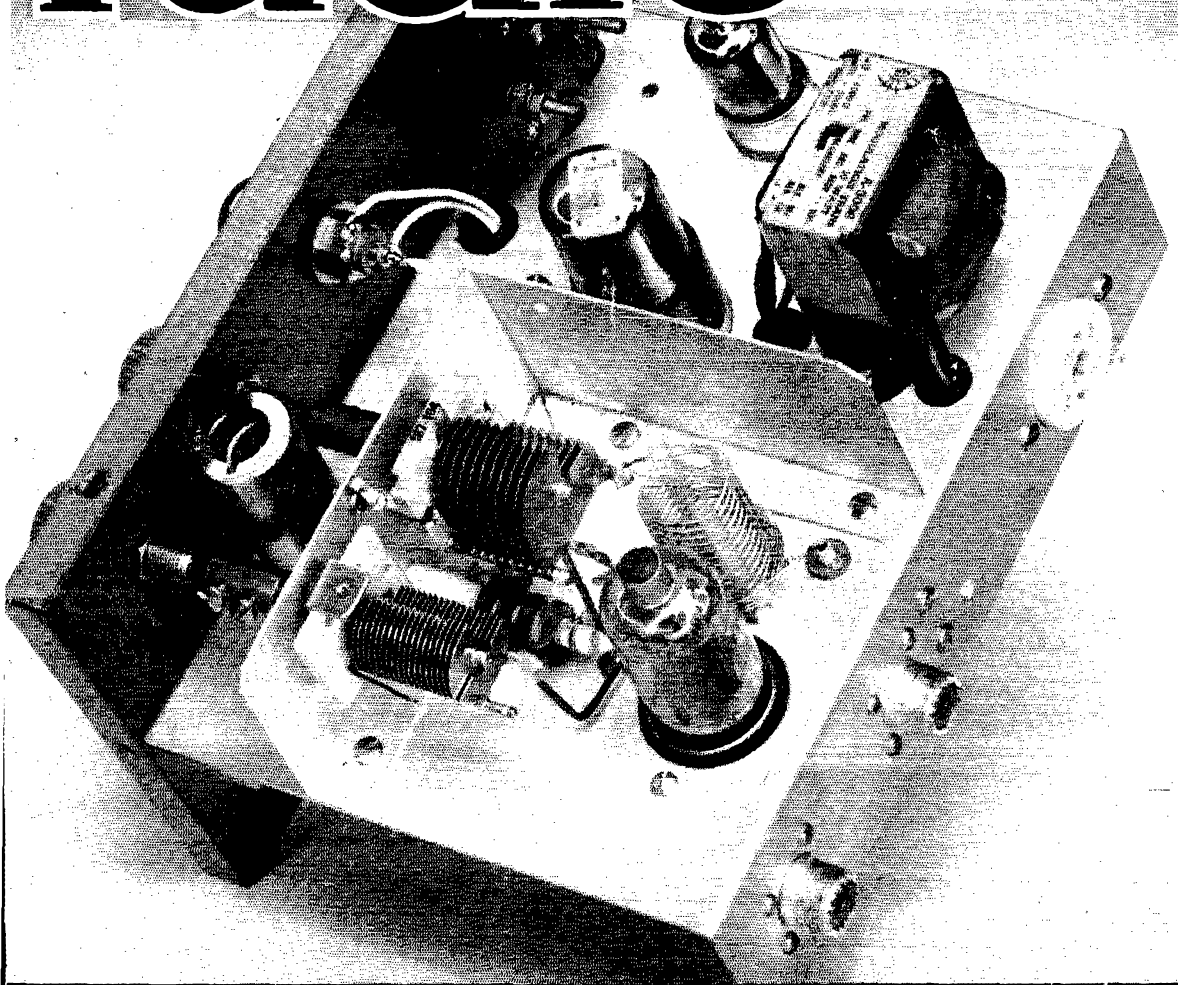
QST

January 1957
50 Cents
55c in Canada

devoted entirely to

amateur radio



PUBLISHED BY THE AMERICAN RADIO RELAY LEAGUE

THE STANDARD OF COMPARISON FOR OVER 20 YEARS

HIGH FIDELITY TRANSFORMERS

FROM STOCK... ITEMS BELOW AND 650 OTHERS IN OUR CATALOGUE B.

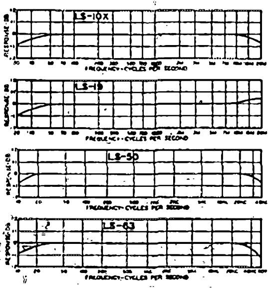
TYPICAL UNITS

LINEAR STANDARD series

Linear Standard units represent the acme from the standpoint of uniform frequency response, low wave form distortion, thorough shielding and dependability. LS units have a guaranteed response within 1db. from 20 to 20,000 cycles.

Hum balanced coil structures and multiple alloy shielding, where required, provide extremely low inductive pickup.

These are the finest high fidelity transformers in the world. 85 stock types from milliwatts to kilowatts.

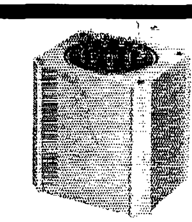


LS-10X Shielded Input
Multiple line (50, 200, 250, 500/600, etc.) to 50,000 ohms . . . multiple shielded.

LS-19 Plate to Two Grids
Primary 15,000 ohms.
Secondary 95,000 ohms C.T.

LS-50 Plate to Line
15,000 ohms to multiple line . . . +15 db. level.

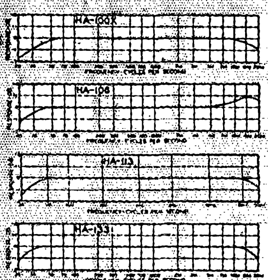
LS-63 P.P. Plates to Voice Coil
Primary 10,000 C.T. and 6,000 C.T. suited to Williamson, MLF, ul.-linear circuits. Secondary 1.2, 2.5, 5, 7.5, 10, 15, 20, 30 ohms. 20 watts.



CASE	LS-1	LS-2	LS-3
Length	3⅛"	4-7/16"	5-13/16"
Width	2⅝"	3½"	5"
Height	3¼"	4-3/16"	4-11/16"
Unit Wt.	3 lbs.	7.5 lbs.	15 lbs.

HIPERMALLOY series

This series provides virtually all the characteristics of the Linear Standard group in a more compact and lighter structure. The frequency response is within 1 db. from 30 to 20,000 cycles. Hipermalloy nickel iron cores and hum balanced core structures provide minimum distortion and low hum pickup. Input transformers, maximum level +10db. Circular terminal layout and top and bottom mounting.

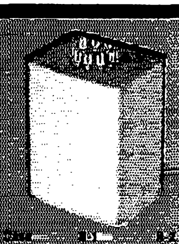


HA-100X Shielded Input
Multiple line to 60,000 ohm grid . . . tri-alloy shielding for low hum pickup.

HA-106 Plate to Two Grids
15,000 ohms to 135,000 ohms in two sections . . . +12 db. level.

HA-113 Plate to Line
15,000 ohms to multiple line . . . +12 db. level . . . 0 DC in primary.

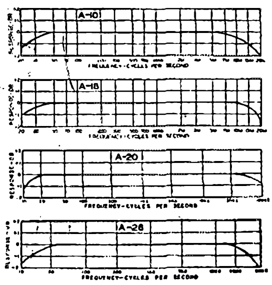
HA-133 Plate (DC) to Line
15,000 ohms to multiple line . . . +15 db. level . . . 8 Ma. DC in primary.



Case	[illegible]	[illegible]
Length	[illegible]	[illegible]
Width	[illegible]	[illegible]
Height	[illegible]	[illegible]
Unit Weight	2 lbs.	[illegible] lbs.

ULTRA COMPACT series

UTC Ultra Compact audio units are small and light in weight, ideally suited to remote amplifier and similar compact equipment. The frequency response is within 2 db. from 30 to 20,000 cycles. Hum balanced coil structure plus high conductivity die cast case provides good inductive shielding. Maximum operating level is +7db. Top and bottom mounting as well as circular terminal layout are used in this series as well as the ones described above.

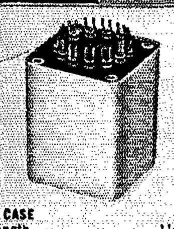


A-10 Line to Grid
Multiple line to 50,000 ohm grid.

A-18 Plate to Two Grids
15,000 ohms to 80,000 ohms, primary and secondary both split.

A-20 Mixing Transformer
Multiple line to multiple line for mixing mikes, lines, etc.

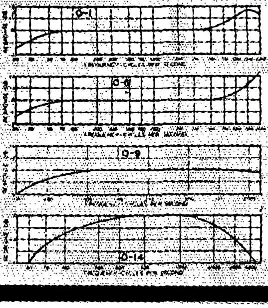
A-26 P.P. Plates to Line
30,000 ohms plate to plate, to multiple line.



A CASE	
Length	1½"
Width	1½"
Height	2"
Unit Weight	½ lb.

OUNCER series

UTC Ouncer units are ideal for portable, concealed service, and similar applications. These units are extremely compact . . . fully impregnated and sealed in a drawn housing. Most items provide frequency response within 1 db. from 30 to 20,000 cycles. Maximum operating level 0 db. These units are also available in our new P series which provide plug-in base. The O-15 is a new line to grid transformer using two heavy gauge hipermalloy shields for high hum shielding.

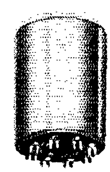


O-1 Line to Grid
Primary 50, 200/250, 500/600 ohms to 50,000 ohm grid.

O-6 Plate to Two Grids
15,000 ohms to 95,000 ohms C.T.

O-9 Plate (DC) to Line
Primary 15,000 ohms, Secondary 50, 200/250, 500/600.

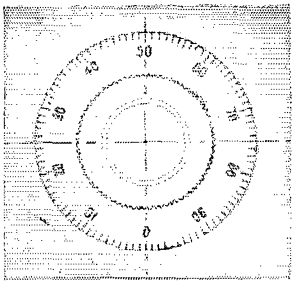
O-14 50:1 Line to Grid
Primary 200 ohms, Secondary .5 megohm for mike or line to grid.



OUNCER CASE	
Diameter	⅞"
Height	1-3/16"
Unit Weight	1 oz.

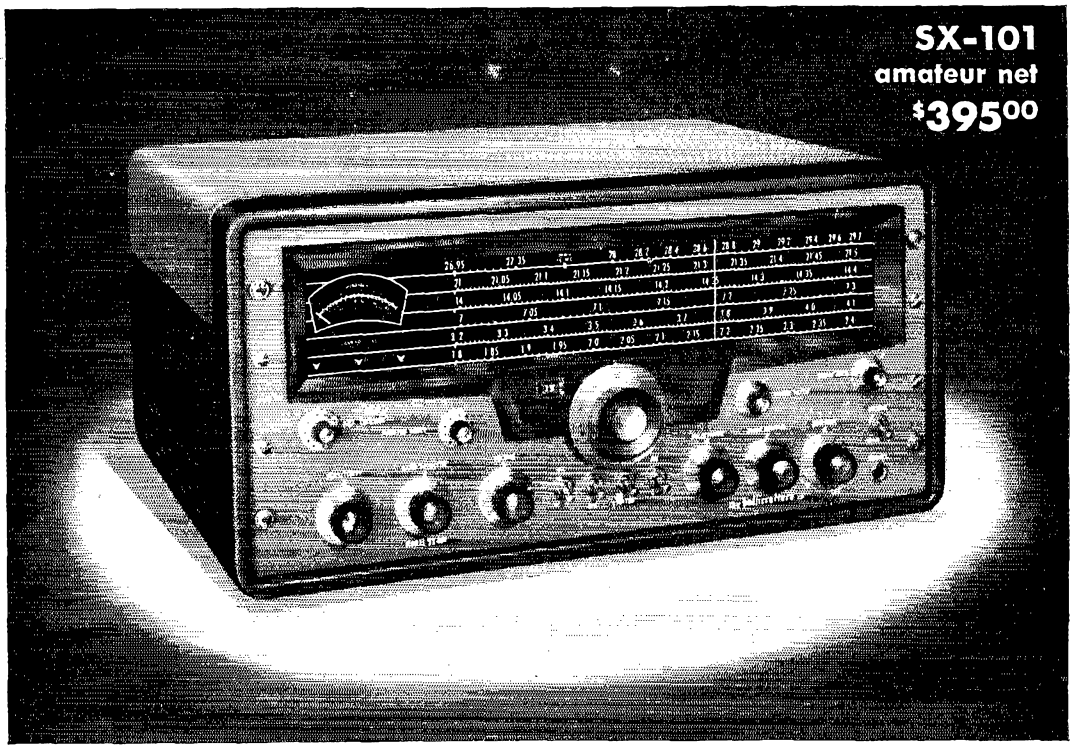
UNITED TRANSFORMER CO.

150 Varick Street, New York 13, N. Y. EXPORT DIVISION: 13 E. 40th St., New York 16, N. Y. CABLES: "ARLAB"



New heavyweight champion!

Hallicrafters new SX-101 receiver employs heaviest chassis in industry... incorporates V.F.O. feature*...has 2000° disc logging counter.



It's all amateur—and as rugged as they come! Hallicrafters presents the complete answer to ham reception, with every essential needed for today and for the future.

First—built like a battleship. Bigger. Heavier. Second—a marvel of stability—the result of 22 years of experience and development. Third—it brings you a long list of new features:

- **Complete coverage of 7 bands—160, 80, 40, 20, 15, 11-10 meters.**
- **Special 10 mc. pos. for WWV, plus coverage of major MARS frequencies.**
- **Exclusive Hallicrafters upper/lower side band selection.**
- **S-meter functions with A.V.C. off.**
- **Tee-notch filter.**
- ***Local oscillator output available for use in heterodyne V.F.O.**

PLUS: Band in use individually illuminated...built-in crystal calibrator...antenna trimmer...dual conversion...full gear drive from tuning knob to gang condensers...five steps of selectivity from 500-5000 cycles...sensitivity—less than 1 microvolt on all bands...direct coupled series noise limiter...50 to 1 tuning knob ratio...and many more.

For full specifications see it at your Radio Parts Supplier today!

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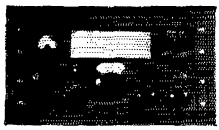
CHICAGO 24, ILLINOIS

WHERE THE BEST IDEAS IN COMMUNICATIONS ARE BORN

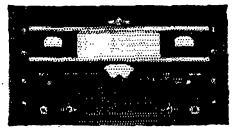
EXPORT SALES: Philips Export Co. 100 East 42nd Street, New York 17, New York



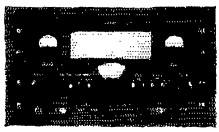
75A-1 . . . 1948

75A-2 . . . 1950

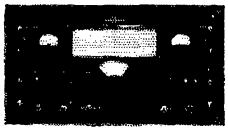
75A-3 . . . 1953



32V-1 . . . 1948

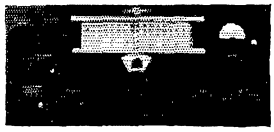


32V-2 . . . 1949



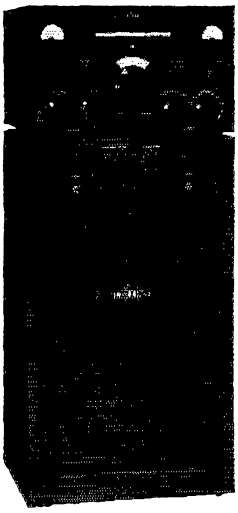
32V-3 . . . 1953

310B-1 . . . 1948

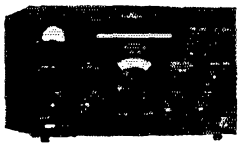


310B-3 . . . 1948

All these years YOU could have owned Collins



KWS-1



75A-4

. . . because it costs only a few cents a day to own the world's finest. Considering performance you can't buy or build equipment that costs as little per day to own. The reason is Collins high resale value. Check the chart below. See why Collins Amateur equipment is not only the standard for performance, but the best investment, too. So why miss out any longer on the kind of performance that puts your signal out sharp and clear and pulls in the good ones. Invest today in Collins Amateur equipment. Get the performance you've always wanted.

Collins CREATIVE LEADER IN COMMUNICATION

COLLINS

COST PER DAY TO OWN COLLINS EQUIPMENT

			FALL OF 1955		FALL OF 1956	
MODEL	PRODUCTION YEAR	COST NEW	AVERAGE MARKET RESALE PRICE	COST PER DAY TO OWN	AVERAGE MARKET RESALE PRICE	COST PER DAY TO OWN
75A-1	1948	$ 375	$ 300	2½c	$ 260	3c
75A-2	1950	440	350	4	350	3
75A-3	1953	530	425	10	400	9
32V-1	1948	475	300	6	300	5
32V-2	1949	575	350	10	425	5
32V-3	1953	775	500	27	550	15
310B-1	1948	190	150	1	150	1
310B-3	1948	215	175	1	200	½
KW-1	1952	3,850	2,850	66	3,000	59

QST

JANUARY 1957

VOLUME XLI • NUMBER 1

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

OFFICES

38 La Salle Road
West Hartford 7, Connecticut

TEL.: ADams 3-6268 TWX: HF 88

Subscription rate in United States and Possessions, $4.00 per year, postpaid; $4.25 in the Dominion of Canada, $5.00 in all other countries. Single copies, 50 cents. Foreign remittances should be by international postal or express money order or bank draft negotiable in the U. S. and for an equivalent amount in U. S. funds.

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

INDEXED BY
INDUSTRIAL ARTS INDEX

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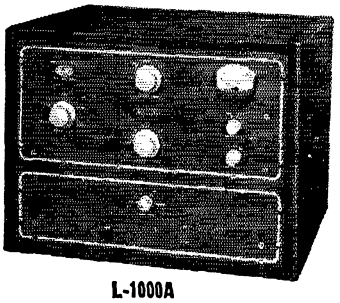
— CONTENTS —

B & W PRODUCTS of the YEAR

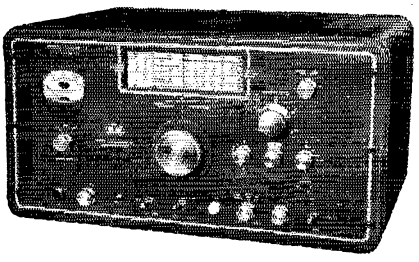


L-1000A

1 KW Grounded Grid Linear Amplifier—Model L-1000A

• Outstanding performance on all bands 80 through 10 meters • Peak envelope power 1 KW SSB, 875 watts CW • Heavy duty pi-network output circuit allows precise adjustment and loading on all bands • Broadbanded input requires no tuning • Contains own power supply • All power switching operations controlled by a single front panel switch • Ideal for use with 5100-B or 51SB-B/5100-B combinations and other commercial or home built transmitters • Full output with r-f excitation of only 80 watts. Power Source 117 VAC 60 cycles.

NET PRICE $460.00

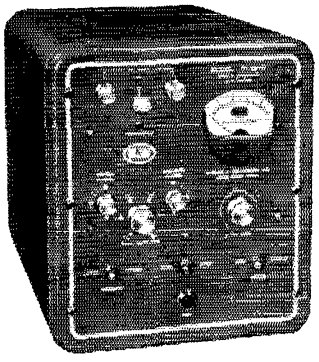


5100-B

Medium Powered Transmitter 5100-B

• Completely self-contained including power supply and VFO • Bandswitching on the 80-40-20-15-11/10 meter bands. Peak envelope power 180 watts CW-SSB; 145 watts AM. • Excellent SSB when used with the 51SB-B described below. • Stable VFO accurately calibrated for all amateur bands including 10 meters. Bias system provides complete cut-off under key-up conditions • Excellent TV1 suppression • Pi-network output • Output receptacle on the back for powering other units including the 51SB-B. • Plenty of audio for 100% AM modulation at all times.

NET PRICE $475.00



51SB-B/51SB

Single Sideband Generator 51SB-B/51SB

Excellent SSB with your present transmitter • Provides push-to-talk, speaker deactivating circuit, TV1 suppression • Complete bandswitching on 80-40-20-15-11/10 meters • Utilizes frequency control method of your present rig • R-F portion has 90° phase shift network, double balanced modulator, and two class "A" r-f voltage amplifiers. • All operating controls on the front panel • Input impedance 50 ohms resistive; input voltage 1.5-2.0 RMS on all bands.

MODEL 51SB-B—For use with B & W 5100-B from which it derives all operating power.

NET PRICE $265.00

MODEL 51SB—Similar to 51SB-B, but contains own power supply. For use with other commercial or home built rigs.

NET PRICE $279.00

*All prices subject to change without notice

B & W

BARKER & WILLIAMSON, INC.

Bristol, Pennsylvania

20 METERS, Type Z-3, $3.95 • 40, 80 AND 160 METERS, Type Z-2, $2.95

PR Crystals

Since 1934

USE PR AND KNOW WHERE YOU ARE

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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*. **ARRL Field Organization station appointments** are available in the areas shown to qualified League members. These include ORS, OES, OPS, OO and OBS. SCMs also desire applications for SEC, EC, RM and PAM where vacancies exist. *All amateurs* in the United States and Canada are invited to join the Amateur Radio Emergency Corps (ask for Form 7).

ATLANTIC DIVISION				
Eastern Pennsylvania	W3PYF	Clarence Snyder	717 Porter St.	Easton
Maryland-Delaware-D. C.	W3PRL	J. W. Gore	3707 Woodbine Ave.	Baltimore 7, Md.
Southern New Jersey	K2BG	Herbert C. Brooks	800 Lincoln Ave.	Palmyra
Western New York	K2HUK	Charles T. Hansen	211 Rosemont Drive	Buffalo 21
Western Pennsylvania	W3NCD	R. M. Heck	RFD 1	Sharpsville
CENTRAL DIVISION				
Illinois	W9VIX	George Schreiber	239 S. Scoville Ave.	Oak Park
Indiana	W9NTA	Seth L. Baker	276 West Sumner Ave.	Martinsville
Wisconsin	W9RQM	Reno W. Goetsch	929 S. 7th Ave.	Wausau
DAKOTA DIVISION				
North Dakota	WØKTZ	Elmer J. Gabel		Hankinson
South Dakota	WØFLP	Les Price	Custer State Park	Hermosa
Minnesota	WØMXC	Charles M. Bove	1611½ E. Lake St.	Minneapolis 7
DELTA DIVISION				
Arkansas	W5ZZV	Ulmon M. Goings	P.O. Box 207	Osceola
Louisiana	W5FMO	Thomas J. Morgavi	3409 Beaulieu St.	Metairie
Mississippi	W5WZY	Julian G. Blakely	525 So. Main St.	Greenville
Tennessee	W4SCF	Harry C. Simpson	1863 So. Wellington St.	Memphis
GREAT LAKES DIVISION				
Kentucky	W4KKW	Albert M. Barnes	830 Third Ave.	Dayton
Michigan	W8RAE	Thomas G. Mitchell	409 Liberty	Buchanan
Ohio	W8AL	Wilson E. Weckel	2118 Tuscarawas St., W.	Canton 8
HUDSON DIVISION				
Eastern New York	W2EFU	George W. Tracy	1138 North Country Club Drive	Schenectady
N. Y. C. & Long Island	W2TUK	Harry J. Dannals	139 East Zoranne Drive	Farmingdale, L. I.
Northern New Jersey	W2VQR	Lloyd H. Manamon	709 Seventh Ave.	Asbury Park
MIDWEST DIVISION				
Iowa	WØBDR	Russell B. Marquis	807 North Fifth Ave.	Marshalltown
Kansas	WØICV	Earl N. Johnston	1100 Crest Drive	Topeka
Missouri	WØGEP	James W. Hoover	15 Sandringham Lane	Ferguson 21
Nebraska	WØCBH	Floyd B. Campbell	203 W. 8th St.	North Platte
NEW ENGLAND DIVISION				
Connecticut	W1EFW	Milton E. Chaffee	53 Homesdale Ave.	Southington
Maine	W1BPI/VVA	Allan D. Duntley		Casco
Eastern Massachusetts	W1ALP	Frank L. Baker, jr.	91 Atlantic St.	North Quincy 71
Western Massachusetts	W1HRV	Osborne R. McKeraghan	22 Mutter St.	Easthampton
New Hampshire	W1AIJ	John Arthur Knapp	15 North State St.	Concord
Rhode Island	W1VXC	Mrs. June R. Burkett	24 Roger Williams Ave.	Rumford 16
Vermont	W1OAK	Mrs. Ann L. Chandler	RFD 2	Barre
NORTHWESTERN DIVISION				
Alaska	KL7AGU	Dave A. Fulton	Box 103	Anchorage
Idaho	W7RKI	Rev. Francis A. Peterson	Box 66	Preston
Montana	W7NPV/WXI	Vernon L. Phillips	Box 971	Harlowton
Oregon	W7ESI	Edward F. Conyngham	11901 Powell Blvd.	Portland
Washington	W7FIX	Victor S. Gish	511 East 71st St.	Seattle 5
PACIFIC DIVISION				
Hawaii	KH6AED	Samuel H. Lewbel	P.O. Box 2564	Honolulu
Nevada	W7JLV	Albert R. Chin	P.O. Box 14	Reno
Santa Clara Valley	W6VHM	G. Donald Eberlein	P.O. Box 372	Los Gatos
East Bay	W6FDJ	Roger L. Wixson	3018 Berlin Way	Oakland 2
San Francisco	W6GGC	Walter A. Buckley	901 Grafton Ave.	San Francisco 12
Sacramento Valley	W6JDN	Harold L. Lucero	1113 Elinore Ave.	Dunsmuir
San Joaquin Valley	W6JPU	Ralph Saroyan	3639 Mono St.	Fresno
ROANOKE DIVISION				
North Carolina	W4RRH	B. Riley Fowler	Box 143	Morgantown
South Carolina	W4HMG	Bryson L. McGraw	227 Kalmia Road	Columbia
Virginia	W4KX	John Carl Morgan	c/o Radio Station WFVA, Box 269	Fredericksburg
West Virginia	W8PQQ	Albert H. Hix	1013 Belmont St.	Forest Hills, Charleston 4
ROCKY MOUNTAIN DIVISION				
Colorado	WØHEM	James B. Simpson	825 South Weber St.	Colorado Springs
Utah	W7LQE	James L. Dixon	931 Childs Ave., P.O. Box 1045	Ogden
Wyoming*	W7PSO	James A. Masterson	851 Bon Ave.	Casper
SOUTHEASTERN DIVISION				
Alabama	W4MI	Joe A. Shannon		Cottondale
Eastern Florida*	W4IVT	Andy B. Clark	41 Lenape Drive	Miami Springs
Western Florida	W4MS	Edward J. Collins	1003 E. Blount St.	Pensacola
Georgia	W4CFJ	William F. Kennedy	459 Fairway Hill Drive, S.E.	Atlanta
West Indies (Cuba-P.R.-V.I.)	KP4DJ	William Werner	563 Ramon Llovet	Urb. Truman, Rio Piedras, P. R.
Canal Zone	KZ5WA	P. A White	Box 82	Gamboa
SOUTHWESTERN DIVISION				
Los Angeles	W6CMN	William J. Schuch	6707 Beck Ave.	North Hollywood
Arizona	W7OIF	Cameron A. Allen	Maryland Ave.	Phoenix
San Diego	W6LRU	Don Stansifer	4427 Pescadero	San Diego 7
Santa Barbara	W6QIW	William B. Farwell	90 Grapevine Road	Oak View
WEST GULF DIVISION				
Northern Texas	W5TFP	Ray A. Thacker	4700 West Hanover	Dallas
Oklahoma	W5GIQ	Ewing Canaday	919 Stanley	Stillwater
Southern Texas*	W5QEM	Roy K. Eggleston	1220 Dunn Lane	Corpus Christi
New Mexico	W5FPB	Einar H. Morterud	2717 Quincy St., N.E.	Bel Air Albuquerque
CANADIAN DIVISION				
Maritime	VE1WB	D. E. Weeks	R.R. 3	St. Stephen, N. B.
Ontario	VE3NG	Richard W. Roberts	170 Norton Ave.	Willowdale, Toronto, Ont.
Quebec	VE2GL	Gordon A. Lynn	R.R. No. 1	Ste. Genevieve de Pierrefonds, P. Q.
Alberta	VE6MJ	Sydney T. Jones	10707-57th Ave.	Edmonton, Alta.
British Columbia	VE7JT	Peter M. McIntyre	981 West 26th Ave.	Vancouver, B. C.
Yukon				
Manitoba	VE4HL	John Polmark	109-13th, N.W.	Portage la Prairie, Man.
Saskatchewar	VE5HR	Harold R. Horn	1044 King St.	Saskatoon

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

With the NEW Model HT-30 Transmitter/Exciter

HALLICRAFTERS RAISES THE STANDARDS OF SSB TRANSMISSION

For almost a quarter of a century the constant goal of Hallicrafters engineers has been the improvement of receiving and transmitting equipment standards. This policy of continuous improvement is again reflected in the design and engineering of Hallicrafters amazing new HT-30 Transmitter/Exciter.

