers, 1404 Park, Pekin, Ill.

SELL: HQ-129-X with speaker, $120; HT-19 transmitter, complete, best offer over $200.00; both perfect condition. Used seven months. Express collect from North Hollywood. W6PMV, Wm. M. Thompson, 8054 Laurel Grove Ave., No. Hollywood, Calif.

BARGAINS; New and used transmitters, receivers, parts: Globe King, $299.00; New 150-watt phone, $199.00; 60 watt phone, $99.00; Globe Trotter, $57.50; R9'er, $15.00; Millen exciter and VFO, $25.00; TR-4 $19.95; MB-611, $39.00; Pierson KP-81, $219.00; HRO-5TA1, $199.00; SX-43, NC-173, HQ-129-X, $139.00; NC-200, $129; RME-45, SX-25, $99.00; Howard 430, $29.50; S-38, $29.95; S-41, $22.50. Latest signal shifter $59.00; DB-22A, $49; BC610's, 32V1's and many others. Large stock trade-ins. Free Trial. Terms financed by Leo, WØGFQ. Write for catalog and best deal to World Radio Labs, 740–44 West Broadway, Council Bluffs, Iowa.

ALUMINUM tubing, etc. Complete beams for amateurs, TV, FM. Lists free. Willard Radcliff, Fostoria, Ohio.

RADIO operators desk similar July QST article unfinished $48, finished $57.00, or made to order. Write for details, photo, etc. H. A. Morris, W4KZ, C & L Mfg. Co., Greenville, S. C.

NEED BC-348Q oscillator unit complete. Please state price. A. J. Miller, AT1, C. G. Air Facility c/o N.A.S. Kodiak, Alaska.

CRYSTALS for all commercial services at economical prices. Over fourteen years of satisfaction and fast service! Eidson Electronic Co., Phone 3901, 1802 North Third, Temple, Texas.

QSLS, SWLS. Meade, WØKXL, 1507 Central Ave., Kansas City, Kans.

COLORTONE QSLS! "America's Finest"! Snappy! Bright! Different! "No junk!" Samples? Colortone Press, Tupelo, Miss.

BC-348-H for sale. Best offer or trade for television kit or receiver. Bought in "removed from unused plane" condition from surplus. Never used by me. W6HOJ, 216 Hamner Ave., Corona, Calif.

TRADE-IN your used receivers for new or better units at Northern New England's foremost amateur radio supply house. Evans Radio, Concord, N. H.

BC-610E, Super Pro, 50 ft. steel tower, Meissner signal shifter, VHF 152A, beam rotator (Director-O-Beam) 4-element Workshop beam, and power supply and gear. Best offer over $800. C. Harrist, W5HFD, 3550 Frederick St., Shreveport, La.

SELLING out complete works to highest bidder: Kilowatt rig VFX 680 (VFO-FM modulator) PP 807 into PP 813 final link throughout. Completely switched, metered, fused, relayed. Only finest commercial components used. Every part over-rated for safety. Mounted with Super Pro receiver in beautiful Bud 66" enclosed cabinet with roller base, everything included for immediate operation. All bands cw and fone. Also 10–11 meter Stancor 203A xmitter with Gon-Set, all wired and ready for fixed or mobile operation, over $150. Spare parts. Goes to one buyer. Freight prepaid anywhere in U.S.A. Ralph Macy, WØGDE, Vermillion, So. Dakota.

SELL: Hammarlund SP-400-X Super Pro, complete with power supply and speaker, $325.00; also Hallicrafters SX-42 and R-42 speaker, $250.00; All equipment like new. V. Pellettieri, 5523, 31 Ave., Woodside, L. I., N. Y. Phone AStoria 8-1838.

QSLS? SWLS? Distinctive? DeLuxe? Cartoons? Photographic? QSL samples, 3¢. Sakkers, W8DED, Holland, Michigan. Finest in QSL cards.

WANTED: Marconi magnetic detector, multiple tuner, DeForest responder; early G-E and RCA receivers; other wireless gear prior to 1925. Franklin Wingard, Rock Island, Ill.

FOR sale: 24 year run of QST. Complete. Best offer takes lot. Mrs. Harold Hodge, Route 8, Box 152, Lemay 23, Mo.

FOR sale: Used "Erco" mobile receiver-transmitter; Model No. MP15C-391; 15 watts; 6 volts; 31,100 kc. J. Dodge, Village of Grand View-on-Hudson, New York, Police Dept.

FOR sale: Model HRO complete with coils and speaker, $135.00. Herbert W. Gordon, 12 Sunnyside Ave., Wellesley 18, Mass.

SALE or trade: New tested only NFM-73. $15 postpaid. Want 300 to 500 watt multimatch transformer. Goebel Davis, jr. W40NX, 722 Gracey Ave., Clarksville, Tenn.

CHRISTMAS in Florida. Will take ham with experience in handling small boats along on leisurely cruise to Florida this Fall. W2JI, Box 602, Church St. Annex, NYC.

FOR sale: BC-610 transmitter, complete, and Tech-Rad T350XM transmitter, complete. Would take Collins 32V or Hallicrafters HT-9 transmitters or similar commercial make transmitter in trade. Can arrange terms. Write for details. WØARA, Butler, Mo.

SELL: Webster wire recorder, Model 79 foundation unit plus wire, BC-453 Q5'er, Navy Auto Transformer type CRP rated 16 amperes. Best offer takes all. WØKOW, Earl Hempy, 720 Stewart Lane, South St. Paul, Minn.

TRADE or sell: Two BC-222 walkie-talkies, complete. Cover 6 and 10 meter bands. Wanted: VHF-152A. P. Schmelzer, Motley, Minn.

GEAR and equipment of interest to hams and experimenters. Write for list. H. I. Bosworth, Westford, Mass.

HALF Kw Am-Cw rack xmitter, coils for ten, twenty, forty. Millen amp with 8005s, Millen exciter, Millen power supply, Meissner DeLuxe factory built ECO. Mod. capable of Kw input. Sell complete by unit, or part payment on 32VI. No reasonable offer rejected. M. R. Sherrill, W9POP, Arlington Heights, Ill.

SELL: At less than cost of parts. 450 volt 200 ma (CCS) power supply, $25.00; 40 watt modulator (circuit page 44 April 1947 QST), $35; low power antenna tuner with 80, 40, 20 and 10 meter coils (Page 267 of 1945 HANDBOOK), $18. All neatly built on grey rack panels. Also *Electro-Voice "Comet" mike*, $5.00. W9VDP, RR No. 1, Hartford City, Ind.

FOR sale: Transmitter 50 watts Super modulation/c.w. coils for 40-80. VFO. Mike, antenna tuner. Neat rack cabinet, $100. Reason: Going to college. John Webb, WØAHM, 82 Barton Court, Great Bend, Kansas.

SWAP: 4 x 5 Speed Graphic, flash, range-finder, case, filters, etc. on HT-19 or 32-V1. Let's make a deal. W4IQV, 321 Willow, Mayfield, Ky.

FOR sale: Two Memovox recorder-reproducer AN/GNQ-2A, $62.00 each, F.o.b. Florida. With case, manual, Turner dynamic 9/U mike, carbon mike, headphones, service harness, spare tubes and parts, sapphire stylus, approx. 150 uncut records. Like new and records 30 min. each side. Raymond J. Stenger, 180 Whitefoord Ave., NE, Atlanta, Ga.

COMMAND receiver BC-454 converted to ten meters. 6H6 noise limiter, AVC, loud speaker audio. With tubes, Fb for mobile-portable. $15.00 express collect. WØFWN, Howe, 1412 Bush St., Red Wing, Minn.

HT-9 with 10–20–40–80 coils, crystals, 3 spare 814s, mike, speed bug, antenna relay, instruction manual. Workshop 3-element 10-meter beam with all fittings, instructions and 100 ft. 52 ohm coax. Entire rig like new, used less than 200 hours. $225.00 for all, or best offer. F.o.b. Danbury, Conn. W1GAS, Geo. Olson, P. O. Box 976, Danbury.

SELL: HRO-7T. Like brand new, $245.00; express prepaid. Ross Thorp, 313 Delia, Flint 5, Michigan. Phone 9-5049.

FOR Sale: Southern California only. Complete station of W6HI. Kilowatt rig, phone or c.w., in 76" totally enclosed Par-Metal cabinet. Uses four 125s in PP final and four 125s in PP modulator. Compression type speech amplifier. Tower with latest heavy duty Gordon rotator, with station indicator, driving double beam. Folded dipole type with 4 elements on 10 and 3 elements on 20. Hammarlund SP-400X with speaker. All new postwar equipment. No surplus. Station value $1550.00. Sell entire layout for $1000. Inspection Sundays 8:30 to 11 A.M. only. No trades. H. L. Bumbaugh, 724 No. Crescent Heights, Blvd., Hollywood, Calif.