Here's a transmitter that's built to give you greater performance . . . greater dependability. And the HT-30 guarantees you greater enjoyment because it incorporates all these wanted features . . .

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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.

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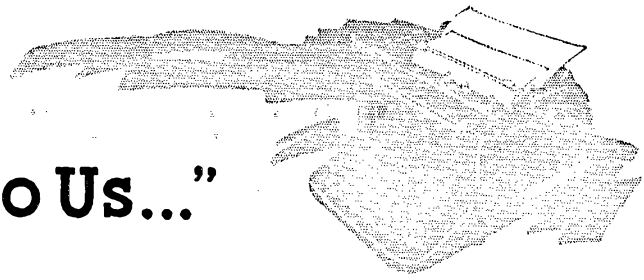

"It Seems to Us..."

THE YEAR IN REVIEW

As 1956 recedes into history, it is gratifying to look back at the growth of amateur radio, the sound financial position of the League at year-end, and the events which have occurred during the year. Both League membership and the fraternity continued to grow at a rapid rate, and ARRL publications continued to be much in demand.

Perhaps the most interesting events were due not so much to efforts of men as to the rising curve of the sunspot cycle. As just one example, the DX record on six meters set by CE1AH and J9AAO of Okinawa in 1947 was broken on March 24 by JA6FR of Kyushu Island and LU9MA of Mendoza, 11,200 miles apart; this record lasted less than an hour, broken by the same Japanese amateur in contacts with LU2EW and LU3EX in the Buenos Aires area, 200 miles farther. In late autumn F_2 DX of world-wide proportions was workable almost every day on 50 Mc. Hundreds of transcontinental contacts were made, and openings to Japan and the Hawaiian Islands were frequent events for 50-Mc. men in our western states.

On lower bands, too, things were looking up. 513 amateurs made DXCC as against 326 for 1955. During the year hams had the opportunity to work the Antarctic task force (KC4USA, KC4USV) and several DXpeditions, including Saint Martin (FS7RT), Sint Maarten (PJ2MC), South Sandwich (LU2ZY), Socorro (XE4A), and Luxembourg (DL1CR/LUX). The year 1956 also marked the first issuance of the WAC award to a Novice, KN6JQJ, attesting to the merits of the 21-Mc. band for DX.

Nicaragua, Panama and Costa Rica signed special agreements with the U. S., permitting United States amateurs to exchange messages with amateurs of those countries on behalf of third parties. The third meeting of IARU member-societies in Region I was held at Stresa, Italy, during June. The five-day conference, at which 14 amateur societies were represented, studied the European Band Plan, joint v.h.f. contests, exchange of technical information, non-amateur interference in the ham bands, and other matters of interest. The decision of the International Telecommunications Union to hold a world radio conference in 1959 aroused questions among the delegates as to how they might best assure continuance of maximum frequencies and privileges for amateurs at the conference.

As a result of the ITU announcement the Department of State called the first of a series of meetings of industry and Government communications people to formulate the U. S. proposals for the 1959 gathering. As usual, the ARRL was represented at the meeting, and will be attending others as they are announced; it is expected planning groups will be meeting at frequent intervals for the next year.

Changes in our domestic amateur regulations were relatively minor. FCC relaxed the rules for RTTY to permit any shift less than 900 cycles; and in separate action provided for the use of A-2 in the A-3 bands for code practice interspersed with voice instructions, formally recognizing a practice of many years' standing. A temporary modification of the rules for the use of 160 meters was imposed on amateurs in some southern states at the request of the Coast Guard, to permit revision of LORAN channel assignments. The League filed petitions for rule-making requesting assignment of 14.3–14.35 Mc. phone to Advanced and Extra Class licensees, and for a return to the 125-mile rule for amateur-administered exams. In the meantime, FCC reduced its examination schedule again because of reduced demand due to the 75-mile procedure now in force. FCC also established standards for restricted and incidental radiation devices, including radio and television receivers manufactured after certain dates.

CONELRAD regulations, on a voluntary basis for the past year, become compulsory January 2, 1957. Much thought and effort by technically-minded amateurs was spent in development of several types of warning devices.

Several hundred v.h.f. enthusiasts signed up in the ARRL-International Geophysical Year propagation research project. Participants will send reports of unusual DX due to reflection from meteor trails, aurora, sporadic-*E* skip, or other means to the League, where a special staff will compile the data for the U. S. A. F. Cambridge Research Center.

Altogether, 1956 seems to have been a very satisfactory year for amateurs . . . and here are the best wishes of your headquarters staff for an even better 1957.

HAMS AT HEADQUARTERS

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W1AW, ARRL Headquarters Station

•

The following calls and personal sines belong to members of the following Headquarters gang:

W1BDI	F. E. Handy, "fh"
W1BUD	A. L. Budlong, "bud"
W1CUT	E. Laird Campbell, "tex"
W1DF	George Grammer, "gg"
W1DX	Byron Goodman, "by"
W1FGF	Ronnie Gann, "ron"
W1HDQ	E. P. Tilton, "ed"
W1ICP	L. G. McCoy, "lew"
W1IKE	Richard L. Baldwin "ike"
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W1TS	D. H. Mix, "don"
W1UED	Perry Williams, "pw"
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W1VLH	Mason P. Southworth "ms"
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W1YYM	Ellen White, "ln"
W1ZDP	Phil Simmons, "phil"
W1ZIB	Ann Furr, "ann"
W1ZID	Anne Welsh, "aw"
W1ZIM	Miriam Knapp, "kp"
W1ZJE	Lillian M. Salter, "lil"

HAMFEST CALENDAR

Utah — The Seventh Annual Banquet of the Ogden Amateur Radio Club, Inc., will be held at the Canton Restaurant, Ogden, Utah, at 7:00 P.M. on Friday, January 18. Mr. John L. Reinartz, K6BJ, will be guestspeaker. Reservations at $2.50 per plate, should be sent to Maj. S. D. Scott, W7ABI, Box 188, Hill AF Base, Utah.

OUR COVER

Our cover this month is an inside shot of the mobile rig built by W1TRF and described on page 19 of this issue. As usual, the photography is by Frank Beaudin of Meyers Studio in Hartford and the photo-engraving by Dowd, Wyllie & Olson, also of Hartford.

50-Mc. DX Continues Unabated

Unlike the previous cycle, when 50-Mc. DX dropped out at the end of November, the band was still hot as we go to press. The first transatlantic 50-Mc. crossband QSO of the current cycle was made by G6DH and W1HDQ at 0822 EST, Dec. 1st. EI2W, Dublin, Ireland, also started working American 50-Mc. stations from 28 Mc. the same morning. G6CJ and PAØFB on c.w., and G5BD on phone, joined the fun on Dec. 2nd, and GD3GMH was in there from Dec. 3rd on. Transcontinental work was still possible almost daily.

January 1932

. . . The lead article twenty-five years ago in *QST* said, "Amateur radio still fairly reeks with problems. There is, for example, the bewhiskered one about selectivity in the radiotelegraph receiver." Rose Hull thereupon recalled some of the previous work on the subject and then presented information on band-pass and low-pass filters. As you will note from this 1957 issue of *QST*, the problems of receiver selectivity are still being worked on.

. . . Another sign of the times. In *QST* twenty-five years ago it was reported that, according to the latest government figures, there were 22,739 amateurs. Now in 1957 there are, in round figures, 150,000 licensed amateurs. Incidentally, the government published a call book in those days, and sold it for 40¢ a copy.

. . . K. B. Warner discussed "Madrid, 1932", an international conference dealing with radiocommunications. He described the general conditions under which the conference would be held, together with some of the actual proposals which would be made by the United States.

. . . In the 30's the electron-coupled oscillator was a popular circuit, and it was introduced to amateur radio by Mr. Dow in this 1932 issue.

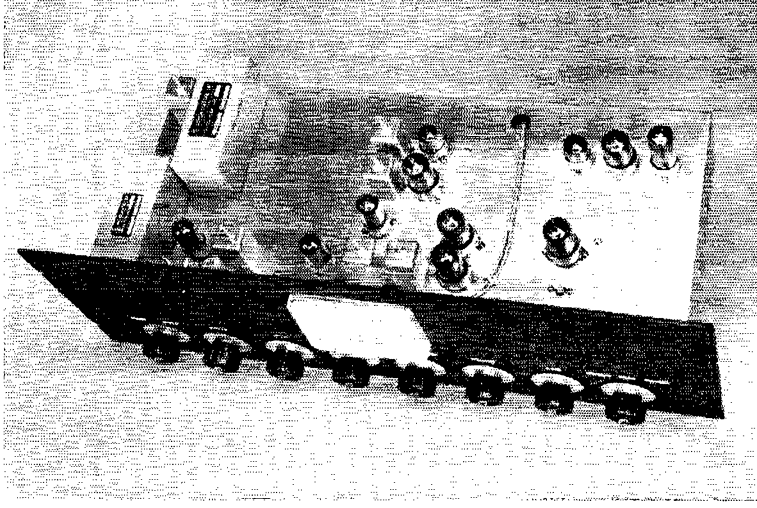
. . . *QST* twenty-five years ago reported on the growing popularity of 56 Mc. following recent publication of practical 5-meter equipment. If you read over that report you will marvel at the crude antennas, by today's standards, that were then used.

. . . On page 36 of the January, 1932, issue, the editors published the full text of the new and revised amateur regulations. Life was simple in those days! The entire regs took up only three columns of QST space, with the whole works printed in the larger type size. Compare that with today's *License Manual*, which needs 15½ pages in small type to cover the amateur regs!

Silent Keys

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

W1WUN, Ernest F. Blake, Bradford, Vt.
W2JYO, James H. Gildersleeve, Syracuse, N. Y.
W2WRA, Francis X. Beckerle, Buffalo, N. Y.
ex-3BGE, Norman J. Kramer, Stratford, Conn.
WN3GXF, George W. Birmingham, Coraopolis, Penna.
W3SKR, Robert G. Kropf, Brandywine, Maryland
W4BOI, Richard N. Penn, Decatur, Georgia
W4GOT, Bert E. Dickinson, Mobile, Ala.
W4IVR, Edward D. Wallace, Louisville, Ky.
W5GR, Wallace A. Clemmons, New Orleans, La.
W5QR, Charles R. Nichuals, Albuquerque, N. M.
W5TDR, Gerald Foster, Ft. Worth, Texas
W5TIV, James A. Widmer, Pine Bluff, Ark.
W5UP, Charles O. Parsons, Roswell, N. M.
W6CUU, Charles A. Cheatham, Beverly Hills, Calif.
K6IFM, Paul W. Hofmann, San Francisco, Calif.
W6JFC, Anthony E. Gerhard, Bellflower, Calif.
ex-KN6JGS, Nancy W. Kubly, Santa Barbara, Calif.
W6JXT, Clair C. Walrath, Santa Barbara, Calif.
W6QVP, Earl M. Alcorn, Stockton, Calif.
W6TZE, Kenneth O. Naylor, Arcadia, Calif.
W7ZYV, Richard M. Hall, Fort Huachuca, Ariz.
W9FEX, Adolph W. Baumann, Chicago, Ill.
WØBZG, James W. Ross, Duluth, Minn.
WØEIB, Walter J. Klassen, Lenexa, Kansas
VE7AZ, J. Sweeton, Vancouver, B. C., Canada
VE7VL, Walter J. W. Wilson, Victoria, B. C., Canada



This i.f. amplifier uses cascaded band-pass crystal filters at 2.2 Mc. The filters are at the left of the chassis. Moving from left to right near the front of the chassis, the tubes are 6AH6 i.f., 6BJ6 i.f., two 12AU7 detector tubes and the 6U8 b.f.o. Moving back from the S meter, the a.v.c.-circuit tubes are 6BJ6 amplifier, 12AU7 and 6AL5. The remaining tubes at the rear right are 6AL5 limiter, 12AU7 audio and 6AR5 audio. The shielded leads on the top of the chassis run to the S meter. Panel controls, from left to right, are selectivity switch, limiter set, gain control, a.v.c. switch, a.m.-s.s.b. switch, audio volume, b.f.o. pitch, and speaker/headphones switch. The b.f.o. trimmer shaft is in front of the 6U8.

What's Wrong with Our Present Receivers?

A 1957 Approach to Receiver Design

BY BYRON GOODMAN,* W1DX

• In these days of double- and triple-conversion receivers, heading back toward a receiver with a single i.f. amplifier might seem like an anachronism. But a new tool, the high-frequency band-pass crystal filter, makes it possible to build a receiver that overcomes the ills thrust upon us by multiple conversion while retaining practically all of the advantages.

UNDOUBTEDLY, many wise readers of the title of this article will answer, "The price!" But if you expect this to be a discussion of the economic problems of the times, you're wrong. This is strictly a discussion of some of the technical aspects of receiver design and a description of an i.f. amplifier that we think solves some of the problems.

McLaughlin,[1] Rand,[2] and Githens[3] used double-conversion receivers to utilize the high adjacent-channel selectivity that can be obtained in the 50- to 100-kc. range. Single conversion with a low i.f. results in r.f. image problems that can only be solved by an almost impossible amount of selectivity ahead of the mixer, and the logical thing to do is to utilize double conversion, with a first i.f. around 2 Mc. and a second i.f. in the 100-kc. region. The more refined receivers on the market these days are double- or even triple-conversion jobs. They use a high first i.f. to minimize r.f. images and a low second i.f. to give good adjacent-channel selectivity.

Double-conversion receivers are not without their shortcomings. With three oscillators running in the receiver (two heterodyning oscillators and the b.f.o.), it is quite a trick to avoid "birdies" and spurious responses somewhere along the line in a ham-bands-only receiver and real tough in one with continuous coverage. There are at least three stages between antenna and the high selectivity, and sometimes more. This means that signals 5 to 50 kc. from the one we want to listen to are riding through at least three stages before any effort can be made to attenuate them in our selective circuits, and when the desired signal is weak and the undesired ones are strong, we run into trouble with overloading and cross modulation. If you don't know what these last two terms mean, you at least know what happens to your receiver when a strong station is only a few kc. from a weak one you want to copy. Your receiver practically jumps off the table.

A receiver to handle these conditions would have either superb linearity (obtained by using transmitting tubes running Class A) or, better yet perhaps, superb adjacent-channel selectivity in the circuit between the antenna and the first vacuum tube. The former is uneconomical, and the latter is impossible with current techniques. The next best solution is to get the high selectivity as soon as possible, preferably in the output of the first mixer stage.[4] But with the desirability

* Assistant Technical Editor, *QST*.

[1] McLaughlin, "The Selectable-Single-Sideband Receiving System," *QST*, June, 1941.
McLaughlin, "Exit Heterodyne QRM, *QST*, October, 1947.

[2] Rand, "The Q5-er," *QST*, December, 1947.

[3] Githens, "A Super-Selective C.W. Receiver," *QST*, August, 1948.

[4] As pointed out by Magnuski, "Adjacent-Channel Rejection Receiver," *Electronics*, January, 1951. At a recent meeting between RCA tube engineers and the writer, no better attack on the cross-modulation problem was proposed than this same one of putting the adjacent-channel selectivity as close to the antenna as possible.

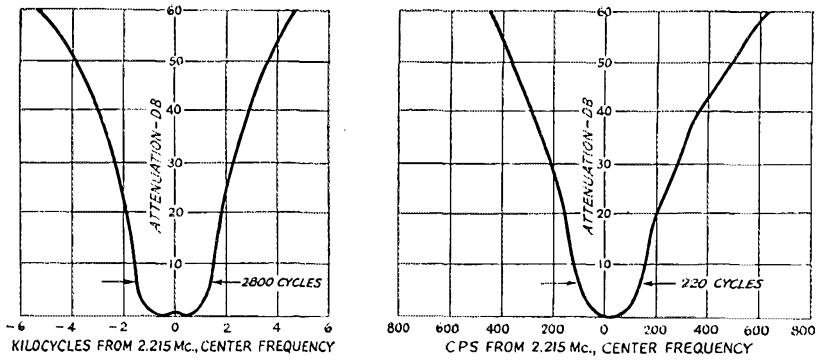


Fig. 1 — Selectivity curves of the crystal filters used in the i.f. amplifier. These filters are centered at 2.215 Mc. Their selectivity compares favorably with that of filters at much lower frequencies.

of a high first i.f. to avoid r.f. image response, where do we get the superb adjacent-channel selectivity we have grown used to in our double-conversion receivers?

The obvious conclusion reached by the author was to go back to a simple single-conversion superheterodyne with a truly-selective high i.f. Just about the time that a batch of surplus crystals had been received, to see what could be done with crystal lattice filters around 2 Mc., one of those once-in-a-lifetime breaks occurred. Bill Banton of Hycon Eastern[5] called on the League and asked for some advice. Hycon made packaged crystal filters at frequencies measured in megacycles and as sharp as 0.01 per cent band width. It didn't take a calculating machine to see that this meant 200 cycles at 2 Mc., which is better than most of us use for c.w. The filters could be made broader, so phone reception was no problem. "Is there an amateur application for our filters?" was the question. You can guess what our answer was!

We suggested a couple of band widths (one for phone and one for code) and a mid-frequency. For the mid-frequency we named 2.215 Mc., the first i.f. of the NC-300. This was done for practical reasons; we knew we would want to test the filters without having to build a front end, and the lab NC-300 could be used. The frequency is high enough so that one good r.f. stage ahead of the mixer should lick any r.f. image problem up to 30 Mc. The first b.f.o. harmonic to hit a ham band is the 13th (28.8 Mc.), and it should be no problem. We sweated out what seemed to be an interminable wait for delivery of some samples but what was actually fine delivery from a company that has many commitments other than to help out a crew that has only ham radio in mind. During this period we had a chance to kick ideas around with Dave Kosowsky, the brilliant engineer responsible for the filter design, and Ed Harrington, W1JEL, who designed the NC-300 and is now with Hycon Eastern. Also during the waiting period we cooked up the "hang" a.v.c. circuit described elsewhere in this issue.[6]

[5] Hycon Eastern, Inc., 75 Cambridge Parkway, Cambridge 42, Mass.

[6] Goodman, "Better A.V.C. for S.S.B. and Code Reception."

The Crystal Filters

The filters furnished us by Hycon Eastern are their Type 22, Models 159-1P1 and 159-1Q1. Those we used are packaged in little rectangular cans, as can be seen in one of the photographs, but the production models are plug-in affairs mounted in a metal-tube envelope the size of a 6L6.

Typical selectivity curves are shown in Fig. 1. The filters can be made with still steeper sides (lower shape factor) and with less rounding of the corners, but they are more expensive that way. In practice we have found the performance of these filters to be fine for our purpose, but we would be remiss if we didn't inform the Cadillac contingent of the more nearly perfect filters.

The insertion loss of the filters is held to less than 3 db. by the manufacturer. The characteristic impedance of the filters varies with the band width; the "broad" filter operates at 4000 ohms and the sharp one at 300. This calls for a little impedance juggling when running in and out of the filters, but it presents no difficulties.

The I.F. Amplifier

The i.f. amplifier in which we used the crystal filters was designed for both phone and code reception; you can save the price of one filter if you're a phone or code specialist by using just one filter. The broad filter is the first element in the i.f. (following a coupling device), and this is followed by the sharp filter, which can be switched in or out. Following the filters we used a two-stage i.f. amplifier that feeds a product detector for heterodyne reception or a diode detector for a.m. work. The detector output is then amplified after passing through a clipper circuit we stole from the Collins 75A-4. The a.v.c. amplifier was taken off through a separate i.f. amplifier after the first stage because it was found that getting any closer to the detector allowed a little b.f.o. voltage to leak into the a.v.c. circuit. A buffer stage was used between the b.f.o. and product detector so that the b.f.o. could be run at low input and consequent low drift.

The schematic diagram of the i.f. amplifier up to the audio amplifier is shown in Fig. 2. The intent is to take the input signal from the plate circuit of a mixer stage (high impedance) into the broad filter at 4000 ohms, and we elected

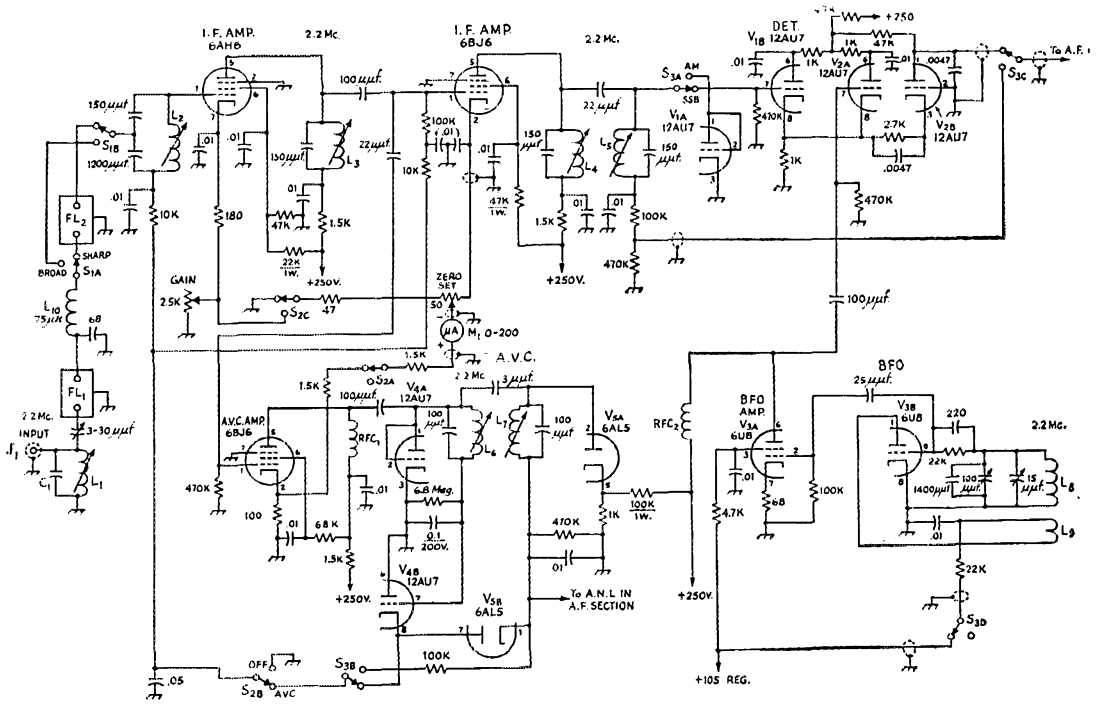


Fig. 2 — Schematic diagram of the i.f. amplifier up to and including the detector circuits. Resistors ½ watt unless specified otherwise. Capacitors µf. unless specified otherwise.