WANTED: Camera, binoculars, optics, in exchange for ham equipment, parts, etc. W2IWV, R.F.D. No. 1, Box 500A, Morris Plains, N. J.

GASOLINE driven 120-volt, 60 cycle generators, 300 watt, bargain. See our full page ad July *QST*. The Myfronic Co., 121 W. Central Pkwy, Cincinnati 2, Ohio.

CUSHING, W1HJI, prints fine QSLS, SWLS. Samples. Box 32, Manchester, N. H.

WILL trade Hickok 532 tube tester, and 191X signal generator, for Leica 111c with Tessar, Summitar or similar lens, or other good 35mm. Camera, or foto equipment. Dick King, W7MBB, Box 14, Cut Bank, Montana.

WANTED: Copy of DeSoto's "200 Meters and Down", bound and in good condition. Must be A-1. W8VFJ, Fremont, Ohio.

SCR-522 complete trans. and rec., all tubes and case, no conversion done, $25.00. John Miller, 10654 So. Kedzie Ave., Chicago 43, Ill.

HRO-5TA-1 latest model, complete with all coils and speaker, $175.00. WØDUD.

SELL: Superior signal generator, model 650, Vomax model 900, Cornell-Dubilier model BF, capacitor analyzer. All in top condition. First $50 takes all. W7HAM, Richey, Montana.

LOOKING for copy of February 1947 *QST*. Good condition important. E. Lyder, W1RNT, 839 Farmington Ave., W. Hfd., Conn.

MUST sell: complete phone station, 1 kw, $250 or almost new signal shifter, Meissner, all coils, $40. Breadboard 2 buffers, p.p. 250T final, coils, power supplies 6 ft. wooden rack; 5 in. meters, etc. $100. Audio amplifiers, modulators, etc. Dozen parts. Hirsch, W1AUB, 43 Atlantic, Stamford, Conn.

SALE: Kw 10-meter NBFM xmitter, complete with VFO in 66" rack, final PP 813s. W7IPD, 651 Elko Ave., Reno, Nevada.

MONEY needed. Selling out station. Globe King 275-watt xmitter, $269.00. Must sell all at any price. Send for list. W5KIE, 713 Woodland Court, Hattiesburg, Miss.

FOUR SCR-522 units, $27.50 each. Telrad 18-A frequency standard, 100 to 45000 kc/s, 10-100-1000 kc markers, $27.50. E. Rybak, W1ONI/3, c/o WGPA, Bethlehem, Penna.

MACKAY receiver FTR-128, AC-DC, 15–650 Kc in 4 bands. Cabinet weight 42 lbs. F.o.b. Boston, $55.00. RCA communications receivers CGR32-2 (1937 twins), 1.43-26.24 Mc. in 6 bands, AC or batteries, 12 tubes. U. S. Coast Guard Marine service super-het circuit, with service manual. 19" x 10½" panel; depth 16¼". Wt. of pr. in cabinets 180 lbs. F.o.b. Boston, Pair: $395.00. Box 81. Chestnut Hill 67, Mass.

SELL National NC-183 receiver, speaker, NFM adaptor $195.00. HRO5TA with power supply, four coils 1.7 to 30 Mc., $115.00. HRO 6 volt power supply, $15.00. RA-34 rectifier 0-1100 v.d.c. 350 mils, 10-14 volts AC 14.25 amps, both variable panel controls, voltmeters, 12 v.d.c. 4.25 amps, $65.00. Collins TCS-12 transmitter *receiver, new, complete, 110 VAC and 12 VDC power supplies*, $445.00. 522 trans-receiver, new, $29.00. BC654, new, $35.00. T. C. Howard, 46 Mt. Vernon St., Boston 8, Mass.

TRADE or sell: Triplett 100 Ma. and 500 Ma. meter, model 227-T. Thordarson transformers T-21F12 6.3 v. 10 a; T-19F96 10v. 8A; T-19PG1 1750 or 1500v. 300 Ma. McMurdo Silver UHF rec. model 800. WØIZJ, 18th & Rural, Emporia, Kans.

SWAP: Half-kilowatt Cw transmitter for clean SP400X, SX28A or equivalent with matching speaker, instruction book 6V6 tritet; 807; PP 812, antenna tuner, two power supplies, all contained in streamlined grey lacquer sprayed table-top rack. All tubes. Meter switching. Log reveals imposing DX and quality reports. Clear photographs on request, subject prior exchange. V. J. Cheek, W4ADN, 115 East Hill Street, Decatur, Georgia.

BARGAINS: New and reconditioned Collins, National, Hallicrafters, Hammarlund, RME, Millen, Meissner, Meck. etc. Reconditioned S-38, $25.00; S-40, $49.00; SX-43, $119.00; NC-57, $59.00; NC-173, $139.00; HQ129X, $129.00; DB-20, $29.00; RME-45, $99.00; HF-10-20, VHF152A, RME-84, NC-46, NC-183, HRO7, NC240D, SX-42, SX-28A, SX-25, AR88D, Collins 75A1, BC-610, etc. Cheap, Shipped on trial. Terms. List free. Henry Radio, Butler, Mo.

SELL late model 75A1 Collins receiver, $295.00. Complete with speaker and in original carton, C. H. Buchanan, Vale Rd., Rt 1, Springfield, Ohio.

SELL: NC-57 with external "S"-meter, cost $105.45, one year old, sell for $85.00 or highest offer; Signa-Tone code oscillator, cost $8.82, sell for $4.50; JT-30 microphone, $6.00; 8-watt amplifier, inverse feedback, $7.00; all in excellent condition; V.O.M., in fair condition, Chicago Model 371-P, $3.00; three tube superregenerative Meissner in sloping panel cabinet, fair, $8.00; Emerson table model receiver, needs speaker cone, $5.00. Bill Ewing, 4316 Fairfax Ave., Dallas 5, Texas.

KILOWATT transmitter PP 810s, 810 Mod. 6 ft. rack, gray crackle well built, excellent appearance and operation. Reason for selling: travelling. Take bids over $375.00. Fred Jones, WØSTM, 323 S. Atchison, El Dorado, Kansas.

SALE: 167BY transmitter, 500 watts on 10 meters and 1 kw on all other bands. PP 813s with B & W final. Cw and NBFM. Best offer. Bill Robinson, W5QAR, Schulenburg, Texas.

WANTED: BC-610s, 348s, 312s, 342s or what have you for cash or equipment. G & M Equipment Co., Inc. Sherman Oaks, Calif.

METERS repaired. Springfield Testing Laboratory, 815 North 12th, Springfield, Ill.

WANTED: Coto 10, 20, and 80 BTL or BTVL transmitting coils. WØTDH, 2847 So. 3rd St., St. Louis 18, Mo.

QSLS! G. L. Taylor, Sumrall, Mississippi.

WANTED: HRO general coverage and bandspread coils, all bands. State type and price. J. G. Hines, P.O. Box 5100, Albuquerque, N. M.

WILL exchange my S-39 (portable) for S-40A; new tubes and operating perfectly. L. G. Barrett, Cranberry Isles, Maine.

FOR sale: One NC-101X, National recvr, in perfect condition. Range 10 to 160 meters. $75.00. F.o.b. Chicago, W9EZN, 6014 Miami Ave., Chicago 30, Illinois.

SELL: 275-watt cw/'phone transmitter, 20–160 meters. Cash: $175.00. Buyer to come and take away. W1BGJ, Fichthorn, Southington, Conn. 166 North Main.

A limited quantity of these Philco Manuals available to ARRL members: Training Manual Trouble-Shooting Procedure for radio sets BC-348J, BC-348N and BC348Q. Both manuals, complete with two wall charts, for only $1.00, Philco Corporation, TechRep Division, 22nd St. & Lehigh Ave., Philadelphia, Penna.

HAMS, Technicians, Engineers! Send one dollar for copyrighted report concerning Why, How, Where for top-paying electronics jobs. Mid-Continent Research Bureau, P.O. Box 121, Wichita, Kans.

NEW BC-348Q. First check for $70 takes it. Al Browdy, W6NSS, 1962 So. Stearns Dr., Los Angeles 34, Calif.

SELL SX-42 with speaker, in excellent condition: $175.00. WØGYZ, 724 N. Florissant, Ferguson, Mo.