C_1 — 150 µµf. less the capacitance of the cable connected to J_1. RG-59/U runs 21 µµf. per foot.

FL_1 — 2.215-Mc. band-pass crystal filter, 2800 cycles wide at —6 db. (Hycon Eastern Type 22 Model 159-1P1).

FL_2 — 2.215-Mc. band-pass crystal filter, 220 cycles wide at —6 db. (Hycon Eastern Type 22 Model 159-1Q1).

J_1 — Phono jack.

L_1–L_7 inclusive — 36-64-µh. adjustable coils (North Hills Type 120F coil mounted in North Hills S-120 shield can).

L_8 — 18 turns No. 20, 16 t.p.i., ¾-inch diam. (B & W 3011 stock).

L_9 — 9 turns No. 20, 16 t.p.i., ¾-inch diam. (B & W 3011 stock). ⅛ inch between L_8 and L_9.

L_{10} — 75 µh. National R-33 100-µh. choke with 20 turns removed.

M_1 — 0-200 microammeter. (Triplett Model 327-PL).

RFC_1, RFC_2 — National R-30, 2.5-mh. choke.

S_1 — Two-pole 2-position 2-section rotary switch (Centralab PA-31 sections on PA-301 assembly).

S_2 — Three-pole 2-position rotary switch (Centralab PA-1007).

S_3 — Six-pole (5 used) 2-position 2 section rotary switch (Centralab PA-1019). See Fig. 3.

to do it as shown. The input tuning coil, L_1, is adjusted to resonate at 2.215 Mc. with the fixed capacitor C_1 and the capacitance of the length of connecting coaxial line connected to J_1. Since the impedance of this resonant circuit (in shunt or not with the mixer output circuit, depending upon how you utilize the amplifier) may not be known with decent accuracy, provision for impedance matching is included by using the 3- to 30-µµf. adjustable trimmer. To go from 4000 to 300 ohms between the two filters, an L section is used, consisting of the 68-µµf. capacitor and the 75-µh. inductor. (The computed value of capacitance is 63 µµf., but 68 µµf. is close enough.) To step up the impedance level at the grid of the first i.f. stage, a tapped circuit is used. The capacitance divider uses 150 and 1200 µµf. These values are based on a coil Q of 60, the measured Q of the coil we used. The larger capacitor calculates to 1350 µµf. but we didn't have this value and used 1200 µµf. However, the measured impedance at the capacitance tap is 330 ohms, which was considered to be close enough. While this may sound all very scientific (and it is), it should not scare off anyone who wants to duplicate the unit, since most adjustments merely consist of peaking the circuits for maximum signal. You will have to set the 3- to 30-µµf. trimmer at several different values and peak L_1 each time until you get optimum filter performance, but this "rocking" operation isn't hypercritical and it can be done with a steady signal and the S meter as helpers. If it is decided to eliminate one crystal filter, or to install it later, you can simply add a jumper where the filter terminals would have been.

It is worthwhile to use as good a first i.f. tube as possible, because if the gain ahead of this stage isn't high enough there can be some degrading of the over-all noise figure. This is the reason a 6AH6 was used in the first i.f. stage instead of a 6BJ6. Since the selectivity has already been determined by the crystal filters(s), no effort was made to get additional selectivity in the i.f. amplifier, and a single tuned circuit

was used for coupling between first and second i.f. stages. The switch, S_3, that shifts the signal to either of the detectors, also switches the b.f.o. on (S_{3D}), selects the output (S_{3C}), and shifts the a.v.c., when on, from the hang type for heterodyne reception to the more conventional type for a.m. reception (S_{3B}).

In the a.v.c. circuit, switch S_{2B} turns the a.v.c. on or off, S_{2A} opens the S-meter circuit when the a.v.c. isn't used, and S_{2C} takes the cathode return off the gain control so that the S-meter reading isn't affected by the gain setting. The S-meter circuit is one suggested by ZL2GU.[7] It meters the voltage difference between a reference and the cathode voltage of an a.v.c.-controlled stage. With the "hang" a.v.c., it gives good readings on c.w. and s.s.b. If you have a signal generator you can calibrate the meter in db. above some arbitrary level. With the constants shown, the meter has a range of about 90 db. The no-signal point will be lower on a.m. than on s.s.b. by a few scale divisions, because of a contact-potential effect in the hang-a.v.c. circuit. This makes no practical difference.

Everything in the audio amplifier section (Fig. 3) is conventional, with the exception of the three-position switch S_4, which permits feeding output to headphones, loudspeaker or both. This is a convenience when visitors are in the shack. The writer uses low-impedance headphones that work at voice-coil impedance level; a constructor with high-impedance phones might take the headphone output from the plate of the 6AR5 through a 0.05-μf. capacitor.

Construction

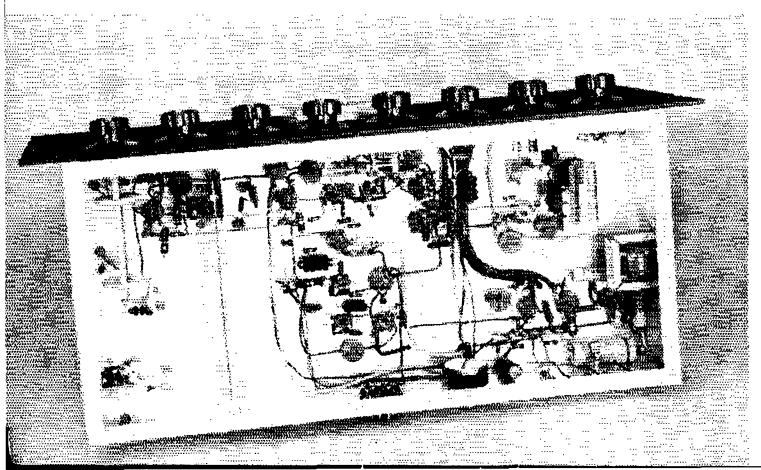
We suspect that anyone immediately latching on to one or more of these filters will have circuit and constructional ideas of his own, but for those who like to duplicate units closely, we will describe a few of the major points involved in the construction of the unit shown on these pages. The chassis is an 8 × 17 × 3-inch aluminum one, and the panel is a standard relay-rack panel 7 inches high. The panel is held to the chassis by the mounting nuts of the switches and potentiometers; the shaft bushing of the Hammarlund HF-15X b.f.o. capacitor wasn't long enough to be used in this way, and consequently a clearance hole was required in the panel large enough to clear the nut that holds the capacitor to the chassis. A photograph shows that ceramic switches were used in this unit; there is no need for them, and the captions specify phenolic switches. Ceramic was used here because that was the lab stock and we were in a hurry. Ceramic capacitors can be used for any of the values up to 0.01 μf., with the exception of those associated with the b.f.o., where silver mica and air capacitors are recommended. The 100- and 150-$\mu\mu$f. capacitors shunting the i.f. coils can be plain mica, since the circuits aren't sharp enough to justify silver mica.

Figs. 2 and 3 show that a number of shielded leads were used, in the audio between tubes and switches and for some of the other leads. Actually, the shielded leads in the audio circuit are pieces of coaxial line; the vinyl covering makes it possible to carry the grounds back to the audio tubes and not depend upon the chassis for a return. In some cases this latter procedure can introduce a.c. hum when one side of the heaters is grounded as in this case. The other shielded wires were included to minimize the chances for feedback and b.f.o. leakage into the "front end." A shield partition masks the input tube and S_1 from the rest of the amplifier; this was done to knock down some slight b.f.o. energy that was leaking into the grid of the first tube.

Most of the remainder of the unit follows standard practices and requires no elaboration. The b.f.o. coil, L_8–L_9, is supported by its leads on a long tie point, and this seemingly insecure mounting is quite adequate and shows no microphonic tendencies. The 1400-$\mu\mu$f. capacitor shown shunting the 100-$\mu\mu$f. trimmer is made up of two 680- and one 47-$\mu\mu$f. silver mica capacitors; with tolerances running the way they do you may have to use something other than a 47-$\mu\mu$f. capacitor to bring the b.f.o. close enough to 2.215 Mc. to be set by the Hammarlund MAPC-100 trimmer. The 15-$\mu\mu$f. b.f.o. panel control tunes over more than 8 kc., and some builders might want to pull off a plate or so to bring this range down to about 6 kc. We used the double-spaced capacitor with this in mind, but didn't bother to pull any plates because the tuning rate is quite adequate.

Sharp observers may notice a shielded lead from the 6U8 b.f.o. over to the 8-pin power plug. This is the hot heater lead and it goes to

[7] In the N.Z.A.R.T. *Break In* for September, 1954.



The audio output transformer is mounted on the side wall of the chassis, and the rear wall of the chassis has the input and output jacks, the power plug and the S-meter zero set. Audio leads between limiter and audio stage and panel controls are carried in small coaxial cable. The shield at the left-hand side of the chassis (parallel to the side and about 4 inches in) is held in place by the mounting screws of a shield can.

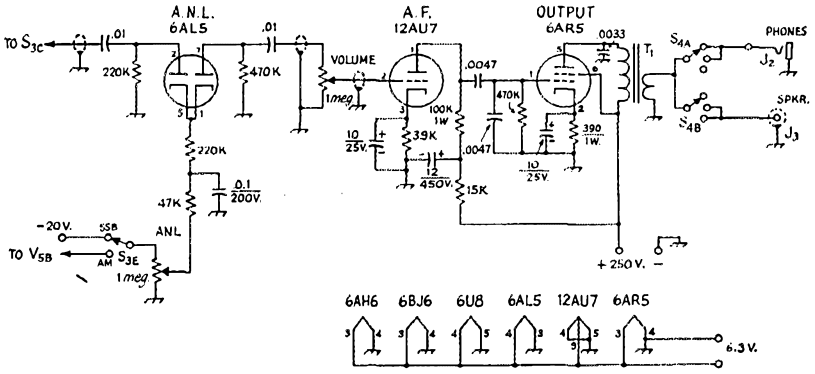


Fig. 3 — Schematic diagram of the audio portion of the amplifier. All capacitances in μf. Fixed resistors are ½ watt unless specified otherwise.

J_2 — Open-circuit phone jack.
J_3 — Phono jack.
S_3 — See Fig. 2.
S_4 — Two-pole 3-position rotary switch (Centralab PA-1002).
T_1 — 7000-ohms-to-voice-coil output transformer, 4 watts (Stancor A-3822).

a separate terminal, so that when this i.f. is used in our "dream station" we can run the b.f.o. heater from a stabilized source. It is probably an unnecessary elaboration, since varying the line voltage several volts showed no discernible effect on the frequency.

The power-supply requirements are 95 ma. at around 280 volts for the plates, a few ma. at regulated + 105 (from a VR tube), 3¼ amperes at 6.3 volts for the heaters, and −15 volts at negligible current for one terminal of S_{3E} (Fig. 3). We got the latter voltage from the power supply through a 1-V rectifier and an *RC* filter.

Alignment

As indicated earlier, there is nothing unusual about the alignment of the amplifier. If you have a signal generator (or grid-dip meter) you can use the output to tune the circuits L_2 through L_5 close to 2.215 Mc. This portion of the amplifier is broad, so if you get in the vicinity of 2.215 Mc. you will be able to hear a signal passed through the crystal filters, after which you can again peak the coils. The a.v.c. circuit can be aligned initially by connecting a v.t.v.m. from ground to the cold ends of L_6 and L_7, after which the S meter will serve as an indicator. It will require some further juggling, which will be described later. The b.f.o. is brought into tune with the 100-μμf. trimmer; if you can't hit because the silver-mica capacitors are at the edges of tolerance you may have to add capacitance or else remove a turn from L_8. If you have a v.t.v.m. and r.f. probe, the voltage at the grid of V_{2A} should be adjusted to about 5 volts peak, by changing the value of the 22K resistor between S_{3D} and L_9.

With a steady signal coming through the amplifier, its amplitude should be adjusted to give about −6 volts at the grid of V_{4B}. You will need a v.t.v.m. for this job. Then measure the voltage at the cathode of V_{5B} and detune L_7 until it gives a reading of about 40 per cent of the other reading, or 2½ volts. Don't try to measure the voltage on the a.v.c. line, because even the high input resistance of the v.t.v.m. (11 megohms) will impair the a.v.c. performance. When you get the a.v.c. completely aligned, as mentioned a little later, L_6 will be peaked for maximum signal through V_{4A} and for something less than this through V_{5A}.

The i.f. should now be in a condition suitable for the reception of signals, but it requires a "front end." The NC-300 can be used, because it has a first i.f. of 2.215 Mc., or you can build or revise a converter for the job. (A converter for the i.f. will be described in an early issue of *QST*.) Use a length of RG-59/U to connect from J_1 to the plate of the mixer tube, with a 100-μμf. capacitor between plate and inside conductor of the coax to avoid short-circuiting the plate supply in the receiver. If a home-built converter is used, the plate voltage to the mixer can be fed through L_1, by lifting the bottom of L_1 and feeding the plate voltage to it through a 1000-ohm resistor. Bypass to chassis with a 0.01-μf. capacitor.

Tune around until you find a signal or, better yet, feed in a stable signal from a signal generator or 100-kc. crystal-oscillator harmonic. Peak L_2 for maximum signal; then "rock" L_1 and the 3-to-30-μμf. trimmer for maximum signal. If you are using both filters, do these jobs with both filters switched in. You should now be able to tune around the bands and get accustomed to the i.f. and its operation. You will need a slow tuning rate when the sharp filter is used, because the signals come in and out rather fast with this much selectivity. You also need a slow tuning rate with s.s.b. reception, as any operator knows. You can get a line on the a.v.c. action by tuning in a few code signals. On slow sending around 12 or 15 words a minute the S meter will start to drop back between words, while at speeds of 20 w.p.m. or more the S meter should "hang" steady and only follow fading. If it doesn't hang in long enough, detune L_7 a little.

(Continued on page 116)

Better A.V.C. for S.S.B. and Code Reception

A New Circuit and Its Application

BY BYRON GOODMAN,* W1DX

Conventional a.v.c. works well on a.m., because the steady carrier that actuates the a.v.c. is a measure of the signal strength at any time. When the signal drops down in a fade, the a.v.c. circuit increases the receiver gain to hold the output level substantially constant, and when the signal fades up, or a stronger signal is tuned in, the a.v.c. reduces the receiver gain and prevents receiver overload. Most operators have grown so accustomed to the a.v.c. action that they have forgotten all about it, although the S meter (which usually is metering the a.v.c. control voltage) is visual evidence of its behavior.

But conventional a.v.c. isn't worth much on s.s.b. or c.w., for two reasons. Practically none of the circuits in common use can apply the developed a.v.c. voltage quickly enough to the controlled stages, with the result that the receiver overloads on the initial surge of signal, before the a.v.c. can pull down the gain of the controlled stages. Secondly, the a.v.c. doesn't hold in long enough to maintain the receiver gain constant between code characters or s.s.b. syllables. The result is that conventional a.v.c. systems "thump" at the start of a character or syllable, and the background noise rushes up at the end of a character or syllable. Merely lengthening the time constant of the a.v.c. is not enough, because it doesn't help the thump at the start. All this is illustrated in Fig. 1, using slow c.w. dashes to illustrate the effect, although it is paralleled by the syllables in s.s.b. reception.

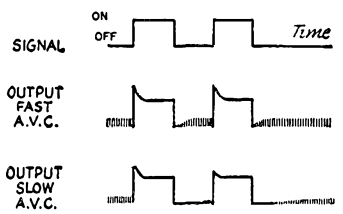


Fig. 1 — Ordinary a.v.c. isn't too effective on s.s.b. or c.w. reception because it doesn't take hold fast enough to prevent overloading at the start of a strong syllable or character. Further, with a short time constant the gain jumps around too fast, as the a.v.c. tries to follow every change. With a long time constant this effect is abated, but there is still no protection at the start of a syllable or character.

"Hang" A.V.C.

The writer decided that what is needed for s.s.b. reception is an a.v.c. system that works like voice control in reverse. In other words, it should be a system that can handle the syllabic bursts of s.s.b., instantly reducing the gain of the receiver to a value that will prevent overloading, and then hanging there for a half second or so before increasing the gain in the absence of a signal. To this end a circuit was devised that may look like a lot of unnecessary electronics, since it involves three diodes and a triode, but which in reality works better than we had hoped for in our occasional optimistic moments.

The basic scheme is shown in Fig. 2. Some of the incoming signal is rectified by V_1 and develops a voltage across C_1. The time constant of R_1C_1 is a long one, obtained by the use of large

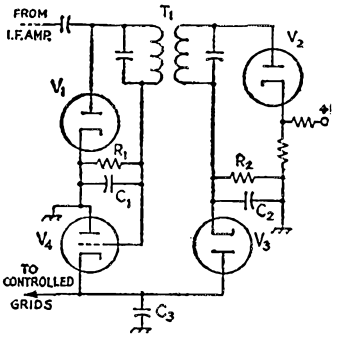


Fig. 2 — "Hang" a.v.c. enables the a.v.c. voltage to build up quickly with an increase in signal strength and to maintain this value for a finite period after the signal has been removed. See text for a detailed explanation of the action.

values of capacitance and resistance. Consequently it takes some time after the signal is removed before the voltage across C_1 gets back to a low value. The diode V_2 is coupled to the signal through T_1, but its load resistor and bypass capacitor, R_2 and C_2, have a "normal" time constant and the voltage developed there doesn't hold on after the signal disappears as it does across R_1C_1. The voltage developed across C_2 is applied to C_3 through diode V_3, which permits C_3 to charge up to the peak value developed across C_2. When the voltage across C_2 disappears because the signal is removed, C_3 remains charged because there is no discharge path. A possible discharge path through V_4 is inoperative because the voltage across C_1 holds V_4 beyond cutoff. Eventually, after the removal of the signal, the voltage across C_1 decays to a value that permits V_4 to conduct and discharge C_3. Obviously, for V_4 to remain cut off for an appreciable length of time (half second or so) it is necessary to develop more voltage across C_1 than across C_2, but this is readily done by loose coupling at T_1 or by detuning its secondary. A little fixed bias in the cathode circuit of V_2 pre-

* Assistant Technical Editor, *QST*.

vents a.v.c. action from incoming noise or very weak signals, in the usual manner of "delayed a.v.c." action.

To demonstrate the a.v.c. action, we switch it on and ask an unsuspecting victim to tune in a number of s.s.b. stations, asking him to see if s.s.b. signals are easier to tune with the i.f. amplifier we are using. The usual response after tuning in a number of stations and perhaps listening to a round table or two is, "Oh, it's about the same." Then we ask, "How many times did you touch the r.f. or audio gain controls?" and the light dawns! "Hey, that's right! I never touched them once!" And that's the answer. It isn't any easier to tune in s.s.b. from the standpoint of careful tuning of the dial but, strong or weak signals, you don't have to touch the gain controls. This leaves one hand free for keeping the log, opening a bottle of soda, or waving at the kids to be quiet.

Comparing the action to that of two current receivers that can use conventional a.v.c. in s.s.b. reception, the thump mentioned earlier is noticeable in them and not in this. (There is *some* delay in applying the control voltage to the controlled stages, as can be seen by watching the output on an oscilloscope and tuning in code signals, but the ear doesn't notice it.) Upon the removal of the signal, the gain comes back slowly enough so that one isn't very conscious of it, yet not so slowly that a weak side-band signal is missed in a round table of predominantly strong signals. The action is pictured in Fig. 3. A meter controlled by the a.v.c. voltage will swing up quickly to a peak and hang there on a string of c.w. characters, although it tends to follow any fading fairly well.

When the circuit was first tried out, we made the mistake of trying to observe its action with a v.t.v.m. across C_3, and it didn't make any difference if V_4 was in the circuit or not. It finally dawned on us that the 11-megohm resistance of the v.t.v.m. was finite enough to kill the action we were looking for. When the v.t.v.m. was removed and the action metered through a vacuum tube, the action became apparent. A meter in the cathode of V_4 will show the behavior of V_4 in discharging C_3. Practical constants and adjustment procedure are not given here, but elsewhere in this issue there is a description of an i.f. amplifier using this "hang" a.v.c. circuit. Constants and adjustment procedure are given there.

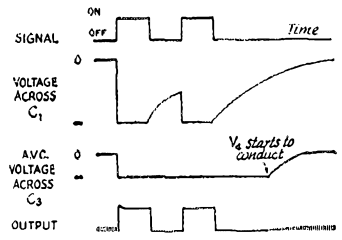


Fig. 3 — The effect of hang a.v.c. is readily understood by following the relative voltages at several points in the circuit of Fig. 2. The higher voltage developed at C_1 maintains V_4 cut off until some time after the signal has stopped, at which time C_3 discharges through V_4.

Like any a.v.c. circuit, this one operates on the signals fed to it, so all of the receiver selectivity should be ahead of it. Receivers without good selectivity can't use it to best advantage. This is also true of receivers depending upon phasing-type "signal slicers" at the tail end for side-band selectivity, because in them the selectivity is in the wrong place. The time constants in the a.v.c. line should be short, since they determine how fast the a.v.c. voltage is applied at the start of a character or syllable, and there should be no d.c. path across C_3, as mentioned above.

Frankly, we never expected to use an a.v.c. system on c.w. reception, but this one works so well it is hardly ever turned off. It is subject to the same selectivity restrictions as on the phone, however, and it takes mighty good selectivity ahead of it to satisfy this requirement on c.w. In our case the band width is just a shade over 200 cycles at −6 db. and 1 kc. at −60 db.

Strays

A new government bulletin entitled "Extra-class Activities in Aviation, Photography, and Radio for Secondary School Pupils," and prepared by Willis C. Brown, W3HB, is available for 25¢ from the Government Printing Office, Washington 25, D. C. This booklet highlights good practices and school programs for these three fields. Reference is made to the electronic advances and need for engineers and communication specialists, and to the acquisition of an FCC amateur license as a mark of distinction. Amateur radio clubs may be able to make good use of this in their local programs.

—•••—

Did you ever load a canoe upside down? It *is* possible, and here's how.

Mount the canoe (16′ aluminum) on the wooden cross bars of a car's roof top carrier. Terminate a suitable length of coax with large copper battery clips. Clip the shield to the center of the canoe's keel, and gamma-match the center conductor of the coax a foot or so either side of center, according to the indication by the plate meter.

There you are! The canoe is loaded, upside-down, making a nifty wide-band mobile antenna with horizontal polarization. It presents a minimum tree or wire hazard, has good aerodynamics, and keeps the rain and sun off the windshield. The maximum efficiency is at right angles for both fish and DX.

— *WØRA*

Sixth Call for Annual Novice Round-up Competition

February 2nd Through February 17th

IT'S THAT TIME AGAIN! On the evening of February 2, 1957, the Sixth Annual Novice Round-up Contest will begin. Novices in all parts of the United States and its possessions will once again vie for top honors. As usual, non-Novices will contact Novices only, transmitting their QSO number and section. Participation by the "Old-Timers" last year reached an all-time high (see *QST*, June, 1956) and an even greater turnout is expected for the NR in '57.

The rules (yes, we still have them) will remain the same as in the previous NR contest. The maximum operating time available will be a total of forty (40) hours during the period designated in the box above. Remember, all operating, listening and logging is included within this period.

ROUND-UP PERIOD

Starts	*Ends*
Feb. 2nd	Feb. 17th
6:00 P.M.	9:00 P.M.
Local Time	Local Time

Scoring

A final score is determined by adding the total number of QSOs to the Code-Proficiency Award. The sum of these two is then multiplied by the number of *different* ARRL sections (see page 6) worked during the contest. If no Code Proficiency Endorsement Sticker has ever come *your* way, it would be advisable to check *QST* listings for the dates of CP Runs (see contest rule 4). The extra points you may obtain through a CP Award might prove to be the difference between first and second place in your section.

The 80- 40- 15- and 2-meter frequencies will see plenty of action, as evidenced by last year's results. Non-Novices would do well to check the frequencies just above and below the 3700–3750 kc., 7150–7200 kc., 21,100–21,250 kc., and 145–147 Mc. frequency segments.

We can assure you, there won't be a dull moment!

How to Participate

Let's suppose KN2QBW in Long Island calls CQ NR and is answered by KN4GNI in Tennessee. A correctly negotiated QSO will look like this:

CQ NR CQ NR CQ NR DE KN2QBW KN2QBW KN2QBW K

KN2QBW KN2QBW DE KN4GNI KN4GNI KN4GNI AR

KN4GNI DE KN2QBW R HR NR 3 NLI BK

KN2QBW DE KN4GNI R HR NR 6 TENN BK

KN4GNI DE KN2QBW R TNX ES 73 SK DE KN2QBW

Short, to the point and away you go!