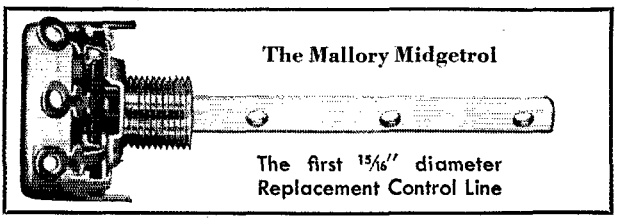
DB-22A, VHF-152A (both slightly used). W8QJC, Box 218, Holland, Michigan.

CRYSTALS: Etched precision low drift, FT243 or 5 pin type holders, 5 to 8.5 megacycles ± 5 Kc, 95¢. Exact frequency $1.75. Money back guarantee. Lattin-Field Laboratories, 320 West Main, Owensboro, Ky.

HAMMARLUND SP-400X, late Super Pro .540—30 Mc. Added Hammarlund 100 Kc. frequency standard, 19 tubes, matching speaker, power unit, $230. Nice looking, tops in performance. Couple new 375 watt Navy plate transformers, instructions. Tapped, 110 volt 60 cycle; $6 packed. Two give 2000 volts at 375 Ma, cool. Unused 872A hi power rectifiers, $1.10. Used filament transformer 5 volt 15 amp. 5000 volt insulation, $3.00. 2 μfd 2500 volt Aerovox filter condensers, new, $2.50. Unused Meissner phase modulator for Signal Shifter, tubes, $10.00. Bids on Signal Shifter partly built as 1 lack room. W2UNK, Shipman, P. O. Box 202, Ithaca, N. Y.

Index to Advertisers

MALLORY HAM BULLETIN



How To Select A Volume Control For Replacement in a Communications Receiver

In selecting a volume control for use in a precision and often expensive communications receiver, we all know there are certain obvious and desirable features a replacement control should have. Such characteristics as *correct over-all resistance*, *low operating noise level*, and *long life* are expected automatically as a necessary part of a good control.

However, there are certain other features, less obvious perhaps, but nonetheless important, which Mallory engineers have discovered should be included in a volume control to make it entirely satisfactory for communications work. These additional or extra features often mean the difference between strictly mediocre performance on the one hand, and entirely satisfying performance on the other.

For example the *smoothness and continuity of taper* in a volume control is extremely important when used in a high-gain communications set. Too often this feature is sadly neglected, with the result that volume or gain is difficult to adjust. Special attention to smoothness of taper means the addition of several more operations on the volume control production line, but Mallory engineers know these extra operations are worthwhile for building a better control.

A control to be fully satisfactory must have a *low hop-off resistance.* (Hop-off resistance is defined as the amount of resistance remaining in the grid-ground circuit with the control set in the minimum volume position.) A control which does not have this very desirable feature, when used in high-gain circuits, will not permit complete attenuation of the audio signal with the result that annoying feed-back and undesirable speaker noises may appear when your own transmitter is on the air. The lowest hop-off resistance factor in the industry is assured in Mallory controls by an exclusive silver spray process at the low volume position.

It is important that a volume control have as great a *mechanical rotation with resistance change* as possible. The greater the mechanical rotation in a volume control, the easier it is to adjust the volume or gain to precise levels. Most volume controls have a mechanical rotation between 280 and 300 degrees. The Mallory control has been designed to provide in excess of 300 degrees of mechanical rotation.

Finally, controls and companion AC switches must be *ruggedly constructed and easily mated* for maximum convenience in use. Don't forget! You do not have to remove the housing from a Mallory control to attach the switch.

The next time you have occasion to buy a replacement control, check to see if the brand you have selected has every one of these necessary features.

If it is a Mallory, all these features will be present and you can be sure you have selected a control entirely suitable for the finest communications receiver.

You will find 416 ratings in the Mallory line—1½", 1⅛", and the all-new 15/16" Mallory Midgetrol. See your Mallory Distributor.

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Job-*Finding* Service Gets 7 Job Offers!

"Since our last correspondence, I have found and accepted a position at KWAD in Wadena, Minn. It is a kilowatter, D. A., full time station, in the center of Minnesota.

I am sincere when I state that I am indebted to CIRE, for I secured this position through the help of the CIRE placement plan. I would also like to state that I had at least six other offers from stations receiving my employment application and CIRE reference. Yes, gentlemen, I am sincerely under obligation to you." — Student No. 2760 AT

Job-*Finding* Service Scores Again!

"I want to inform you that I am working at WRJM as transmitter engineer, and that I received this position in response to one of the employment applications sent me upon completion of my course and the receiving of my Diploma. I received my 1st Class Radiotelephone license on March 2, 1949.

I want to express my sincere appreciation to the staff of CIRE." — Student No. 2608 A2

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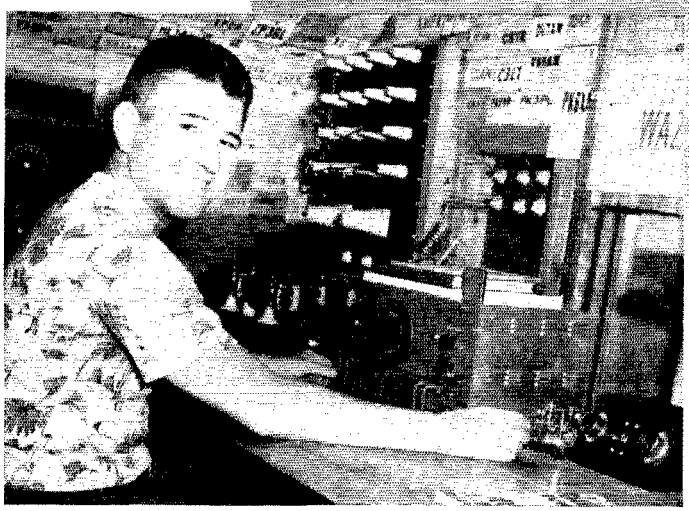
CONCORD, N. H.

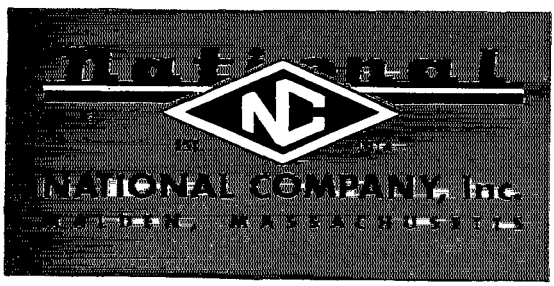
DID WE SAY *performance?*



ROLF LINDENHAYN, JR.
W8BHW

(ex-W2BHW) No newcomer to contest work, "Lindy" was second place winner in the 1947 ARRL Contest, world high winner in the 1947 VK Contest on CW and second to XF1A on phone. We call that performance!

Congratulations to Rolf Lindenhayn, Jr., W8BHW, who had 479 QSO's with stations in 113 different countries. His staggering total of 390,450 points appears to top all other W/VE scores.
His receiver is a National HRO purchased in 1934. According to "Lindy," after 15 years of service, it's still going strong "even on today's crowded bands!"



The Big Three

YOUR SELECTION OF RCA POWER RECTIFIERS

Tube Type	Rectifier	Max. DC Input to Filters	
		Volts	Ma.
RCA-5R4GY	single-tube	750	250
RCA-816	two-tube	950	150
RCA-866-A	two-tube	2390	250
		3180	500

The Fountainhead of Modern Tube Development is RCA

Table-top or kilowatt rig . . .

–here's dependable power

● Name your power and one of these three time-proved RCA rectifier types will supply it at less cost and over longer trouble-free periods.

RCA 866-A half-wave mercury-vapor rectifier has an edgewise wound filament with an enormous emission reserve—hence, longer life. This tube has the ability to withstand a peak inverse voltage of 10,000 volts at 1000 ma. peak plate current. A pair will deliver a kilowatt of dc at 3000 volts . . . with plenty of power to spare.

RCA-816 half-wave mercury-vapor rectifier is also double-ended; therefore its internal high-voltage qualities are not limited by glass electrolysis or by base and socket insulation. A smaller version of the RCA 866-A, this tube also has an edgewise wound filament and will handle high peak voltages and emission currents. A pair will deliver *550 watts* of dc at 2200 volts!

RCA 5R4GY is a full-wave, high-vacuum rectifier with a heavy-duty coated filament. Fitted with a low-leakage Micanol base, this tube can handle peak inverse voltages up to 2800 volts at 650 ma. peak current per plate. A single tube will supply a d output of over 150 watts at 250 ma.

To get all the rectifier power, performance, and life *you* pay for . . . buy genuine RCA tubes in the familiar red, black, and white cartons from your local RCA tube supplier.

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