Read the rules carefully, get that antenna checked out, send in to the ARRL Communications Department for the convenient log forms and all that remains will be racking-up those contest points. CU in the NR!

Sample log form that must be used by all contestants.

STATION KN2QBW — SUMMARY OF CONTACTS
NOVICE ROUNDUP

Band	*Time on or off air*	*Date, Time of Contact*	*My NR Sent*	*My Section*	*His NR Rcvd*	*His Call*	*His Section*	*Number of each new Section as worked*
80	1801	Feb. 2	1	N.L.I.	1	KN2MYB	N.L.I.	1
		1807						
		1820	2	"	1	WN1IFN	Conn.	2
	1902	1850	3	"	9	W1FGF	Conn.	–
40	1915	1920	4	"	6	KN4GNI	Tenn.	3
		1930	5	"	5	KN6SRZ	S. Fran.	4
	2020	2005	6	"	11	W1RBX	N. H.	5
15	1200	Feb. 3						
		1215	7	"	8	KNØEVT	Minn.	6
		1232	8	"	12	W7SUJ	Ariz.	7
		1240	9	"	4	W1VLH	Conn.	–
		1258	10	"	4	KN2SMT	N.L.I.	–

Total operating time: 3 hours 18 min.
Bands used: 80, 40 and 15

No. contacts: 10
CP credit: 10
No. sections: 7

Claimed score: 10 contacts plus 10 CP = 20 × 7 (sections) = 140
I have observed all competition rules as well as all regulations established for amateur radio in my country. My report is true and correct to the best of my knowledge.

Signature: .....

Address: .....

Rules

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

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

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

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

(*Continued on page 128*)

Depending upon the coils used, this two-stage 20-watt mobile transmitter may be operated on any band from 80 to 10 meters. A panel-illuminating lamp is mounted to the right of the meter, along with the amplifier-tank and antenna-link tuning controls. Along the bottom, from left to right, are the microphone jack, meter switch, filament switch, tune-operate switch, oscillator tuning control and the crystal.

The Mobile Single-Bander

Twenty Watts with Simplicity

BY ROBERT M. RESCONSIN,* WITRF

• Multiband mobile rigs are usually complicated, expensive and difficult to build within small dimensions. On the other hand, most hams will hesitate to build a simpler transmitter that confines them exclusively to one band. In this article, WITRF shows how he solved the problem. The answer is a two-stage rig that can be operated on any desired band from 80 to 10 meters. Changing bands is a matter of only a few minutes with the soldering iron.

A GOOD WAY TO TEST YOUR WILL POWER these days is to try to turn your back on some of the cute mobile rigs that are on the market. The designers have left no stone unturned. Most of these outfits are very compact and are designed to cover the bands 80 through 10 meters. But they are expensive, and the worst part of the situation is that you can't stop with the rig itself. If you want to work these bands conveniently, you're far from through with your shopping trip. There's the multiband antenna to consider, along with an f.s. meter or some other device to tune the thing. I feel that this is where the line is drawn for many mobile operators, and they resign themselves to operating one favorite band.

The unit shown in the photographs is simplified and reduced in cost by making it a one-band affair. However, rather than to confine its application to any one particular band, it has been designed so that it will operate efficiently on any band that may suit the builder's fancy, 80 through 10 meters. Furthermore, changing from one band to another is a simple matter of unsoldering a pair of readily-accessible coils and replacing them with others for the new band.

* 15 West St., Rocky Hill, Conn.

Circuits

There is nothing unusual or unorthodox in the circuit shown in Fig. 1. A 5763 crystal oscillator drives a 2E26 final amplifier. Quadrupling frequency in the output of the grid-plate oscillator from a 7-Mc. crystal will provide adequate drive for the final on 10 meters. Sufficient capacitance is provided in the plate tank of the 2E26 for a Q of 10 or more on all bands except 80 meters. On 80 meters, the tank Q will drop to about 6, but there is little danger of appreciable harmonic output when feeding a high-Q antenna such as the usual loaded whip. Adequate output coupling on this band is assured by tuning the output link line. Parallel plate feed is used in both stages.

The audio circuit is equally simple. One triode unit of a 12AU7 is used as a grounded-grid amplifier. This provides low-impedance input for a carbon microphone without the need for a microphone transformer. The second triode unit of the 12AU7 is used in conventional fashion to drive a 1635 Class B modulator. This tube operates at zero bias with an idling current of only 10 ma. D. c. voltage for operating the carbon microphone is obtained by connecting the microphone in series with the two speech-amplifier cathodes and ground.

The 1-ma. meter M_1 may be switched across appropriate multiplier shunts to read amplifier grid or plate current, or modulator plate current. A d.p.d.t. change-over relay, K_1, actuated by the microphone push-to-talk switch, is also provided. One pole shifts the antenna from receiver to transmitter, while the other mutes the receiver

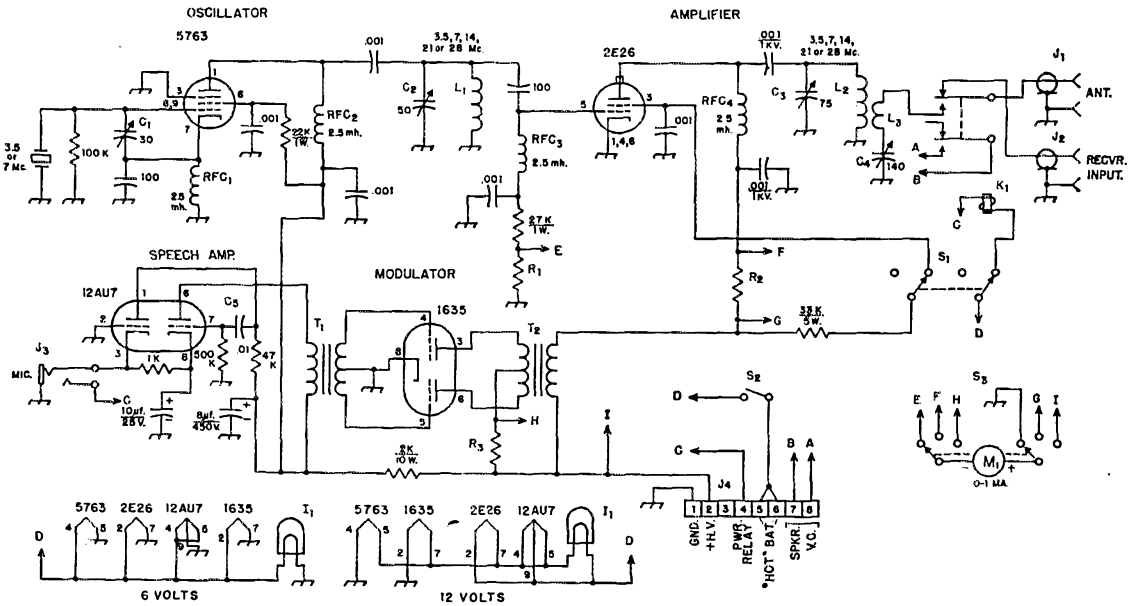


Fig. 1 — Circuit of the single-band mobile transmitter. All resistors are ½ watt unless otherwise specified. All capacitances less than 0.001 μf. are in μμf. All 0.001-μf. capacitors are disk ceramic. Fixed capacitors of smaller value may be mica or NP0 ceramic. Capacitors marked with polarity are electrolytic.

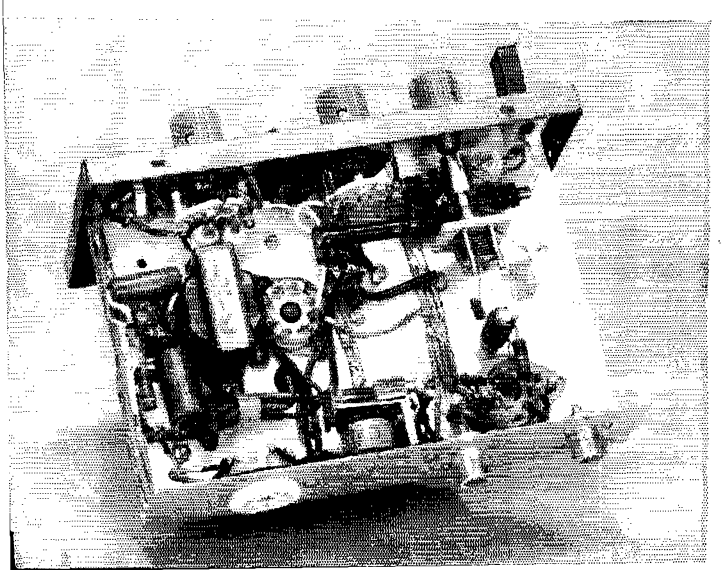
C_1 — Mica or ceramic trimmer.
C_2 — Air variable (Hammarlund HF-50).
C_3 — Air variable (Johnson 167-4).
C_4 — Air variable (Hammarlund HF-140).
C_5 — Paper or ceramic.
I_1 — 6.3-volt 250-ma. dial lamp.
J_1, J_2 — Coaxial connector (SO-239).
J_3 — Push-to-talk microphone jack.
J_4 — Power connector (octal tube socket).
K_1 — D.p.d.t. 6-volt or 12-volt d.c. relay (Guardian Series 200).
L_1, L_2, L_3 — See coil table.
M_1 — 0–1 d.c. milliammeter, 2⅜-in. (Triplett 227-T).
R_1 — 10-times shunt for M_1 (6.1 ohms for 55-ohm meter.)
R_2, R_3 — 100-times shunt for M_1. (0.5 ohm for 55-ohm meter.)
S_1 — D.p.d.t. rotary switch (Centralab PA-1002).
S_2 — S.p.s.t. toggle switch.
S_3 — 2-pole 3-position rotary switch (Centralab PA-1002).
T_1 — Driver transformer, 2.5:1 primary to ½ secondary (Merit A-2920).
T_2 — 10-watt modulation transformer (Merit A-3008).

by shorting the voice coil of the speaker. S_1 removes screen voltage from the 2E26 and disables the relay so that the oscillator may be tuned up before the amplifier is put on the air.

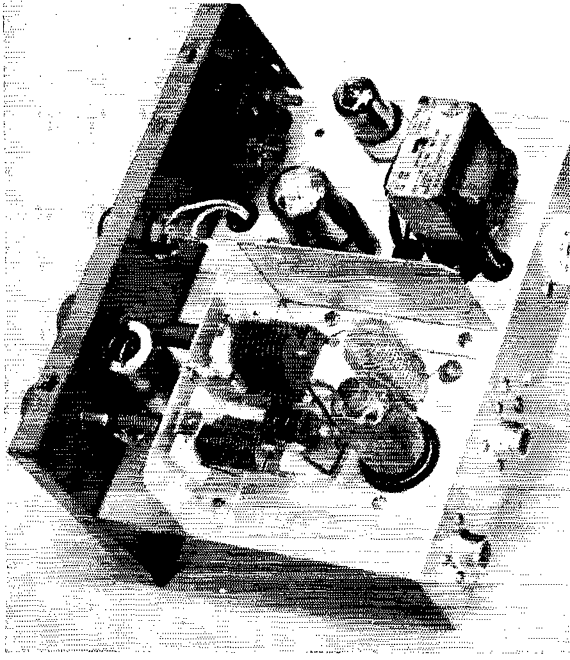
Construction

A 5 × 6 × 9-inch steel utility box (Middletown Mfg. Co., Middletown, Conn.) provides plenty of room for the components without undue crowding. The chassis is bent up from aluminum sheet approximately 1/16 inch thick. The chassis is 8¾ inches wide, 6 inches deep and has 2-inch lips along the front and rear edges.

The 2E26 and the output-tank components are separated from the other components on top of the chassis by an L-shaped aluminum partition



Bottom view of the single-band mobile transmitter. The driver transformer is placed between the two audio-tube sockets. The oscillator plate-tank and amplifier-coupling components are to the right. All power wiring is shielded.



Interior view of W1TRF's single-band mobile rig showing the arrangement of components on top of the chassis.

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which measures 4½ inches along the front and 4 inches along the side. It is 2¼ inches high with ½-inch lips along the bottom edges for fastening to the chassis.

C_3 and C_4 are mounted on the front wall of the partition with their shaft centers 1⅜ inches above the chassis. The shaft of C_4 is centered 1¼ inches from the open edge of the shield, while the shaft of C_3 is centered 3 inches in. The shafts of these capacitors are connected to panel-bearing units by rigid metal shaft couplers.

The socket for the 2E26 is submounted on ¾-inch spacers, beneath a 1¼-inch clearance hole centered 1 inch from the rear edge of the chassis and 2 inches in from the side. RFC_4 is mounted horizontally from the front wall of the partition, below and between C_3 and C_4.

The output tank coil, L_2, is cemented to a 1-inch cone insulator and soldered between a rear stator terminal of C_3 and a grounding lug on the chassis. The bottom end of L_3 is connected to a rear stator terminal of C_4, while the other end goes through a small feed-through point in the chassis to a relay terminal immediately below. The 5763 is centered between the partition and the front panel, and between the shafts of C_3 and C_4.

The interior-view photograph shows the modulation transformer in the upper right-hand corner of the chassis. The 12AU7 and 1635 sockets are centered on a line about halfway between the rear of the meter and the modulation transformer. The socket for the 12AU7 is centered ⅞ inch from the end of the chassis. Then the socket for the 1635 is spaced sufficiently from the 12AU7 socket so that the driver transformer, T_1, can be mounted between the two sockets, underneath the chassis.

The two coaxial connectors, J_1 and J_2, are mounted on the rear lip of the chassis, spaced to avoid the 2E26 socket. An octal socket serves as the power-supply connector J_4, and the changeover relay is centered between this socket and the nearest coaxial connector.

In the bottom view, along the front lip of the chassis, from left to right, are the microphone jack, meter switch, filament switch S_2, tune-up switch S_1, oscillator tank capacitor C_2 and the crystal. These are spaced out as evenly as possible. The oscillator tank capacitor is spaced back of the panel, and mounted behind the 5763 socket. L_1 is soldered across the terminals of the capacitor.

All power and control wiring is done with shielded wire, such as Belden No. 8885. Although TVI isn't usually of too much concern to a mobile operator, it has been my experience that the use of shielded wire goes a long way toward stabilizing any transmitter. The 2E26 is not neutralized, and yet it is perfectly stable, even with excitation removed. I believe that the shielded wire provides at least part of the answer. The secondary taps of T_2 should be set for 7500 ohms.

Testing

The unit will operate from any supply delivering 300 to 400 volts at 125 ma. or more. I use a 400-volt supply.

While the 2E26 might be used as a doubler if necessary, straight-through operation is recommended. Crystals in the 80-meter band will provide adequate drive for the final on all bands up to and including the 14-Mc. band. Crystals in the 7-Mc. band are needed for 21- and 28-Mc. output. I usually use 7-Mc. crystals for all bands except 80. Coils should be selected from the coil table to suit the band desired.

The oscillator is adjusted with S_1 in the tune position, and the meter switch turned to read amplifier grid current. With power supplied, C_2 should be adjusted for maximum grid current.

(*Continued on page 120*)

Table of Coil Dimensions

Band	Lμh.	Turns	Diam. In.	Length In.	Wire Size	B&W No.	Airdux No.
			L_1				
80	29	44	1	1⅜	24	3016	832
40	6.3	28	⅝	⅞	24	3008	532
20	2.8	16	⅝	1	20	3007	516
15	0.9	9	⅝	9/16	20	3007	516
10	0.5	6	⅝	⅜	20	3007	516
			L_2				
80	32	80	¾	2½	24	3012	632
40	8	41	¾	2½	20	3011	616
20	3.5	20	¾	1¼	20	3011	616
15	1.6	16	¾	2	18	3010	608
10	1.1	12	¾	1½	18	3010	608

L_3 — 3 turns No. 20, 1-inch diam., 3/16 inch long, over ground end of L_2 (B W 3015, Airdux 816) for 80, 40 and 20 meters; 2 similar turns for 15 and 10 meters.

The "Happy Accident" Ground Plane

Simple Yet Rugged Design for a 10-Meter Vertical

BY WESLEY B. HAMMOND,* K2GSO

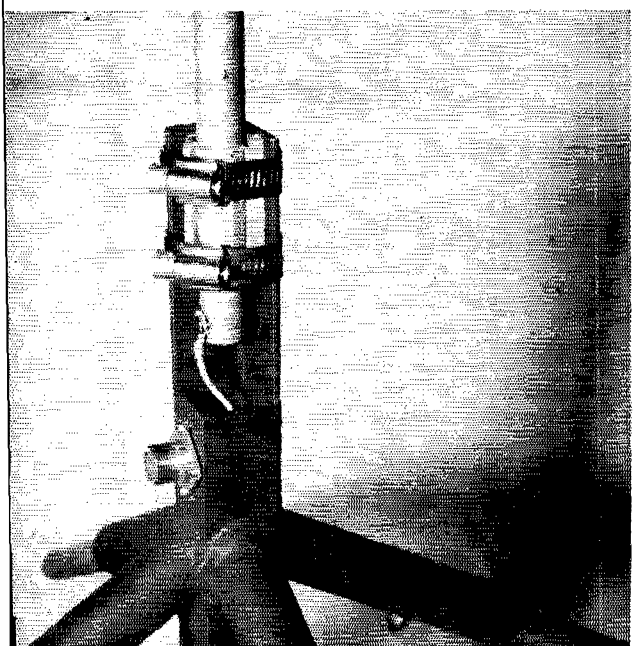
• The simplicity of the ground-plane antenna, combined with its low-angle radiation, makes it an attractive proposition for the 10-meter man, whether he's out for DX, or working in a local net. This design provides a substantial mounting for radiator and ground-plane elements.

AS YOU MAY EASILY GUESS from the call, K2GSO joined the amateur ranks while the ten-meter band was at low ebb for DX. There are quite a few hams in our county, and those adjacent, but they are scattered directionwise and some are quite a distance apart. We wanted to organize a net for local QSOs and as a c.d. effort, but when someone suggested ten meters, we found that our long wires, Windoms, and beam antennas did not work well at all. Out came the books and magazines, followed by considerable discussion. As a result, the ground plane seemed to be the answer, considering that we wished to work all directions at the same time, and also wished to work mobiles as efficiently as possible. Since none of us could be classed as an expert in antennas by any stretch of the imagination, experimentation and trial-and-error were in order. We wanted an antenna that would require no matching stubs, etc., yet would be rugged. It should be easily mounted, cheap, and fed with coax for simplicity. This antenna, like Topsy, "just growed," but it has proved to work so well we must call it the "Happy Accident."

It isn't claimed, of course, that it will in any way replace a good beam, but many of the local men have worked the world with it. DX men like W2RTX and W2DFS use it for band scanning to determine the direction of DX openings without wearing out the beam rotators. Surprisingly at times, the "Happy Accident" will show gain over our 5-element beam, presumably because of the low radiation angle.

*York Road, Leicester, N. Y.

There are some 35 to 40 of these antennas in use in this area at the present time, and all operators are pleased with the results. Stations located 30 to 40 miles apart running about 50 watts input have no trouble maintaining "arm-chair" contacts almost any time on ground wave when QRM is not a problem. Mobiles have been worked about 50 miles away on ground wave and 35- to 40-mile ground-wave schedules, mobile to fixed, with low power used in both cases, have been kept night after night for over a year. Installations, and the power used, are as varied as one might guess. Some antennas are mounted on wood masts, some on metal, one is 70 feet high and one is 15 feet high, yet all installations checked have a very low s.w.r. As an experiment, when Ralph, W2DFS, put up his ground plane, he first fired up with the antenna some ten feet above ground, and read S3 at our QTH some 35 air miles away. He raised the antenna to about 25 feet and was then S5. Finally, it was put up to the present height of approximately 40 feet and his signal report here now is S8½.



This photograph shows how angle iron and pipe are welded into a rugged support for the radials and antenna. Hose clamps are used to fasten the antenna and its insulators to the support.

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QST for

We tested many of the installations for s.w.r. and found that when the suggested dimensions were used, the s.w.r. was never higher than 1.2 to 1 in the 29-Mc. area. Our own antenna has been up for a year and a half in all kinds of storms and has survived 70- to 80-m.p.h. winds without even breathing hard. The s.w.r. checks at this station as 1.3 at 28.5 Mc., 1 at 29 Mc., and 1.2 at 29.360 Mc., to give a few examples.

We surely feel it is the "Happy Accident," but enough chit chat, so here is how we build it:

Mounting Unit

Secure a 20-inch length of $\frac{1}{8} \times 1 \times 1$-inch angle iron (larger sizes are OK). Cut this length into two pieces, one 4 inches long and the other 16 inches. Place the edges of these two pieces together to form a hollow square, with one end of the shorter piece 4 inches from the corresponding end of the longer piece. Have a welding shop (preferably a friend!) weld the two pieces together in this position. Drill a $\frac{5}{8}$-inch hole for a coax fitting in one of the faces of the 4-inch piece, 1 inch from the upper end (the end where the longer piece extends 4 inches). Place the fitting, with one corner upward, in the hole, and mark upper and lower mounting holes. Drill with a No. 32 drill, but do not tap the holes. It

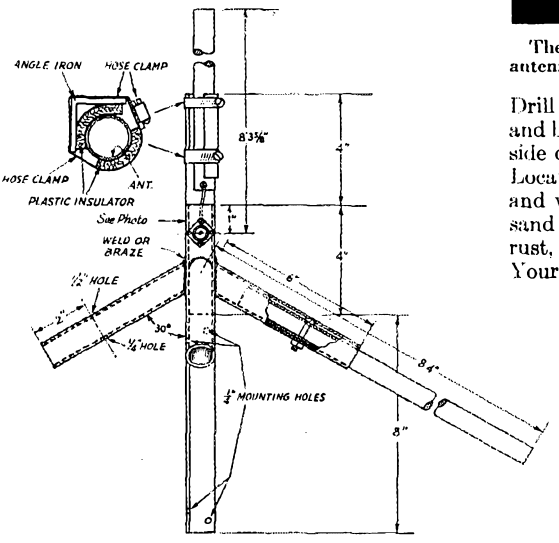
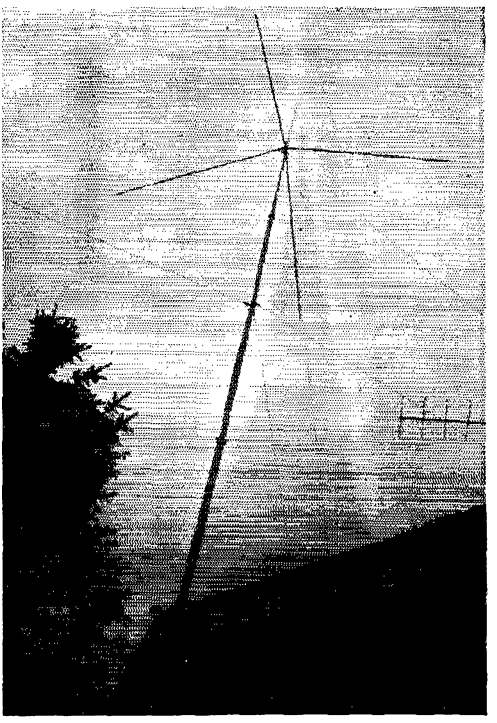


Fig. 1 — Sketch showing constructional details of K2GSO's 10-meter ground-plane antenna.

is also advisable to drill $\frac{1}{4}$-inch mounting holes, as indicated in Fig. 1, so that the assembly can be fastened to a wood mounting if desired. The upper mounting holes are difficult to drill after the radial supports have been added.

The radial supports consist of 6-inch lengths of $\frac{3}{4}$-inch black iron water pipe. Four are required. One end of each length is cut at an angle of 60 degrees. Locate and center-punch for the radial mounting bolts as shown, 2 inches from the square ends and on the long side of the pipe.



The "Happy Accident" 10-meter ground-plane antenna mounted on a tubular mast.

Drill a $\frac{1}{4}$-inch hole completely through the top and bottom walls. Now enlarge the top hole (long side of the pipe) by drilling with a $\frac{1}{2}$-inch drill. Locate the positions of the pipe pieces as shown, and weld or braze them in place. Wire-brush or sand the bracket so that it is clean and free from rust, etc., and apply a coat of good metal primer. Your local auto-accessory store has auto-body primer or sealer. Then apply two coats of good aluminum paint. A pressure spray can works well here.

Using a 6-32 tap, thread the two coax-fitting attaching holes which we left until now so the painting would not fill the holes and prevent a good bare metal-to-metal contact. It may be necessary to ream out the holes in the fitting to pass No. 6 screws. Solder a 3- to 4-inch piece of fairly-heavy stranded wire to the center terminal of the chassis fitting, and install the fitting as shown using $\frac{3}{8}$-inch or $\frac{1}{2}$-inch 6-32 machine screws with star washers placed between the chassis fitting and the bracket. The washers will bite into the metal, assuring a good electrical contact.

Secure a piece of Plexiglas or Lucite $\frac{1}{4}$ by $1\frac{7}{8}$ by 3 inches and another $\frac{1}{4}$ by $\frac{3}{4}$ by 3 inches and heat in the XYL's oven until soft, but avoid overheating. Lay these pieces in the corner of a piece of angle iron and quickly press a piece of $\frac{3}{4}$-inch metal rod against them, to form these pieces into the corner, until cool.

(Continued on page 120)

How To Make a Folding Workbench

Sturdy Construction for the Apartment Dweller

BY STAN DANE,* VE3PB

• Not only those who live in apartments, but many other hams as well, will find this simple yet rugged folding workbench an answer to a common problem. The same design can, of course, be applied in making a collapsible operating table of lighter materials.

IF YOU are an apartment dweller whose hobby is ham radio, woodwork, or metal work, you know how frustrating it is to use the bridge table, kitchen table, or even your desk, as a workbench. The heavy jobs that require lots of pounding, drilling, planing, or sawing, can be done on the living-room floor with your vise bolted on a board set across two crates or boxes. Of course, you must have a good-natured wife who will spend the evening sitting on the board to hold it steady while she knits, reads, or watches TV.

I used the living-room floor as a workbench for several months while searching the craft books and magazines for plans for a folding bench that would be compact, strong, easy to construct in the apartment, and very, very rigid. I didn't find one that suited so I designed and built one myself. The bracing system is so strong and simple I don't see why I didn't think of it sooner. As you can see in Fig. 1, the under side is not cluttered up so, if I ever have an opportunity to set the bench up permanently, I can put shelves, drawers, tool racks and doors underneath. My carpenters' vise stays attached permanently and my mechanic's vise, which weighs 22 lbs., is bolted on whenever I need it. The bench is six inches thick when folded. The minimum length will be determined by the length of legs required to suit your height.

The accompanying drawings show constructional details. The dimensions of my bench are for comparative purposes only. It is important that you make your bench to suit your own height. I was advised by a friend that the bench should be high enough so that when the heavy mechanic's vise is bolted on the top of it, the jaws of the vise will be slightly under the right elbow. My heavy vise is 6 inches high. I followed this advice and found that the bench top and both vises were just the right height for standing-up jobs. (I put some books under the legs of an ordinary table and practiced planing, filing, soldering, etc., to find out if this really was the comfortable height for me.) For sitting-down jobs I use a 27½-inch kitchen stool.

The front section of the bench top should be made of thick heavy hardwood with a good shellac and varnish finish to help prevent dents and scratches. This part of the bench will be the most difficult to obtain. I scrounged mine from a discarded refrigeration-room door. It was made of 1½ × 1½-inch maple strips already glued and bolted, but requiring much refinishing. In fact, I scrounged all the material for this bench except the ¼-inch plywood sheets which come in standard sizes 2 × 3 and 3 × 4 feet. That is why the legs just happen to be 2 feet wide and almost 4 feet apart.

The rest of the wood used in construction should be strong but much lighter in weight so that you can set up or carry the bench fairly easily. My bench with carpenter's vise attached weighs 67 lbs. It seems to be about the right compromise between firmness and portability. The tool tray which forms the rear section may be made of ¾-inch stock with molding around the edges.

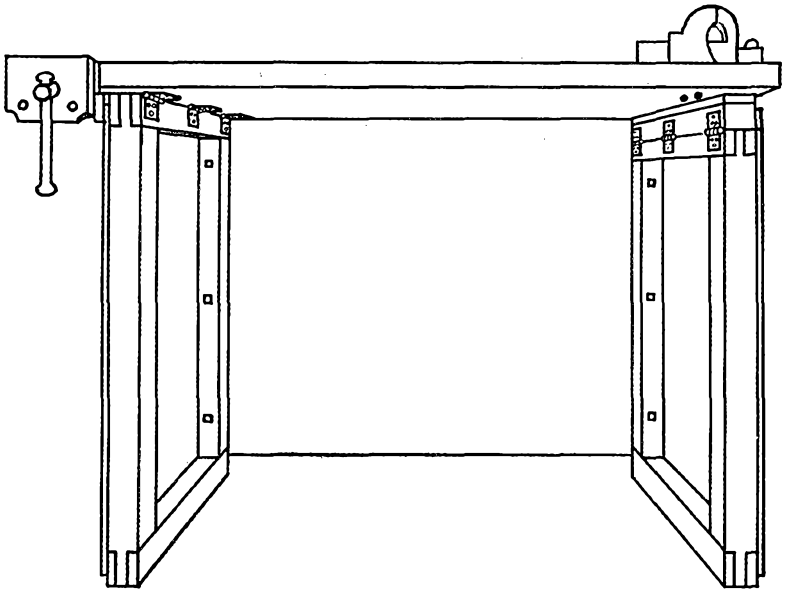
The two legs should be made of sturdy but light stock not less than 2 by 2 inches. They are each made in the form of a rectangle with mortised and glued corners. They are braced by gluing and screwing the 2-foot-wide plywood pieces to the side of the rectangle as shown in all drawings. One leg is, of course, shorter than the other. This leg is attached to the bench top as shown in Fig. 1 and Fig. 3 so that it will fold over the longer leg. Make the longer leg first. Then make the shorter leg, plus the strip that fastens it to the bench top, exactly the same length as the longer leg. The strip will have to be ½ inch thicker than the wood the legs are made of so that the legs will fold together properly. I glued on a ½-inch piece of plywood to accomplish this. Then I fastened the strip firmly to the bench top with countersunk screws. The crosspieces at the bottoms of the leg rectangles are necessary to provide a firm, broad base which will not mark the floor. Remember, your bench may be set up on the living-room rug.

The position of the left-hand leg under the bench will depend upon the width of your carpenter's vise which is permanently bolted to the front under side of the top, at the left end. The right-hand leg is positioned directly under the mechanic's vise. The handle of the vise, when closed, must clear the end of the bench. The fastening bolts come through just inside the strip to which the short leg is hinged.

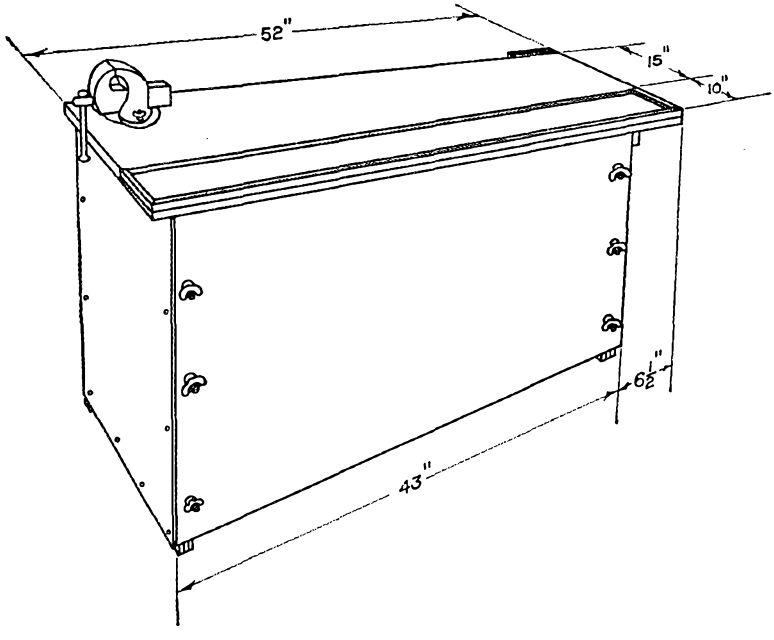
When you have figured out the proper length of the legs for you, their position when folded, and the space occupied by the vises, then you can determine the minimum length of your bench

(Continued on page 126)

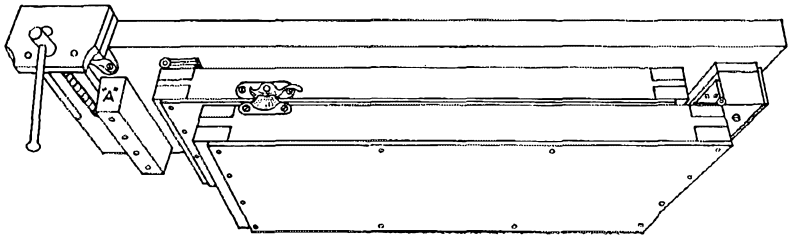
* Apt. 1, 326 Bloor St., West, Toronto, Ont., Canada.



« *Fig. 1* — Front view of VE3PB's folding workbench. Leg room underneath is not obstructed by braces.



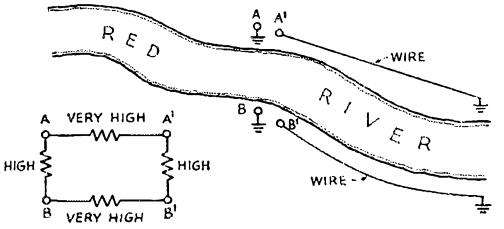
» *Fig. 2* — Rear view of the collapsible workbench showing essential dimensions. The hinged legs are firmly braced by a removable rear panel of plywood. Note that the top wing nut and bolt on the shorter leg must be placed lower than on the longer leg.



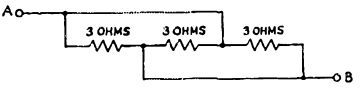
« *Fig. 3* — The folding workbench collapses into a compact package that can be stored under the bed.

Quist Quiz

The solution to last month's Quist Quiz lies in the desire of electricity to follow the path of least resistance, a characteristic not confined to electricity. By installing metallic stakes at four points, as shown in the sketch, the electricity for the telephone circuit would rather travel around the circuit than to stay on one side of the river. The success of the system depends upon separating the two stakes on one side of the river by at least 20 times the width of the river, to insure adequate current flow under the river.



This month's teaser is from W1HJL. What is the effective resistance between points A and B? Hint — the answer is shorter than the question.



Strays

A new socket for the 4X150–4X250 type tubes has just been announced by the E. F. Johnson Co., Waseca, Minn. Designated as Catalog No. 124-108, the basic socket has Kel-F insulation and provision for passing cooling air. A separate by-pass capacitor assembly is available. The new design is intended to meet the demand for a moderately-priced socket for a tube type that is becoming increasingly popular in the amateur field.

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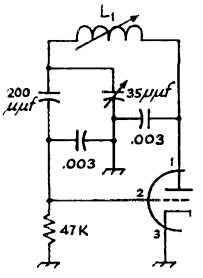
QSOs of fantastic proportions were apparently collected during this SS past. For instance, early-arriving reports note phone exchanges with 500 or more verbalists by K2AAA, *W3s* OMV VKD, *K4s* CTUHGA, W5DQK, *K5s* EAR/5 GMB, *W6s* AM CPL PQW SUP, K6EVR, W8EPC, *WØs* KLP NPR QON ZSZ, *KG4s* AC AL. Fists weren't idle either, not with A-1 logs indicating QSOs upwards of the 800 figure by *W1s* BFT EOB JYH, W2UZ, *W3s* AEL CPS EIS EIV JNQ KLA MSR TMZ UHN VAN VIW VOW, *W4s* KFC KVX YHD, *K4s* AZN LPW, K5CAW, *W6s* BJU SBB YMD, *K6s* CEF JQJ, *W7s* DZL KEV, *W8s* FGX LQA OYI, *W9s* APY KZZ OCB RQM YFV, WØDXE. High-claimed scores to appear next month, Operating News.

What's this? Why, it's the mobile antenna of W5JYS. If you look real close, you'll see that the uprights are broom handles, mounted with a spring arrangement so that they swing down when they hit an obstruction. The whole arrangement is a closed loop, arrived at by pure cut-and-try. W5JYS says he gets out real good.

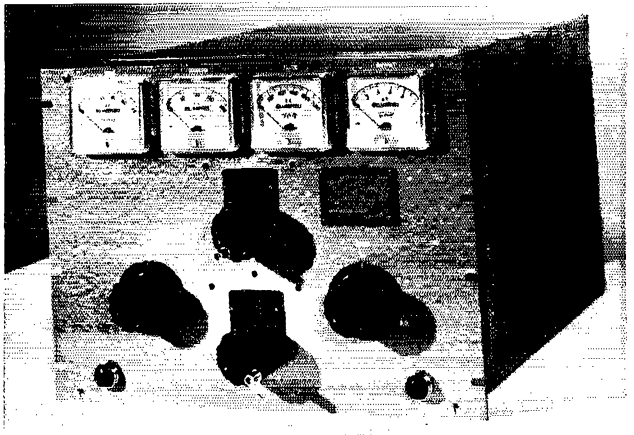
Pretty neat, eh? A setup such as this will go a long way toward selling ham radio in your neighborhood.

FEEDBACK

In the circuit diagram for "The Poor Man's Signal Slicer" (Dec. 1956 *QST*, page 35), the switch position marked "Product Detector" should have been shown marked "Hybrid Detector." With no b.f.o. injection, any response to a.m. signals is purely a hybrid action, but W6TSQ included the position because he found it useful under some conditions. Further, there should have been a 100K resistor from pin 7 of V_{2B} to ground, and the b.f.o. should have been drawn as shown here.



A Cool California Kilowatt



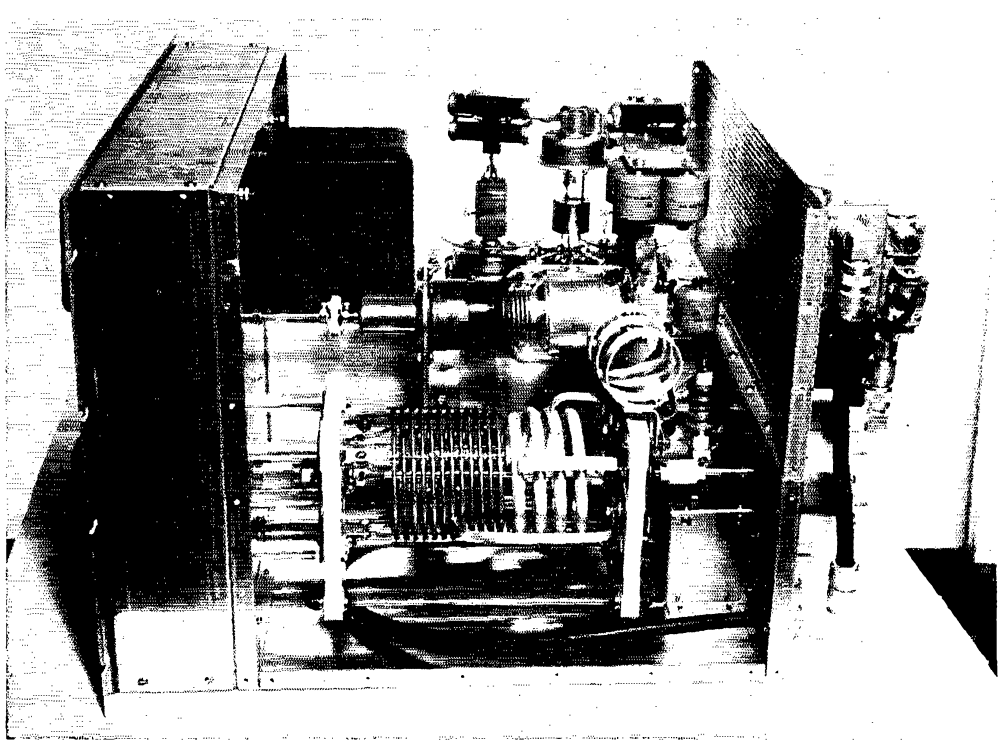
BUILT BY RAYMOND F. RINAUDO, W6KEV,

173 San Benito Ave., San Bruno, Calif.

No transmitter to be built by a tyro, this kilowatt amplifier demonstrates many good design and constructional practices. The principal objectives in the design were complete freedom from TVI, maximum ease and speed in band changing, and reliable operation over a long period of time. The TVI requirement was met through the use of shielded wiring by-passed at each end with ceramic capacitors, excellent over-all shielding, and a low-pass filter in the output. Maximum ease in band changing was obtained by ganging the band switches (including an antenna selector switch), and further speed resulted from padding the grid circuit so that the grid tuning falls at the same spot on each band. A counter dial on the plate-circuit vacuum variable tuning capacitor allows excellent reset accuracy. Reliable operation is insured through the use of components rated much higher than the powers and voltages at which they are operated.

The band switch drives the B & W plate-coil switch directly and moves the grid-circuit switch through two right-angle drives (see Fig. 4). To make the switching job easier, the detent on the B & W assembly was freed a little, and the detents on the grid and antenna switches were disengaged. An extension was added to the plate-coil switch shaft and ganged with the antenna selector switch (see Fig. 3). The plate tuning capacitor has a capacitance range of 10 to 400 $\mu\mu$f., permitting the use of a proper L-to-C ratio on all bands 80 through 10 meters.

The amplifier is built behind a 12¼-inch standard relay rack panel. The shield enclosure housing the r.f. components is 12 inches high, 13 inches deep and 17 inches wide; it is spaced 3 inches from the panel by four pillars. The 6½ inches required by the blower brings the total front-to-back depth to 22½ inches.



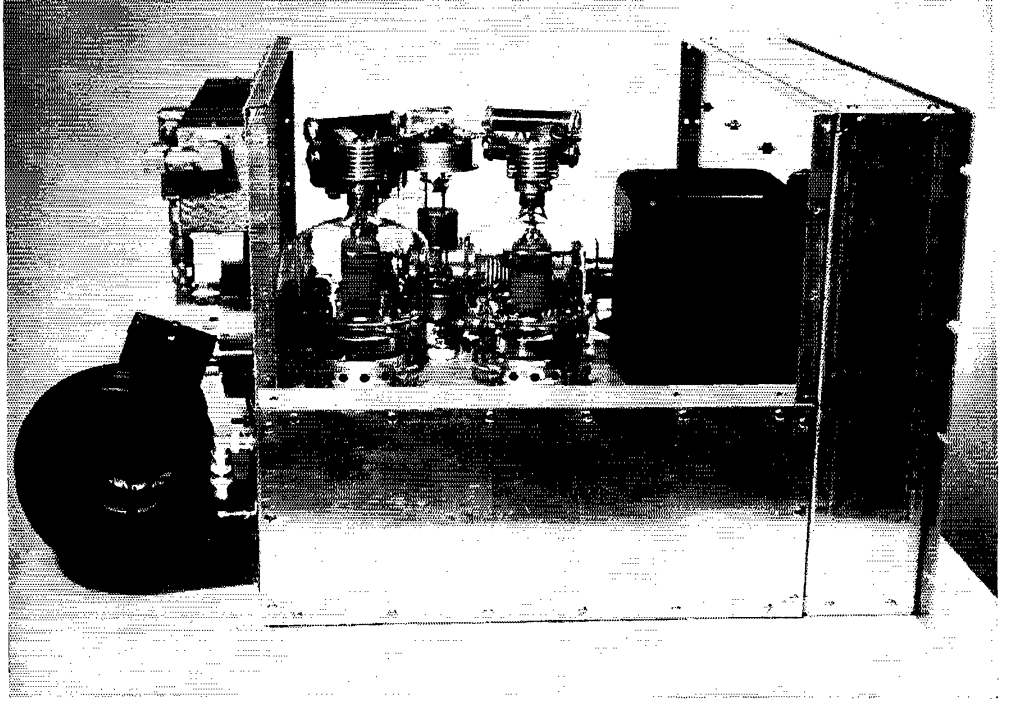
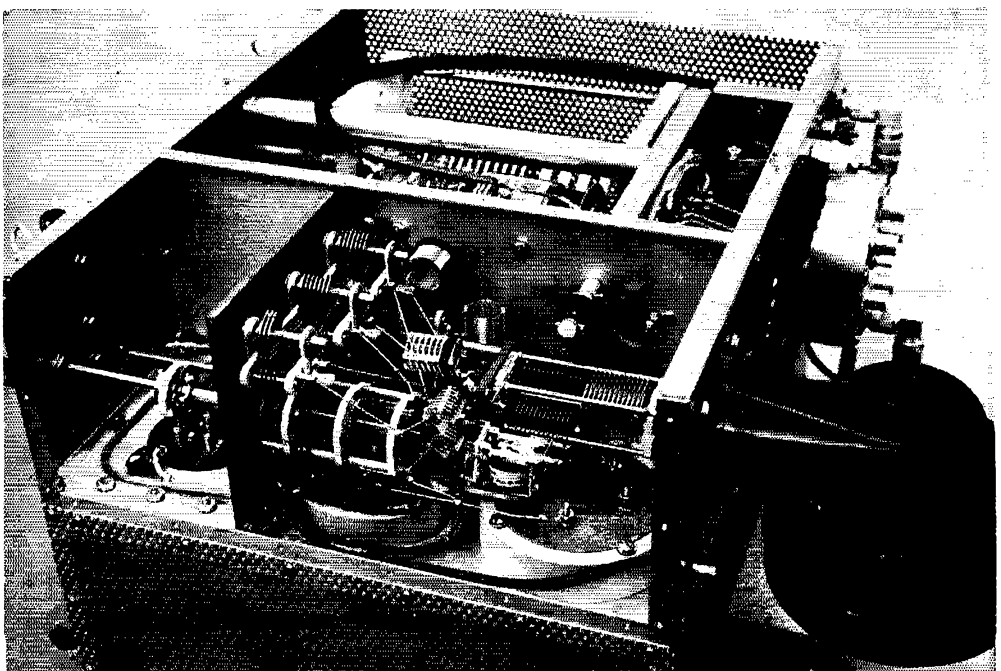


Fig. 1 — The kilowatt amplifier uses a pair of 4-250As in parallel, with a pi network plate circuit. The 6-$\mu\mu$f fixed vacuum capacitor standing behind the two tubes is the neutralizing capacitor from the tube plates to the "cold" end of the grid circuit. To provide for neutralizing adjustment, the grid-circuit r.f. return is through a 750-$\mu\mu$f. fixed capacitor shunted by a 140-$\mu\mu$f. variable. The plate circuit parasitic suppressors are each two 100-ohm 5-watt carbon resistors shunted by 3 turns of No. 12 wire wound to ½-inch diameter.

Fig. 2 — A split-stator tuning capacitor is used in the grid circuit; only one section is used on the higher frequencies. The three variable capacitors mounted along the wall supporting the grid switch are padding capacitors that are switched in on the lower-frequency bands. High-*C* grid circuits are used (400 $\mu\mu$f. at 3.5 Mc.) to provide a high-*Q* grid circuit and consequently better drive regulation.

The tube sockets are the Eimac air-system sockets, and the socket by-pass capacitors are inside and concealed. One side of each filament is grounded to the chassis, in contrast to the more usual use of a center-tapped filament transformer. The builder credits this trick with helping to tame the unit. A 50- to 2000-$\mu\mu$f. vacuum variable output loading control is located on the other side of the center partition, below the aluminum tube used as a duct for control wires running between front and rear of the amplifier. The relay cuts in a swamping resistor for linear operation.



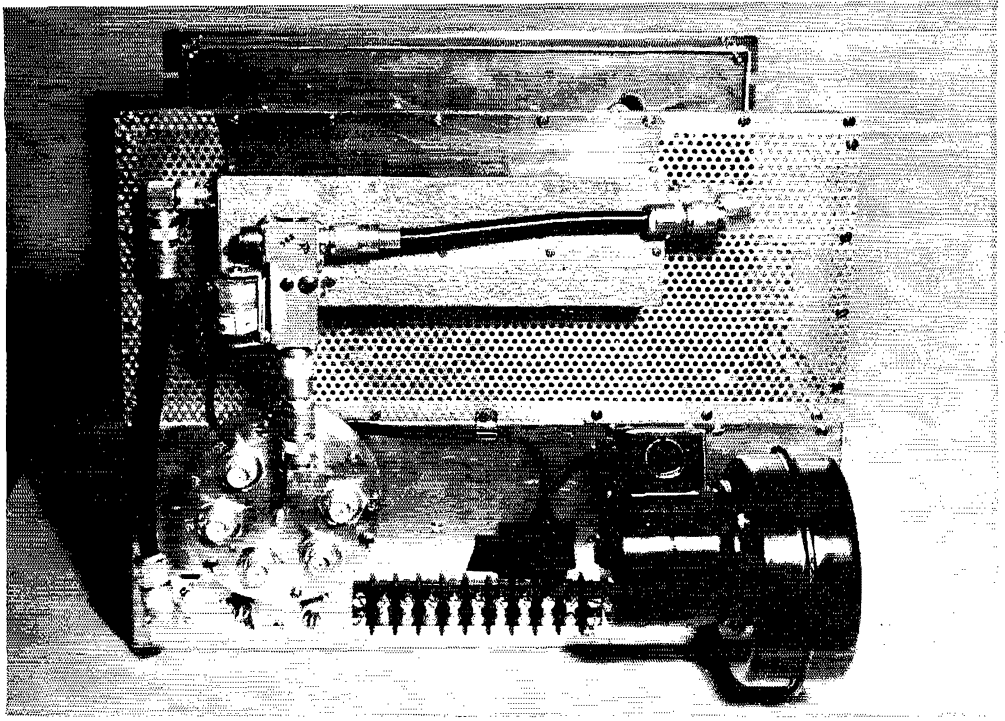
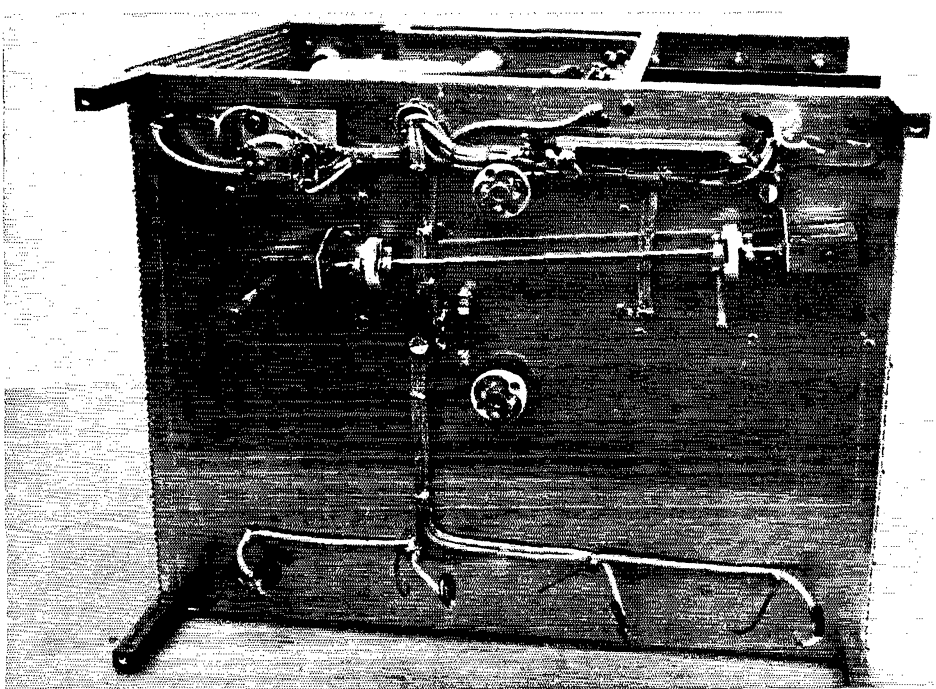


Fig. 3 — The blower for cooling the tubes, the antenna selector switch, the antenna change-over relay and the low pass filter are all mounted on the back of the amplifier cabinet. Plate voltage is connected at the porcelain stand-off insulator under the antenna switch. Output voltage metering is obtained through the use of a high-resistance voltage divider across the output line and a 1N34A diode rectifier. The diode current is read by the output meter on the front panel.

Fig. 4 — The front panel has been removed for this photograph, and the amplifier has been turned upside down. A 100-ohm resistor is normally in series with the blower motor, to reduce the speed, but when plate power is applied the relay (upper left) closes and shorts out the resistor. The right-angle drives are connected between plate switch and grid-circuit switch. Note that all wiring is done with shielded wire, by-passed at the ends, for TVI reduction. The two flexible couplings connect to the vacuum variable capacitors in the pi-network output circuit.

The amplifier was designed and built by W6KEV but now reposes in the shack of Elvin Feige, W6TT. The builder credits W6TT with several of the ideas that make the rapid band change possible, but gives no clue to the deal that resulted in the change in ownership.



6L6GBs in a 2-Stage Novice Rig

A Simple Band-Switching Unit for 80, 40 and 15

BY LEWIS G. McCOY,* W1ICP

• The transmitter shown in the photographs is designed for 75 watts input on the 80-, 40- and 15-meter Novice bands. Power supply is included and space has been left for the addition of a plate-screen modulator later on if desired. Provision has also been made for adding the 20- and 10-meter bands.

ALTHOUGH the 75-watt transmitter shown in the photographs is not complicated, either in circuit or construction, it incorporates most of the conveniences found in more advanced equipment. It includes such features as crystal switching, band switching, meter switching, and a pi-network output circuit. The power supply is built in, and provision has been made for adding a full-size modulator and additional bands later on.

Circuit Details

As shown in the diagram of Fig. 1, the r.f. lineup consists of a 6AG7 grid-plate crystal oscillator driving a pair of 6L6GBs in parallel. The 6L6GB is a recent revision of the old reliable 6L6G, for many years a favorite with beginners. Provision is made for plugging in four crystals on the chassis, but the switch, S_1, will accommodate two more if desired. The circuit diagram shows a single crystal. The others are added by connecting each one between an unused switch point and chassis ground. The plate circuit of the oscillator is tuned to the operating frequency by the combination of C_2 and L_1L_2. S_2 selects the proper inductance for each band. Somewhat better efficiency is obtained by using a separate coil, L_2, for 15 meters rather than to short-circuit turns on a single large coil. Crystals in the 3.5-Mc. band may be used for 7-Mc. output, while 7-Mc. crystals will furnish adequate drive to the amplifier for 15-meter operation.

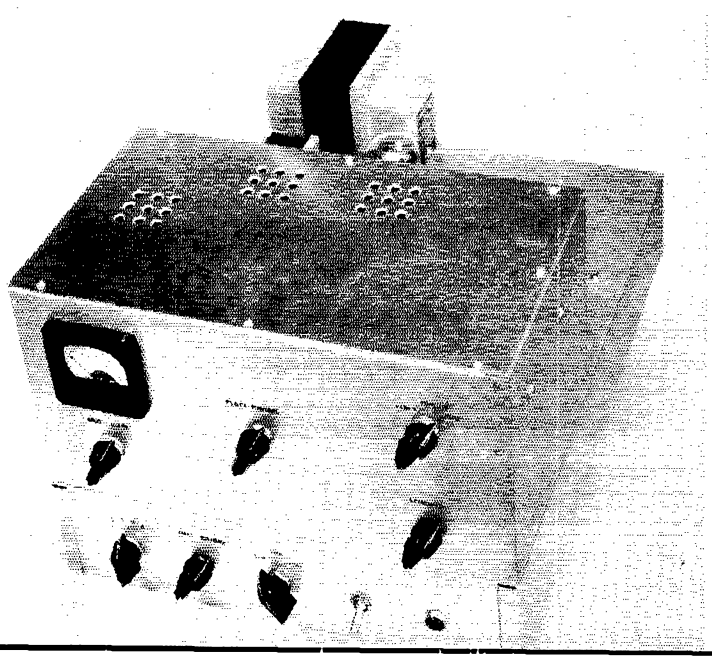
The pi network in the output of the amplifier is designed to work into a low-impedance load — 50 or 70 ohms. The output capacitance is adjusted by means of the variable capacitor C_5. This is a three-gang unit of the broadcast-replacement type having 365 $\mu\mu$f. or more per section. The three stators are connected in parallel. This provides a maximum capacitance of approximately 1100 $\mu\mu$f. which is sufficient for matching a 50-ohm load at 80 meters. The output-capacitance requirements for 15-meter operation into the same load resistance are also within the range of C_5. Here again, a separate coil, L_5, is used for 15 meters.

L_3 and L_4 are v.h.f. parasitic suppressors.

A 1-ma. milliammeter with suitable multiplying shunts is used to measure grid and cathode currents of the amplifier stage. The meter can be switched to either circuit by means of S_4. The combination of R_3 in series, and R_1 or R_2 in parallel, changes the full-scale reading from 1 ma. to 20 ma. when reading grid current and to 300 ma. when checking cathode current.

The 6L6GBs require neutralization. C_3 is the neutralizing capacitor. The 270-$\mu\mu$f. fixed capacitor is also an essential part of the neutralizing

* Technical Assistant, *QST*.



Here is the completed transmitter ready for operation. The ventilating holes in the top of the box are grouped over the three tubes. The power transformer can be seen in the left rear corner of the chassis. The space at the right is for the addition of a modulator. On the box, S_4 is below the meter, C_4 is at the center, and S_3 (above) and C_5 are to the right. From left to right on the chassis below are S_1, C_2, S_2, S_5 and I_1.

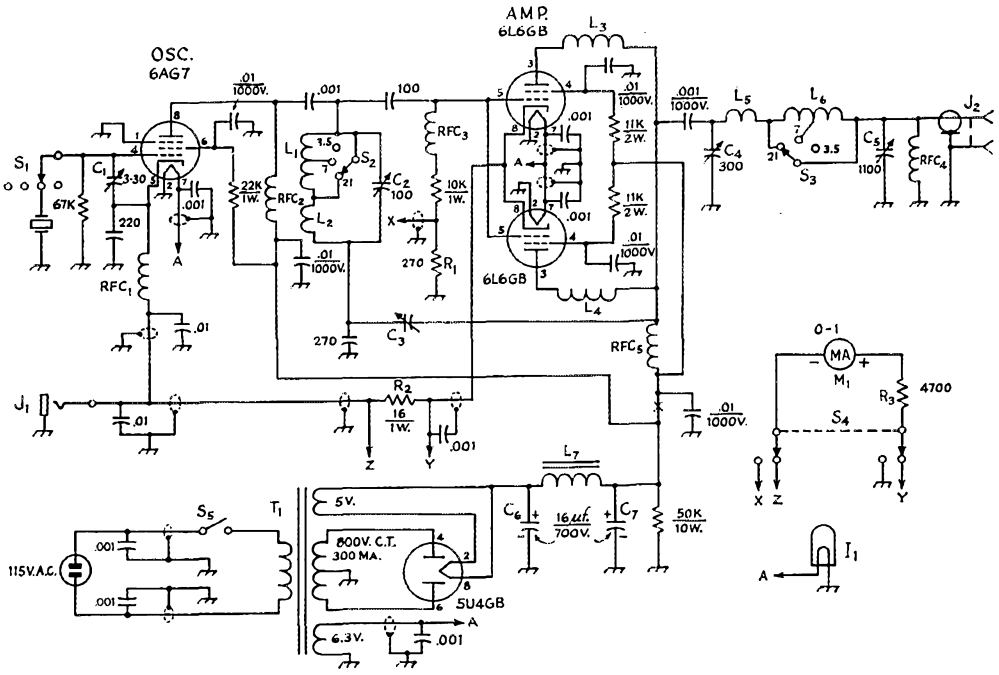


Fig. 1 — Circuit of the 6L6GB transmitter. All capacitances less than 0.001 μf. are in μμf. All 0.001- and 0.01-μf. capacitors are disk ceramic. Capacitors marked with polarity are electrolytic. All other fixed capacitors are mica. All resistors are ½ watt unless otherwise specified. The 11K 6L6GB screen resistors are each made up of two 22K 1-watt units in parallel.

C_1 — Mica trimmer.
C_2 — Midget variable (Hammarlund MC-100-S, Johnson 149-5, Bud MC-1855).
C_3 — 2.3-14.2-μμf. miniature (Johnson 160-107).
C_4 — Midget variable (Bud MC-1860, Hammarlund MC-3251-M).
C_5 — Triple-gang broadcast-type variable, 365 μμf. or more per section (ICA 531, Philmore 9047, Miller 2113, Allied Cat. No. 60H726).
C_6, C_7 — Electrolytic filter capacitor (C-D BRHV-716, Aerovox PRS).
I_1 — 6-volt dial lamp.
J_1 — Open-circuit key jack.
J_2 — Coaxial receptacle (SO-239).
L_1 — 36 turns No. 24, 1-inch diam., 1⅛ inches long, tapped 14th turn from L_2 (B & W 3016 Miniductor, Airdux 832).
L_2 — 5 turns No. 20, ¾ inch diam., 5/16 inch long (B & W 3011 Miniductor, Airdux 616).
L_3, L_4 — 6½ turns No. 18 wound on and connected across a 10-ohm 1-watt composition resistor.
L_5 — 6 turns No. 14, 1-inch diam., 1¼ inches long.
L_6 — 14 turns No. 16, 2 inches diam., 1 7/16 inches long, tapped at 6½ turns from L_5 (B & W 3907-1 Strip inductor).
L_7 — 10-h. 300-ma. or 200-ma. filter choke. See text (Triad C-19A or C16-A).
M_1 — 0-1-ma. d.c. milliammeter, 2⅜ inches square, (Triplett 227-T).
R_1, R_2, R_3 — Meter multiplier resistor — see text.
RFC_1, RFC_2, RFC_3 — 750-μh. r.f. choke (National R-33, Millen 34300-750).
RFC_4 — 2.5-mh. r.f. choke (National R-50).
RFC_5 — 2.5-mh. 300-ma. r.f. choke (National R-300-S).
S_1 — Single-pole 6-position bakelite rotary switch, 4 positions used. See text (Centralab 1401).
S_2, S_3 — Single-pole, 6-position ceramic rotary switch, 3 positions used (Centralab 2501).
S_4 — D.p.d.t. bakelite rotary, 2nd position used (Centralab 1472).
S_5 — S.p.s.t. toggle switch.
T_1 — Power transformer: 800 volts, c.t., 300 or 200 ma. (see text); 5 volts 3 amp. or more; 6.3 volts 5 amp. or more (Triad R21-A or Triad R21-A).

circuit and it should be of the capacitance value specified.

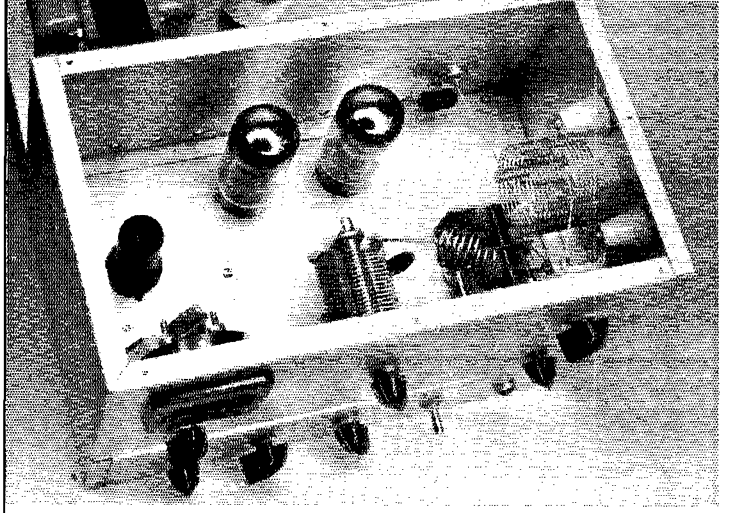
A single transformer is used to power the complete rig. Although T_1 and L_7 are somewhat "huskier" than needed for the transmitter as described, they will handle the modulator current, when it is added, as well as the demands of the transmitter. If no phone operation is contemplated, a transformer delivering the same voltage and a choke of the same inductance, but both having a current rating of 200 ma. instead of 300 ma., will effect a saving in cost.

Construction

A 17 × 12 × 3-inch aluminum chassis is used as the base, while a standard 12 × 7 × 6-inch aluminum box (Premier AC-1276) provides a shielding enclosure for the r.f. components on top of the chassis. Although the chassis is larger than necessary for the rig as shown, it provides adequate space for the future addition of the modulator.

There is nothing highly critical about the layout of the parts. It should be satisfactory if the photographs are followed as closely as possible. In mounting the components that are within the box, be sure that they clear the ½-inch lip around the bottom of the box. To simplify this problem, the box can be set on top of the chassis, and a pencil line drawn on the chassis top, along the lip edges. Then the components can be arranged to fit within the scribed area.

The panel layout is based primarily on the position of the shaft of C_5. C_5 is mounted directly



Looking down into the shielding box. Three of the crystals appear to the rear of the meter. C_4 is at the center. C_5 and L_6 are to the right. L_5 is connected between the switch and C_4. RFC_4 and J_2 are in the right rear corner. The holes along the bottom of the rear wall are for ventilation. L_7 and the 5U4GB are behind.

on the chassis, with its shaft 2 inches in from the right-hand end. S_4 is placed at the opposite end of the box to balance. S_3 is directly above C_5, with its shaft centered 1¾ inches down from the top, and the meter is centered to balance on the other side. The shaft of C_4 is central on the panel.

L_6 is mounted by soldering two lugs diametrically opposite on the outside turn. The lugs are then fastened to two 1-inch cone insulators centered 2 inches down from the top rim of the box. L_5 is soldered directly between the 21-Mc. terminal of S_3 and a stator terminal of C_4. The tap on L_6 can be soldered on the coil most easily by bending the turns on either side of the tap turn inward toward the axis of the coil.

Along the chassis front, I_1 is in the same vertical line as C_5 and S_3, while S_1 is in line with S_4 and the meter. S_2 is directly below C_4, with C_2 and S_5 equally spaced on either side.

Underneath the chassis, L_1 is mounted by cementing it to a 1-inch cone insulator. It is tapped by the same method described above for L_6. L_2 is supported by soldering one end to the rear rotor terminal of C_2 and the other to the 21-Mc. point on S_2. The neutralizing capacitor C_3 is mounted by soldering its two stator rods to insulated terminals on a tie point.

C_2 must be insulated from the chassis. This is done by drilling a clearance hole for the shaft in the chassis, and then placing fiber insulating washers on both sides of the chassis. Be sure to keep the shaft central in the hole while tightening up on the mounting nut so that the shaft will not make contact with the chassis at any point.

L_3 and L_4 are each wound around a 10-ohm 1-watt carbon resistor. The ends of the coils are soldered to the terminal wires of the resistors.

Two octal sockets are used to hold four crystals using FT-243-type holders. These sockets can be seen between S_1 and the 6AG7 socket in the bottom-view photograph. If desired, another socket can be added to accommodate two more crystals. On each socket, Pins 2 and 8 are grounded to the chassis, while Pins 4 and 6 are connected to a point on S_1. The crystals are then plugged in between Pins 2 and 4 and between Pins 8 and 6.

Shielded wire (Belden 8885) is used for the heater, cathode, meter and a.c. power leads, as indicated in Fig. 1. By-pass capacitors should be applied as described in the TVI chapter of the ARRL *Handbook*. The lead from the cathode to the key jack, through R_2, is also made with shielded wire. The key jack is mounted on the rear wall of the chassis. This type of wiring is essential in the suppression of TVI.

Testing and Operation

The first step in testing is to neutralize the amplifier stage. The lead that feeds the voltage to the plates and screens of the amplifier tubes should be disconnected at the point X in Fig. 1 so that there is no voltage on the 6L6GBs except heater voltage. Power can now be applied to the oscillator and the key closed. The meter should be switched to read grid current, and the grid circuit tuned, by means of C_2, to 15 meters with a 7-Mc. crystal switched in. A grid-current reading of half scale or more should be obtained.

Now set C_5 at maximum capacitance (plates fully meshed) and tune C_4 through its range. At one point you should notice a dip in the meter reading. Next, carefully adjust the neutralizing capacitor C_3 so that the *least* amount of change occurs in the meter reading when C_4 is tuned. When you find this point, the amplifier should be neutralized. In the unit shown, C_4 had to be set near maximum capacitance.

The lead to the 6L6GB plates and screens may now be reconnected, *remembering to turn off the power supply before doing this*. Using a dummy load, such as a 60-watt lamp, connected across J_2, the rig can now be tested on all three bands. In each case, turn on the power and let the tubes warm up, but don't close the key. In tuning the pi-network tank circuit, it is a good idea always to start with C_5 at maximum capacitance. This setting gives minimum loading. Close the key now, and tune the oscillator circuit for about 6 ma. of amplifier grid current. Don't hold the key closed any longer than necessary because the output circuit may not be at resonance and the 6L6GBs will draw excessive plate current. Next, switch the meter to read cathode current, and close the key again. With C_4,

resonate the plate circuit as indicated by the dip in cathode current. At this point, the load lamp should start to give some indication of output. The loading and power output can be increased by reducing the capacitance of C_5 a bit at a time, readjusting C_4 to resonance.

When the stage is metered in the cathode circuit, the meter reads the total of plate, screen and grid currents. To arrive at the true plate current, which is necessary to determine plate power input, the grid and screen currents must be subtracted from the cathode current read by the meter. The screens draw approximately 9 ma. each, and the grid current is normally set at 6 ma. Thus if the amplifier is loaded so that the cathode current is 210 ma., the plate current should be about 185 ma. This, when multiplied by the plate voltage of 400, gives a power input of approximately 75 watts.

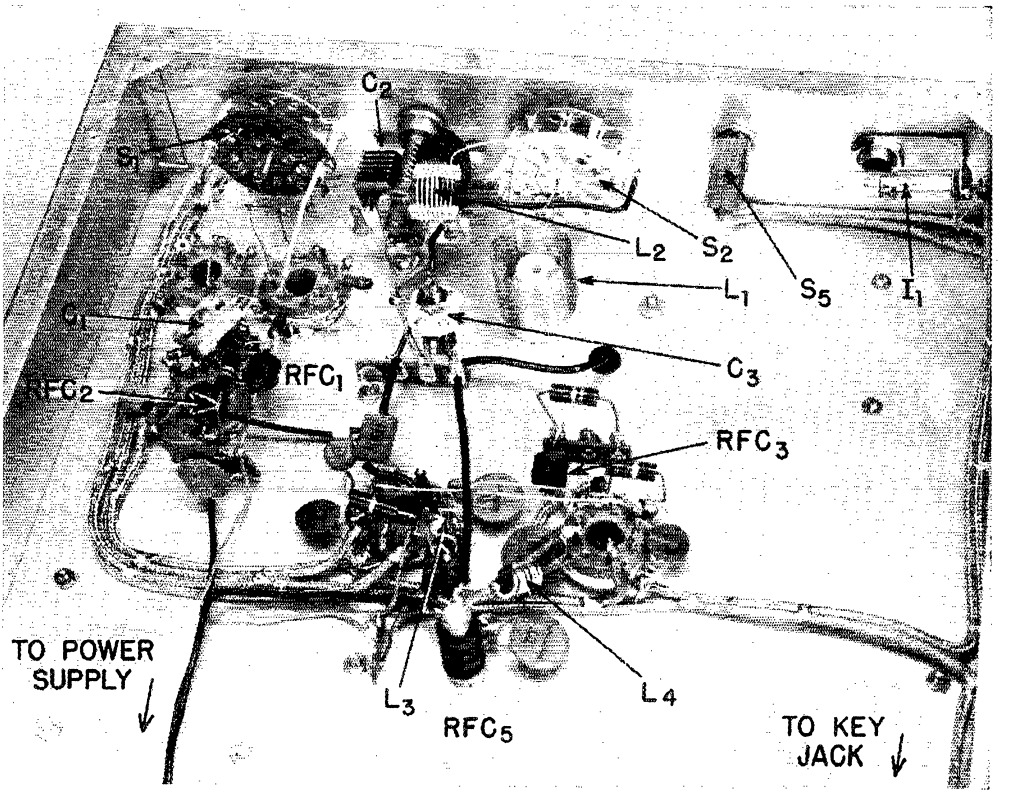
With the amplifier fully loaded, the supply voltage should be about 400. The screen voltage should be approximately 310 volts, and the oscillator screen voltage 200. The key-open voltage of the supply should be about 550 volts. If more than 6 milliamperes of grid current is obtained with the amplifier fully loaded and the oscillator tank circuit tuned to resonance, the oscillator circuit should be detuned to bring the grid current down to 6 milliamperes.

In the oscillator circuit, the purpose of C_1 is to adjust the feedback to the point that gives the best keying characteristics. If a crystal is slow to start oscillating, the signal will tend to be chirpy. By adjusting C_1, it should be possible to minimize the chirp.

When the transmitter has been checked out with a dummy load, and you have become familiar with the tuning procedure, the transmitter is ready for use on the air. As mentioned earlier, the rig is designed to work into a 50- or 70- ohm load. This, of course, means either a matched coax line to an antenna coupler or balun, or a matched coax-fed antenna. A simple multiband antenna system was described in *QST* for July. It is recommended that the reader build an s.w.r. bridge, such as the "Monimatch" described in *QST* for October, 1956. With the use of such a bridge, it is a simple matter to adjust the antenna system so that the pi network is working into the correct load.

The shielded construction shown, and the use of shielded wire in the low-potential circuits, should provide adequate TVI suppression in most localities. However, in weak-signal areas where v.h.f. TV channels are in use, it may be necessary to use a low-pass filter (see the TVI chapter of the *ARRL Handbook*) at the output of the transmitter.

Bottom view showing the arrangement of components underneath the front portion of the chassis. The two crystal sockets are between S_1 and the 6AG7 socket. Note the use of shielded wire in the low-potential leads. Not shown are C_6 and C_7, which are mounted between lug strips farther to the rear, and J_1, which is set in the rear wall of the chassis.



• Recent Equipment —

The HQ-100 Receiver

After you've twisted the knobs and lifted the lids on a lot of radio receivers down through the years, and also frequently strolled down Automobile Row and lifted hoods and kicked tires, you can't help but come to the conclusion that there is quite a similarity in the two fields. Receiver manufacturers are continually coming up with real improvements as well as fads that can best be classified as "sales gimmicks," and certainly no one needs to be told that the same is true for cars. In both fields manufacturing expedients often result in worthwhile improvements that are passed along to the customer as a saving in price or an improvement in performance and convenience.

The HQ-100 can help us with this thesis. Manufacturing techniques that hold the price down represent little or no compromise with performance, and there are a few new features that may set the style for future receivers. A prime example is the die-cast front panel. Solid as a rock, by comparison with the panels of some other receivers, it was used because it is less expensive and also made the assembly job less costly.

We'll give you a quick run-down on the electrical end and then get back to some of the mechanical features. A block diagram of the receiver is shown in Fig. 1. It starts out as conventionally as one might expect: single r.f. stage, a mixer and a separate h.f. oscillator. This is a two-dial receiver, one dial for main tuning and the other for band spread. It covers .55 to 30 Mc. in four ranges, although the band switch has five positions. The fifth position is a special one that changes some connections to give better band spread on the 20-meter band. The four ranges are broken down into 0.55 to 1.6 Mc., 1.6 to 4.0, 4.0 to 10.0 and 10.0 to 30.0. On band spread, 80 meters is covered by 5¾ turns of the knob, 40 and 20 by 3 turns, 15 by 2¾ turns and 28.0 to 29.7 requires 4 revolutions. A 0-100 log-ging scale is included on the band spread dial.

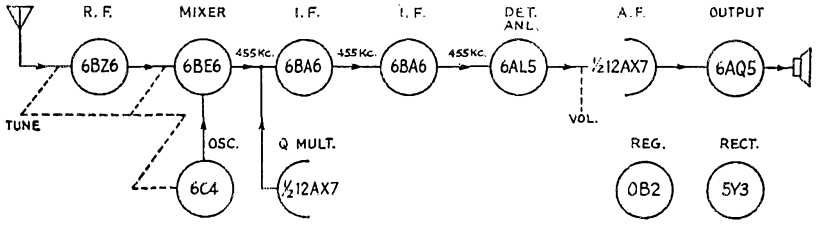
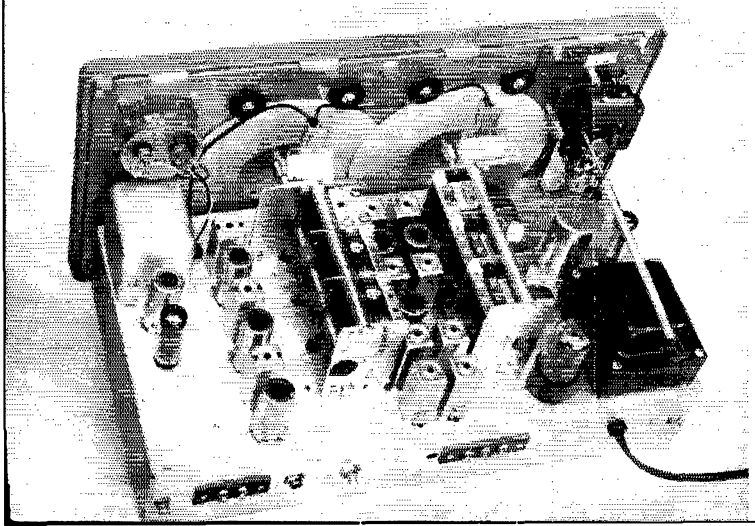


Fig. 1 — Block diagram of the HQ-100 receiver.

Getting back to Fig. 1, there are two stages of 455-kc. i.f. following the mixer, with a *Q* multiplier at the output of the mixer. This *Q* multiplier has only the "peak" type of operation, so in effect it is a continuously-variable type of i.f. selectivity. It has FREQUENCY and SELECTIVITY panel controls. If you glance back at Fig. 1 you may think the b.f.o. was left off the sketch accidentally, but the fact is that the *Q* multiplier, oscillating instead of just being regenerative, is used for the b.f.o. More about that later. The normal i.f. bandwidth is 6 kc. at −6 db.; with the *Q* multiplier in, it ranges from about 3 kc. down to 300 cycles. The diode second detector and the series-diode automatic noise limiter are conventional. A.v.c. is applied to the r.f. and first i.f. The S-meter circuit is similar to that in the HQ-150.[1]

The audio system has a twist in it that we'll explain, because you may see references to

[1] "Recent Equipment," *QST*, December, 1956.



The HQ-100 receiver removed from its perforated-metal wrap-around case. The high-frequency coils and the tubes associated with these circuits are mounted above chassis between the two tuning gangs. The *Q*-multiplier circuit is contained in the drawn aluminum can at the extreme left. The gadget at the upper right is a clock; its time and switch are set from the rear of the receiver.

♦

QST for

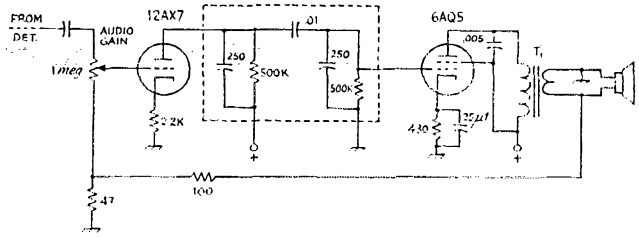


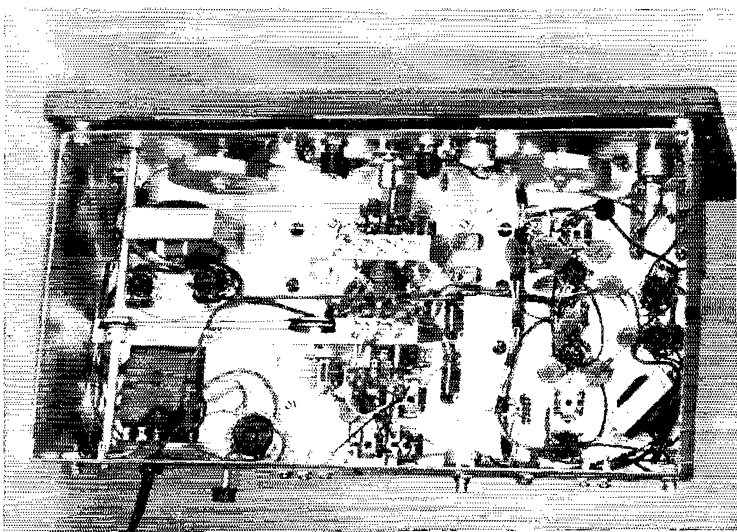
Fig. 2 — The "Auto-Response" circuit shown here is an application of negative feedback in the amplifier that changes the response at various settings of the gain control.

"Auto-Response" in the ads and wonder what it's all about. The circuit is shown in Fig. 2, and those familiar with such things will recognize it as a negative feed-back circuit. Some of the signal developed across the secondary of the output transformer, T_1, is introduced back to the 12AX7 grid via the 100- and 47-ohm resistors. At low settings of the AUDIO GAIN control this represents quite a bit of negative feedback; as the gain control is opened up, the negative feedback is reduced. Normally, the response of the amplifier would be reduced at the higher frequencies by the 250- and 5000-$\mu\mu$f. capacitors and at the low end by the coupling capacitor and the limitations of T_1. This is exactly what happens at maximum setting of the gain control, when the negative feedback is out of the picture, and the response is down 6 db. at 110 and 3000 cycles and 20 db. down at 35 and 8500 cycles. However, when you back off the audio gain control, the negative feedback comes into play to make the gain more nearly constant over the audio range, and with the control open 25 per cent the response is down 6 db. at 40 and 8500 cycles. The result is that when you have the audio gain cranked wide open (as on weak signals) you have a selective audio system, and when it is backed off (for loud signals or local b.c. reception) you have a wider audio amplifier.

The components in Fig. 2 surrounded by dotted lines are all part of a printed circuit assembly, as are the capacitors and resistors in the noise-limiter circuit.

The front panel of the HQ-100 will be a shocker to many old hands in the game, because the first thing to catch their eyes will probably be the clock (optional equipment, like power steering or white walls). "What the blazes is a clock doing on a ham receiver?" is the likely comment. But the more you think of it, the more logical the clock becomes. You need a clock for logging, and one on the panel is handy. This clock can be set to turn on your receiver at any desired time, to assure you of a warmed-up receiver or just as a substitute for the alarm clock if the receiver is left tuned to a b.c. station. In our snidest manner we accused the manufacturer of including the clock because the receiver has high warm-up drift. He took it good-naturedly and replied that, to the contrary, this receiver has very low warm-up drift. We couldn't take that lying down and asked, "How come?" It was attributed to some good design and the perforated-metal case that limits the temperature rise to about 15° C.

Getting back to the panel, the dial drive is rim drive of the dial scales, with flywheels on the knob shafts to give a smooth action. Some of the panel controls have already been mentioned; there is a SENSITIVITY (i.f. gain) control, ANTENNA (trimmer), toggles for switching from a.v.c. to manual gain and for cutting the limiter out, and a switch marked OFF, REC, SEND, Q MULT. In the REC position the receiver is normal, with the *Q* multiplier plate voltage removed. The SEND position opens the lead to the regulator tube, removing plate voltage from the oscillator and screen voltage from the r.f., mixer, and two i.f. stages. The Q MULT position brings the set back to the REC condition but with plate voltage to the *Q* multiplier. For c.w. reception you turn the *Q* multiplier selectivity control all the way to a stop marked BFO; this throws it into oscillation and also disconnects it from the mixer plate. Anyone familiar with receiving techniques will recognize that a b.f.o. and a 6-kc. bandwidth i.f. don't give a very high degree of single-signal c.w. reception, and an HQ-100 owner who spends a lot of time on c.w. would benefit considerably



The wiring under the chassis of the HQ-100 is clean and compact, primarily as a result of the uncluttered r.f. wiring. The string drive is for the antenna trimmer.

by adding a b.f.o. at the detector, thus reserving the *Q* multiplier for its selectivity job. The manufacturer informs us that a kit will be available soon that permits the easy installation of a 455-kc. *crystal-controlled* b.f.o. If you're wondering about the flexibility of a crystal-controlled b.f.o., remember that you can change the peak frequency of the *Q* multiplier around, so the end result is the same. We tossed in a little transistor b.f.o. in the lab, and easily got single-signal c.w. reception.

You may have noticed that the manual gain control is applied to the i.f. stages only, and the r.f. stage runs wide open all the time (except on a.v.c.). However, the antenna trimmer can be used as an r.f. stage gain control. Through string drive of the antenna trimmer, 300 degrees rotation of the knob accounts for 180 degrees of the capacitor.

The rear of the chassis carries the antenna and speaker terminals, the S-meter zero set, and the phone jack. We'll defend this break with tradition and the usual panel-mounted phone jack; in fact, much the same thing was done in an i.f. strip described elsewhere in this issue.

The clock can be set from the rear of the receiver only, and a small panel switch under the clock turns the timer feature on or off.

If you get a chance to look at the bottom of an HQ-100, you will see some of the manufacturing techniques we mentioned at the start. For example, all of the front-end coils are mounted in shield cans above the chassis. These assemblies drop into place and are secured by spring clips. The terminals are always in the same place, of course, and whoever does the wiring simply drops some punched straps over many of these terminals and then solders the connections. At other spots, preformed heavy wire leads are used for connections. The net result is that the receivers show excellent consistency of dial calibration in production. This doesn't mean that you can throw away your 100-kc. standard; you can, of course, but you would be crazy to, with *any* receiver.

The switch assembly for the front end is simplicity itself, but the mechanical design is such that we wish we could use it in some home-brewed gear. The switch sections mount on pillars on two shield partitions. These partitions also serve as the interstage shield between r.f. and mixer and as the ground bus for the band-spread tuning capacitor. A flatted fibre rod is then passed through the three switch sections and brought up to the panel band-switch coupling. The net result is an r.f. section with nothing running between stages except what is wired there. Try and get the same clean construction with the switches we hams can buy; we always end up with the two support bars and a metal shaft.

Tube sockets are riveted to the chassis, but each socket mount is also soldered to the chassis, to insure good ground connections.

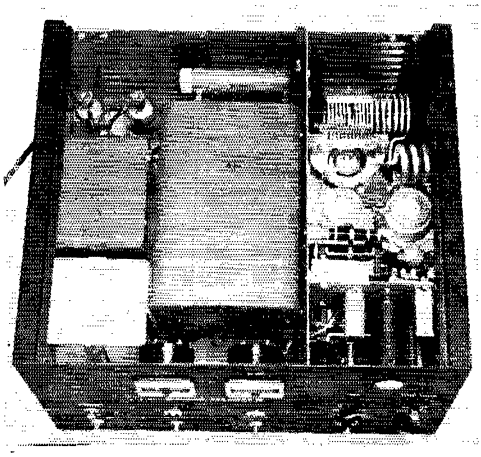
Last, but not least. Even though you know all about receivers, read the instruction book. It is only 18 pages long, easy reading, and you might pick up a few hints. — *B. G.*

The SSB-1000 Linear Amplifier

PACKAGING a kilowatt band-switching amplifier, complete with power supply, in a receiver-type cabinet would have been a "blue-sky" project not long ago. But thanks to new high-power tubes of compact dimensions Eldico has been able to realize just such an amplifier in the model SSB-1000 linear. Using a pair of 4X250B tetrodes in parallel, the amplifier is rated at a kilowatt input on c.w., a kilowatt peak-envelope input on single side band, and 700 watts input as an a.m. linear. The unit is 17¼ inches wide, 11 inches high, and about 16 inches deep over all. The weight is 98 pounds — a reminder that a kilowatt power supply is still a kilowatt power supply.

The circuitry in the r.f. section is familiar — pi-network output circuit, parallel-tuned grid tanks with link input, "capacitative-bridge" neutralization of the amplifier. The output tank coil is sectional, with taps for the various bands.

(Continued on page 142)



Looking into the top of the SSB-1000 amplifier. The r.f. section, at the right, occupies about one-third of the total space; the remainder is power-supply equipment. The amplifier tank switch is mounted horizontally under the tank coil and is operated by a right-angle drive ganged with the grid-circuit band switch. The oscilloscope assembly is on a small chassis mounted above the tank and loading variable capacitors, near the front panel.

A High-Power 50-Mc. Transmitter

Featuring Operating Convenience and TVI Prevention for the 6-Meter Man

BY MASON P. SOUTHWORTH,* W1VLH

• This transmitter combines a versatile v.h.f. exciter and a high-power 50-Mc. amplifier in one compact rack-mounted package. The exciter features band-pass circuitry for ease of operation, complete anti-TVI treatment, and provision for driving a 144-Mc. tripler as well as the 50-Mc. amplifier. The amplifier uses any of three popular tetrodes, and will take inputs up to a kilowatt. Either unit can be built separately, if you so desire.

THERE was a time when description of a high-power transmitter for 50 Mc. only would have raised a few eyebrows. Not so today; the 6-meter band has really come into its own of late, and many hams are finding it to be as interesting amateur territory as any band available. This transmitter was designed especially for the serious 50-Mc. men. In two units, it can be built and used in stages.

The exciter portion provides up to 40 watts output at 50 to 54 Mc., as a low-power transmitter, or as an exciter for a kilowatt final. It will supply power at either of two levels at 48 Mc., to drive frequency multipliers to 144 Mc.

The high-power amplifier uses any one of three popular tetrode tubes. Power input depends on the tube selected, but it can be anything up to the legal limit. Compact one-band design enables the exciter and amplifier to be mounted on a single 10½-inch rack panel.

The Exciter

Increased activity places a premium on the ability to shift frequency quickly and easily. This means v.f.o. operation on lower bands, but as a good v.f.o. is not easily designed for 50 Mc., crystal control is still the most reliable and satisfactory means of frequency control for this and higher frequencies. With crystals cheap and plentiful, a high degree of flexibility can be obtained at moderate cost.

Settling on crystal control, we next have to decide on the type of oscillator. Should it be the conventional tetrode variety, using low-cost crystals, or a v.h.f. oscillator of the overtone type? Starting on a high frequency makes elimination of unwanted crystal harmonics a simple matter, but it involves expensive crystals, and rules out the cheap surplus supply. Crystals in the 6- or 8-Mc. range provide good stability, and some experimentation showed that it was no great problem to trap out the unwanted harmonics. The latter course is followed, and in addition, the tuned circuits are set up for band-pass characteristics. No tuning, other than in the output circuit of the exciter, is required in working over a 4-Mc. range. This can be 48 to 52 Mc., if one wants to use the exciter for 2-meter work also, or 50 to 54 Mc. for 6 meters only.

Circuit Details

The oscillator is a 5763, using crystals above 6, 8, 12 or 24 Mc. for 144-Mc. use, or 6.25, 8.34, 12.5 or 25 Mc. for 50-Mc. operation. Its plate circuit tunes 24 to 27 Mc., quadrupling, tripling or doubling the crystal frequency. (Crystals at 24 to 27 Mc. are overtone cuts that oscillate at one-third the marked frequency, in this circuit.) A series-tuned trap, L_1C_1, in the oscillator plate circuit traps out the third harmonic of 6-Mc. crystals. This 18-Mc. energy otherwise would pass on to the next stage, where it would be tripled in frequency, the resultant signal falling in Channel 2. This unwanted oscillator harmonic has been found to be a common cause of TVI in Channel 2 from 50-Mc. operation.

The second stage, also using a 5763, is a doubler at all times. A second trap, C_4L_4, connected in the doubler grid circuit, is tuned to the 7th harmonic of the 8-Mc. crystals used. The two traps were designed to prevent radiation of energy in Channel 2, the most difficult TVI problem a 6-meter man is likely to encounter. They can be

* ARRL-IGY Project Coordinator.

Complete r.f. unit for high-power 50-Mc. transmitter. Exciter in ventilated compartment at left has band-pass circuits for maximum operating convenience.

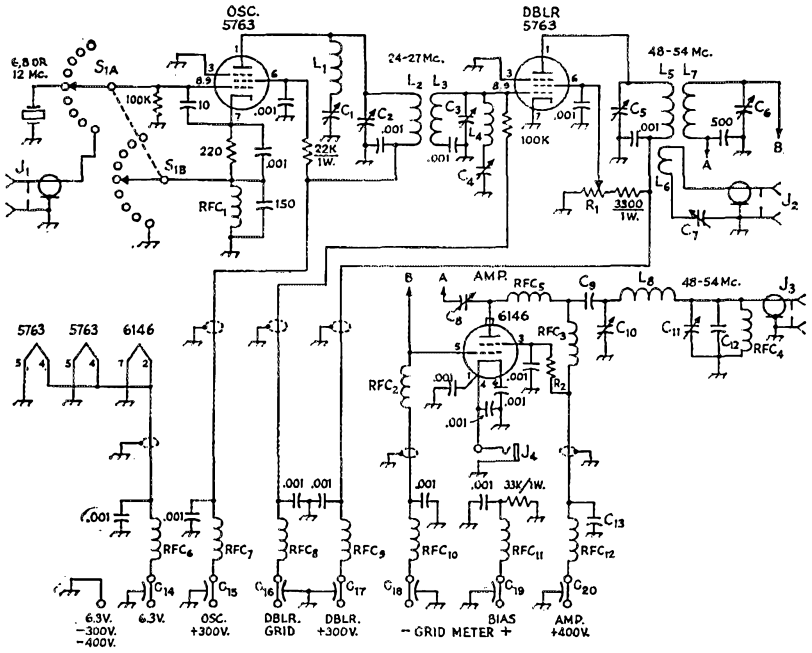


Fig. 1 — Schematic diagram of 48–54-Mc. exciter. All capacitances less than .001 μf. are in μμf. All .001-μf. capacitors are disk ceramic. All resistors are ½ watt unless otherwise specified.

C_1, C_2, C_3 — 35-μμf. miniature trimmer (Hammarlund MAPC-35).
C_4 — 10-μμf. miniature variable (Hammarlund MAC-10).
C_5, C_6 — 20-μμf. miniature variable (Hammarlund MAC-20).
C_7 — 50-μμf. miniature trimmer (Hammarlund MAPC-50).
C_8 — 15-μμf. miniature trimmer (Hammarlund MAPC-15).
C_9, C_{13} — .001-μf. 3000-volt disk ceramic.
C_{10} — 35-μμf. miniature variable (Hammarlund HF-35).
C_{11} — 100-μμf. miniature variable (Hammarlund MAPC-100B).
C_{12} — 100-μμf. 1000-volt mica.
C_{14}–C_{20} — .001-μf. feed-through-type ceramic (Centralab FT-1000).
J_1, J_2, J_3 — Coaxial chassis fitting (Amphenol 83-1R).
J_4 — Open-circuit phone jack.
L_1 — 16 turns No. 21, ⅝-inch diam., 32 t.p.i. (B & W Miniductor No. 3008).
L_2, L_3 — 12 turns each No. 20, ⅝-inch diam., 16 t.p.i. (B & W Miniductor No. 3007). Make from one piece of Miniductor with 5 turns removed between coils. Cold ends are adjacent.
L_4 — 2 turns No. 20, ½-inch diam., 16 t.p.i. (B & W Miniductor No. 3003).
L_5, L_7 — 6 turns No. 20, ½-inch diam., 16 t.p.i. (B & W Miniductor No. 3003). Make from one piece of Miniductor with 3 turns removed between coils.
L_6 — 2 turns hookup wire wound around cold end of L_5 and cemented in place.
L_8 — 4 turns No. 18, ¾-inch diam., 8 t.p.i. (B & W Miniductor No. 3010).
R_1 — 25,000-ohm 4-watt pot.
R_2 — 33,000 ohms, 3 watts (3 100,000-ohm 1-watt in parallel).
RFC_1 — 2.5-mh. r.f. choke (National R-100S).
RFC_2, RFC_3, RFC_4 — 7-μh. solenoid v.h.f. choke (Ohmite Z-50).
RFC_5 — 6 turns No. 22 tinned wire, ¼-inch diam., spaced one-wire diam.
RFC_6–RFC_{12} — 15 turns No. 24 enam. close-wound on high value 1-watt resistor.
S_1 — 2-pole 12-position miniature ceramic rotary (Centralab PA-2005).

modified for other frequencies to suit local problems. An example is the 10th harmonic of 8-Mc. crystals, that can cause trouble in Channel 6. A trap for the 5th harmonic of the crystal frequency in the oscillator plate circuit would probably be most effective here.

The 6146 amplifier stage has a shunt-fed pi-network plate circuit. The choke, RFC_4, is provided to short out the d.c. voltage that would appear on the output circuit if C_9 should break down. For best stability over the entire range, the 6146 is neutralized. The capacity-bridge circuit is used. The choke in the plate lead, RFC_5, may or may not be required to suppress parasitic oscillation. Note that each of the three cathode terminals is bypassed separately at the socket. The exciter may be keyed in the 6146 cathode jack, J_4.

Double-tuned band-pass circuits are used for coupling between the oscillator and doubler, and the doubler and 6146. Properly adjusted, and placed as shown, these circuits provided essentially flat response across a 4-megacycle range, so only the 6146 plate circuit and the crystal switch need be used in changing frequency. A potentiometer in the doubler screen circuit provides for excitation control to the 6146.

Provision is made for taking off output from the 5763 doubler plate circuit through L_6, to drive a frequency multiplier from 48 to 144 Mc. An example of this use is the tripler-driver-amplifier described in November, 1955, *QST* and the current *Handbook*, where a 6360 tripler is driven in this manner. This transmitter and the 2-meter job described by W1HDQ were designed as companion units. Note that the keying jack in the

6146 cathode lead is the open-circuit type. Removing the key from the jack thus disables the 6146 stage when the first two stages are being used to drive a 144-Mc. frequency multiplier stage as described above. Separate heater switches allow the exciter and final amplifier to be operated separately. Plate voltage may be left applied to both 50- and 144-Mc. r.f. sections, the filaments and heaters being energized only in the units in use.

Construction

The exciter is built on a 5 × 10 × 3-inch aluminum chassis, with a bottom plate and a perforated aluminum cage to complete the shielding. The small knobs at the lower left of the front view are for the crystal switch and the excitation control. The crystal switch has 12 positions. Ten are for the crystals on the multiple crystal socket (Johnson No. 126-120-1). One more crystal position is provided on the front panel (a convenience if you want to use a frequency not covered by the 10 crystals in the multiple socket), and the 12th switch position is for an external v.f.o. It connects the 5763 grid to the coaxial v.f.o. input fitting, and shorts out RFC_1 and its parallel capacitor. The stage then functions as a frequency multiplier. The output frequency of the v.f.o. could thus be in the 6-, 8- or 12-Mc. range. Above the excitation control may be seen the knobs for the 6146 plate and output coupling capacitors.

Three coaxial connectors are on the rear wall of the exciter. The one at the outside edge is for v.f.o. input. The others are the doubler and 6146 output fittings. Two 4-terminal steatite strips handle the various power and metering leads. Adjacent to each terminal except the ground connection is a feed-through by-pass capacitor to take the power lead through the chassis.

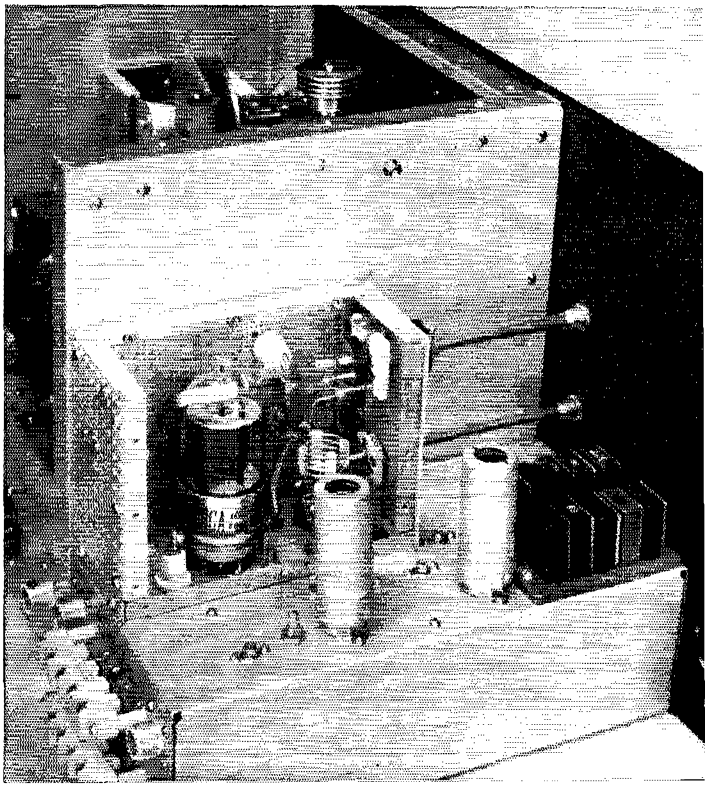
TVI that might result from radiation of harmonics by the power leads is prevented by filtering of each lead. The feed-through bypasses are connected to the exciter circuits through r.f. chokes, the inner ends of which are again bypassed with small disk ceramic capacitors. All power leads are made with shielded wire, bonded at intervals to the chassis.

The side view shows the multiple crystal socket at the front of the chassis. Separate crystal sockets may be used if desired. The oscillator and doubler tubes are in the foreground. The trap capacitors, C_1 and C_4, are adjacent to these tubes, while C_2 and C_3 are between them, a bit off their center line. To the rear of the 5763 doubler are C_5 and C_6. The grid tuning capacitor for the 6146, C_6, is just visible inside the amplifier compartment.

A separate lead is provided for each power circuit. Fixed bias for the 6146 is brought in from the bias supply that is part of the high-power amplifier assembly. This bias is desirable to prevent the plate current from rising too high when the excitation is backed off. If the exciter is used alone, fixed bias is unnecessary. External meters can be connected in any of the circuits at the terminal strips.

The sides, back and top of the amplifier cage are Reynolds "Do-It-Yourself" perforated aluminum sheet, now available in many hardware stores. The pieces are joined together at the corners with lengths of ⅜-inch aluminum angle which can be bought or bent up from sheet stock. The tuning and loading capacitors are mounted on the front of the cage, so this part should be a piece of solid sheet stock rather than the perforated material. The dimensions of the cage are not critical. Ours came out 5¾-inches deep, 2⅝-inches across, and 4¼-inches high. Make provision for removing the top and outside sheets of perforated stock for convenience in servicing, when the exciter is mounted against the amplifier unit. Extension shafts and couplings bring out the amplifier controls to the panel.

Inside the cage, the 6146 can be seen with its socket mounted above the chassis on ½-inch metal sleeves. The cathode and screen bypasses should connect to separate ground lugs on the top of the chassis, with the shortest possible leads.



Exciter end of the 50-Mc. transmitter with shielding removed.

This wiring can be done conveniently before the socket is mounted on the chassis if nuts are used temporarily to hold the ground lugs in place over the socket mounting screws. The neutralizing adjustment, C_8, is mounted on the rear wall of the cage, and wired to the 6146 plate clip and the feed-through bushing with $\frac{3}{8}$-inch wide strips of thin copper. A ceramic insulator mounted on the wall near the 6146 plate cap supports the junction of RFC_5, RFC_3, and C_9. An ordinary tie point supports the other end of RFC_3 and the shielded power lead. The plate coil, L_8, can be seen in back of the 5763 doubler tube, wired between the stators of C_{10} and C_{11}. C_{12} and RFC_4 are mounted near C_{11}, and hooked between its stator bar and a ground lug. A short length of RG-58/U coax runs down through a hole in the chassis from C_{11} over to J_3.

Most of the parts visible in the below-chassis view can be identified from our description of the panel, rear, and topside layouts. The oscillator cathode choke, RFC_1, can be seen mounted upright near the oscillator tube and crystal sockets. Both 5763 sockets should be oriented so that Pins 4 and 5 are adjacent to the outside chassis wall. L_1 is visible between C_1 and the oscillator tube socket. L_2 and L_3 run between this socket and that of the doubler. These coils are made from a single length of Miniductor stock with the specified number of turns removed to provide spacing between them. The same applies to L_5 and L_7. These are to the left of the 6146 socket. L_4 is between the doubler socket and C_4. The trap coils are mounted with their axes vertical, to minimize coupling to the band-pass coils. L_6 is wound around and cemented to the by-passed end of L_5.

The power lead r.f. chokes are mounted between single-terminal tie points on the rear lip of the chassis and the feed-through capacitors. The disk ceramic bypasses are then applied at the tie points. A single-terminal tie point mounted under RFC_1 holds one end of the 3300-ohm doubler screen resistor and the lead over to the terminal strip at the rear. A double tie point is mounted between the two 5763 sockets to support the bypassed ends of L_2 and L_3. Another over nearer the rear of the chassis supports the cold end of L_5 and the bottom of the doubler grid resistor.

Wiring will be simplified by the following procedure. Before mounting the crystal switch, ground one terminal of each crystal socket through a bus wire. Connect short lengths of tinned wire to the other terminal of each socket that will be under the switch. Then when the latter is installed, the wires can be run to the proper contacts and soldered in place. Note that the front wafer of the switch is used for shorting out RFC_1, while the crystal socket connections are made to the rear wafer, which is more accessible. The v.f.o. input socket is connected to the proper switch contact with a length of RG-58/U coax.

In assembling the power lead filtering components at the rear of the chassis, the disk ceramic bypasses can most easily be mounted on the tie points before the latter are fastened inside the chassis. Wiring up the power leads should be done before the r.f. chokes are mounted in place.

Bottom view of the exciter, showing the band-pass circuits and TVI protective measures.

The High-Power Amplifier

Though the exciter and amplifier are pictured on a single panel, the possibility of using either by itself should not be overlooked. The exciter will make a fine low-power transmitter, and if you already have an output of 15 watts or more available on 50 Mc., the design shown here for the final amplifier might suit your requirements for increasing power.

The amplifier follows proven principles employed in other amplifiers of this general type that have appeared in *QST* and the *Handbook* for

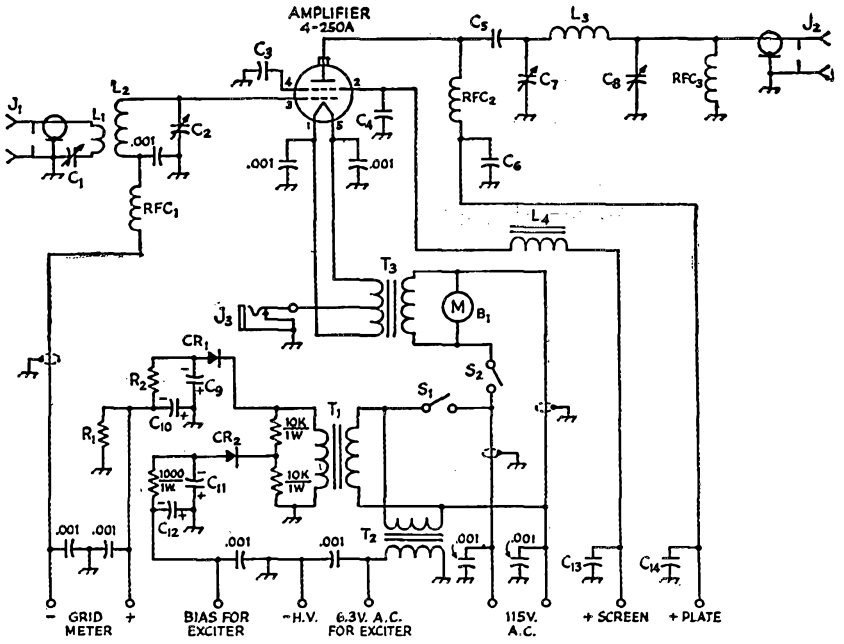


Fig. 2 — Schematic diagram and parts list for the 4-250A amplifier. All capacitors marked .001 μf. are 600-volt disk ceramic.

C_1 — 50-μμf. miniature variable (Hammarlund HF-50).
C_2 — 15-μμf. miniature variable, double-spaced (Hammarlund HF-15X).
C_3, C_4, C_{13} — .001-μf. 1000-volt disk ceramic.
C_5, C_6, C_{14} — 500-μμf. 20,000-volt ceramic (Cornell-Dubilier MMI20T5).
C_7 — Disk-type capacitor with 3-inch diam. plates (made from Millen 15011).
C_8 — 250-μμf. variable, double-spaced (Johnson 250F20).
C_9, C_{10}, C_{11}, C_{12} — 12-μf. 250-volt electrolytic.
CR_1 — 65-ma. selenium rectifier (Federal 1002A).
CR_2 — 20-ma. selenium rectifier (Federal 1159).
J_1, J_2 — Coaxial chassis fitting (Amphenol 83-1R).
J_3 — Closed-circuit phone jack.
L_1 — 5 turns No. 24, ½-inch diam., 32 t.p.i. (B & W Miniductor No. 3004).
L_2 — 4 turns No. 18, ¾-inch diam., 8 t.p.i. (B & W Miniductor No. 3010).
L_3 — 6 turns No. 12 tinned wire, 1-inch diam., spaced twice wire diam.
L_4 — Filter choke, about 10-h. 100-ma. (Triad C-10X).
B_1 — Blower motor and fan (Allied Cat. No. 72P715).
R_1 — 20,000 ohms 10 watts.
R_2 — 500 ohms 2 watts (2 1000-ohm 1-watt resistors in parallel).
RFC_1, RFC_3 — 7-μh. solenoid choke (Ohmite Z-50).
RFC_2 — Solenoid choke, 42 turns No. 24 d.c.c. close-wound on ½ inch diam., 2½-inch long insulator (National CS-2).
S_1, S_2 — Single-pole single-throw toggle switch.
T_1 — Power transformer, 135 volts at 50 ma. (Triad R-30X).
T_2 — Filament transformer, 6.3 volts at 3 amp. (Triad F-16X).
T_3 — Filament transformer, 5.2 volts c.t. at 15 amp. (Triad F-11U).

several years. Simplification for one-band operation led to an easily constructed and highly efficient design for 50-Mc. It will take up to the legal limit of power with a 4-400A tube, 750 watts with a 4-250A, or 400 watts with a 4-125A.

The plate circuit is a larger version of the one used in the 6146 stage of the exciter, a shunt-fed pi network. Operation turned out to be completely stable without neutralization, probably because the natural neutralized frequency of the tubes is close to 50 Mc. Provision was originally made for neutralization, but it was found to be unnecessary. No tendency toward parasitic oscillation has been discovered, so no parasitic suppression devices are used. If the layout is varied appreciably from that shown, the builder should check for both types of instability with great care.

The jack in the filament center-tap lead is for keying, or for insertion of a grid-bias modulator. A bias supply that delivers about 50 volts negative for the 6146 and 150 for the final amplifier is included in the final stage assembly. Filament transformers for the exciter and final are also part of this unit. Separate filament switches are included; one for the exciter and the other for the final tube and the blower motor. Power leads, except the high voltage, are brought in on an 8-pin plug.

Building the Amplifier

A 12 × 10 × 3-inch aluminum chassis is used for the amplifier unit. Thus, it may be combined with the exciter on a 10½-inch rack panel, if desired. The amplifier controls mounted near the panel bottom are, left to right, the input link reactance capacitor, C_1; the grid tuning capacitor, C_2; and S_1 and S_2. S_1 applies a.c. to the transformer for the exciter heaters and to the bias supplies. S_2 applies a.c. to the filament transformer of the amplifier and starts the cooling fan. Above the switches on the panel are the amplifier plate tuning and loading controls.

On the rear of the chassis, coaxial connectors

for r.f. input and output are mounted at either end. Between them are the high-voltage connector for the plate supply, the cathode circuit jack, and a fitting for the remaining power and meter leads.

Above the chassis, the 4-250A tube is conspicuous near the front of the chassis. Note that its socket is mounted on ½-inch sleeves. Holes ⅜ inch in diameter are drilled in the chassis directly underneath those provided in the socket for the passage of cooling air. Holes are also drilled adjacent to the cathode, grid, and screen pins to pass their leads. Bypassing of cathode and screen is done above the chassis. The heat-radiating plate connector for the 4-250A was cut down to four fins to reduce the over-all height requirement. The filament transformer, T_3, and the screen modulation choke, L_4, are also topside.

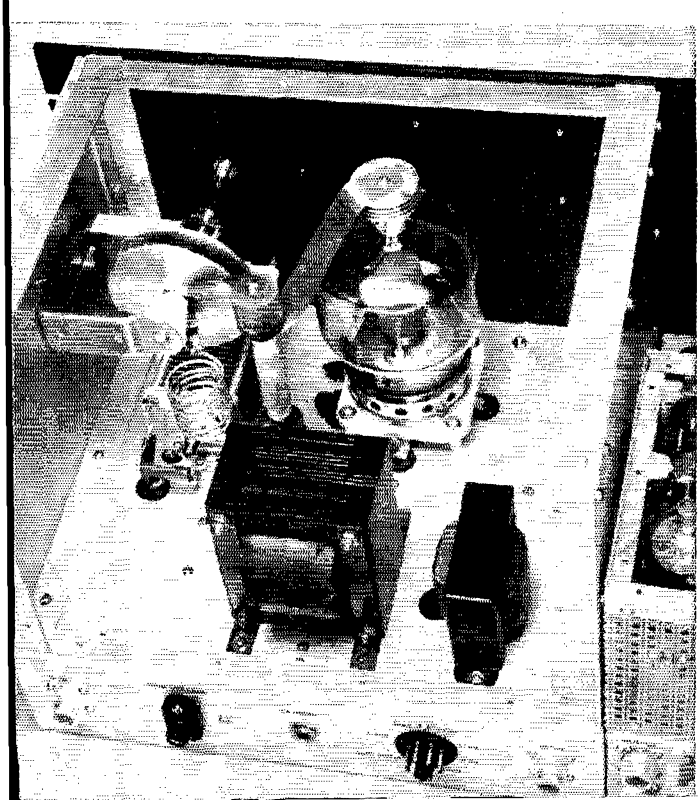
The amplifier plate circuit components are to the left of the tube. The tuning capacitor, C_7, originally a neutralizing capacitor, is mounted on the side wall of the shielding assembly. Two modifications should be made to the neutralizing unit before mounting. The circular plates supplied should be replaced with larger ones, 3 inches in diameter, to increase the available tuning range. The bearing assembly of the rotor disk must be temporarily removed, and a strap of copper run between the screw holding the bearing in place and the opposite (grounded) end of the square ceramic insulating pillar. This grounds the capacitor rotor. Two copper straps must be inserted between the stator disk and its insulator, to connect the stator with the blocking capacitor, C_5, and with L_3.

The blocking capacitor, the shunt-feed r.f. choke, RFC_2, and the high-voltage bypass, C_6, are assembled into one unit before mounting in the amplifier. This is done with the aid of the hardware supplied with the TV-type high voltage capacitors. The by-pass capacitor, on the bottom of the stack, is equipped with one threaded terminal and one tapped one. The latter is on the bottom end, for fastening the assembly to the chassis. The threaded terminal screws into the 2½-inch ceramic insulator upon which RFC_2 is wound. The ends of the choke winding are secured by lugs at each end of the insulator. C_5 should be fitted with a threaded terminal at the lower end for screwing into the top of the insulator. This also serves to fasten one end of the ¾-inch wide strip of copper which runs up to the 4-250A plate cap. Finally, the longer of the two copper strips coming from the stator of C_7 is screwed to the top of C_5. A ½-inch feed-through bushing brings the high voltage up to the hot side of C_6. The loading capacitor, C_8, is mounted on the chassis directly underneath C_7. The plate coil, L_3, gets rather warm when the rig is operated at high power level, so both of its ends must be bolted in place rather than soldered. One end is bent around and fastened under a nut provided on the stator of C_8. The other is bolted to the short length of copper strap previously fastened to the stator of C_7. A length of RG-8/U coaxial cable is run between C_8 and J_2. At the capacitor end, this cable is connected to lugs under the stator and frame mounting screws.

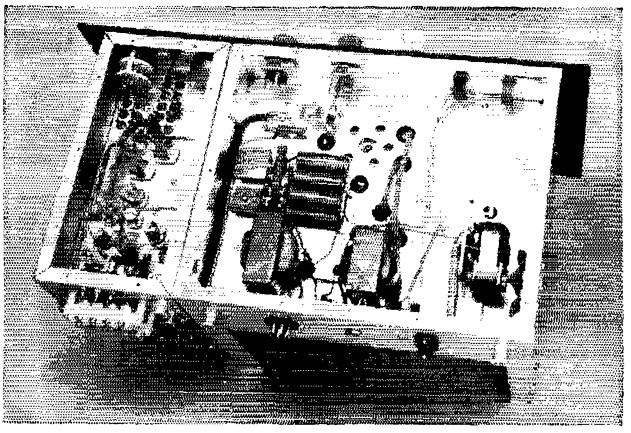
Solid sheet aluminum is used for the enclosure of this unit, as it must be reasonably airtight except for holes directly above the tube itself. The side that supports C_7 must be of fairly heavy stock for rigidity. Home-bent ¾-inch angle stock was used to hold the assembly together. It will be found that if the over-all height of the unit is kept to just about that of the 10½-inch rack panel, there will be enough clearance above the tube plate connector.

Most of the under-chassis components are visible in the bottom view. The grid circuit is near the front edge of the chassis. Copper strap connects the tube socket grid pin with the stator of C_2. L_2 then is soldered between this strap and a tie point. L_1 is slid inside the cold end of L_2, and cemented lightly in place.

The cooling fan sucks air in from



Interior of the 50-Mc. final amplifier. Tube may be a 4-125A, 4-250A or 4-400A, depending on the power level desired.



Bottom view of entire transmitter. Note that the exciter and final amplifier are built as completely separate units, though they are mounted on a single panel. Amplifier includes bias and filament supplies for both.

the side of the amplifier near the back corner. The motor is mounted on an aluminum bracket. The fan as supplied will blow, rather than suck, so the blades must be bent back to reverse their pitch. A small piece of aluminum window screening shields the hole cut in the chassis side for the fan.

Bias supply components occupy the lower left quarter of the bottom view. Layout and wiring of this portion of the rig is anything but critical. Shielded wire was used for all power leads. Bypassing at the power connector should be done with very short leads, and C_{14} should be mounted as close as possible to the high-voltage connector.

Exciter Adjustment

An initial setting of the exciter controls can be made before power is applied, if a grid-dip meter is available. The series traps, L_1C_1 and L_4C_4, introduce varying amounts of reactance across the tuned circuits when they are adjusted, so some further adjustment will be needed after these are set up finally, but the following procedure will result in a close approximation.

Disconnect one end of L_3 (Fig. 1). Couple the grid-dip meter to L_2 and tune it with C_2 to about 24.5 Mc. Leaving the setting of C_2 at that position, lift one end of L_2. Reconnect L_3 and resonate C_3L_3 to about 25.5 Mc. Reconnect L_2, and the circuits should be set for operation on 48 to 52 Mc. For 50 to 54 Mc., the frequencies should be 25.5 and 26.5 Mc.

Procedure for the second band-pass circuit is similar except for the frequencies involved. For 48 to 52 Mc., disconnect L_7 and tune C_5L_5 to 49 Mc. Reconnect L_7 and disconnect L_5, tuning L_7C_6 to 51 Mc. Reconnect L_5. For the 50- to 54-Mc. range these frequencies would be about 51 and 53 Mc.

Connect a source of 6.3 volts a.c. at 2.5 amperes or more between the ground and heater terminals, and a low-range meter from the doubler grid return terminal to ground. Insert crystals for the desired frequency range. Apply about 200 volts d.c. to the oscillator plate-screen terminal through a 50- or 100-ma. meter. Current should be 20 to 30 ma., and grid current in the following stage should be about 0.5 ma., when the voltage is increased to the normal 300 volts. Touch up the tuning of the band-pass circuit, if necessary, to get uniform response across the desired range.

The trap circuits can be adjusted at this point, tuning for minimum signal at the frequency to be attenuated in each case. A receiver tuning to the harmonic frequencies is helpful. These will be about 18 to 20.25 Mc. for the first trap and 56 to 60 Mc. for the second, if they are for Channel 2. A TV receiver on the channels to be protected may also be used, merely tuning the traps for minimum TVI. Some slight readjustment of the band-pass circuit may be needed after the final trap tuning is done.

Now remove the grid current meter and ground the metering terminal in the doubler grid circuit. Connect a meter (0 to 5 ma. or more) between the terminals provided for measuring the 6146 grid current. Set the screen potentiometer, R_1, to about the middle of its range and apply about 200 volts to the doubler plate-screen input terminal. Adjust the band-pass circuit, L_5C_5, L_7C_6 for nearly uniform response across the desired range, using the 6146 grid current as the output indication. There should be at least 2 ma. across a 4-Mc. range when the doubler plate voltage is raised to 300. Note that the screen potentiometer controls the input to the doubler, and through it the excitation to the 6146.

The 48-Mc. output coupling adjustment, L_6C_7, may be checked at this time. The line to a 144-Mc. tripler stage should be connected to J_2, and the series capacitor, C_7, adjusted for maximum grid current in the driven stage. Recheck the adjustment of the band-pass circuit after this is done.

The 6146 amplifier stage had to be neutralized for stable operation. Its adjustment was not critical, however, and C_8 could be set anywhere near minimum capacitance with good results. Start out with its plates meshed about ⅛ inch. With grid drive applied but no plate or screen voltage, tune the 6146 plate circuit through resonance, trying various settings of C_8 until there is no grid current dip at resonance.

A load for the 6146 output circuit is now required. This can be a 40- or 60-watt lamp, with

(Continued on page 122)

W3LEZ/VE1

A Trip To Prince Edward Island

BY PHIL D. BOARDMAN,* W3LEZ

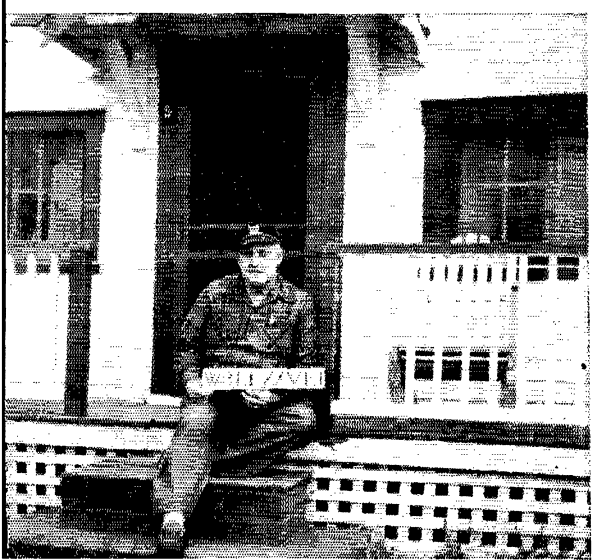
THE STORY of this "poor man's DXpedition" actually began last winter. I was checking QSLs and logs to verify contacts and confirmations needed for several awards I was currently interested in; included was the WAVE (Worked All VE) certificate. This one should be easy, I thought, so I dug into the cards and log books. I soon found I had all required contacts worked and confirmed with the exception of one — Prince Edward Island. Well, better look in one of the older logs, find the two contacts and write a couple of "tear-jerkers" for QSLs. First came 1955, then '54, '53, and on, and on. I finished with 1932, the oldest log available from my days as W9LEZ. You guessed it, I ain't never even worked Prince Edward Island. I reasoned that no contacts with Prince Edward Island in some 20,000 QSOs was a mighty poor average, and if such a catastrophe could strike me, there must be hundreds of other hams in the same boat. Later results proved clearly that such was the case.

So — A Vacation Trip

Fortunately, my XYL, Anne, had several times expressed a desire to make a return trip to Nova Scotia, where we had spent a most enjoyable vacation several years earlier. Armed with this fact, I very blandly suggested that we spend our vacation on Prince Edward Island this year. The idea was immediately okayed and Anne began to mentally pack several bags, also buy a few things to wear, fortunately also mentally.

I started making preparations in another direction. Since one of my purposes in going was to give P.E.I. contacts to as many hams as possible, it was consistent to plan on participating in the W/VE Contest, the last weekend in September. Thus was settled the date for my vacation.

*2644 Kirk Ave., Broomall, Pa.



Chief Operator at "The Island."

With a target date, I then faced fundamental problems of all "ham expedition" planners; namely, authority to operate, agreement to my planned contest activity and a place from which to operate.

A request to the Canadian Department of Transport in Ottawa immediately brought me the necessary license application, which was filled out and returned. I anticipated a lengthy lapse in time here while the governmental wheels turned, but you can understand my gratification, and appreciation of friendly interest on the part of a foreign government, when the signed authority to operate was back in my hands in less than a week.

Two of my problems had been solved most easily, so I tackled the place to stay. I wrote the Prince Edward Island Tourist Bureau and received in turn a packet of maps, descriptive booklets and suggested lodgings. I still needed a personal representative on the ground to verify the presence of convenient trees for my antenna, the availability of 110 volt a.c., the agreement of owners to amateur radio station operation and the answer to a dozen other questions I was worrying over. Upon the recommendation of VO6N, I wrote to Doug Moser, VE1ACL, and asked him to tackle the job. This was a wise choice as I soon discovered, because Doug promptly replied with the answers to most of my queries. A number of letters passed back and forth, and each time Doug cheerfully tried to help me solve another problem.

With most of the preliminaries out of the way I settled on the transmitting and receiving equipment, which I decided would consist of my Viking Ranger, and National HRO-60. I planned to put to use the same 135-foot end-fed, all-band antenna I had previously used on vacation trips, but this seemed too simple, so my ideas expanded into a 15-meter beam. Using tubing from my existing beams, I put together a two-element wide-spaced array, which was supported on 30 feet of telescoping aluminum tubing (my 20-meter beam elements). This beam I erected in my own back yard and proved successful. I dismantled it, measuring and matchmarking the parts for later reassembly.

Along about the time I had completed the foregoing job the 10-meter band came to life, so hurriedly made some additional shorter elements to be attached to the same boom. These were

added to my already-packed bundle of tubing, which was 12 feet long and about a foot in diameter. The whole business weighed about 35 pounds and rode nicely on the car's roof carriers.

And Publicity

I was pretty well set now; had my license, a line on where to stay and the radio equipment. One thing remained, and that was to insure I would have some one to work when I got where I was going. I made up an announcement with all the details. Copies were run off and mailed to about 30 QSL Bureaus around the world. A few of my DX pals were sent copies direct. I didn't forget the DX editor of *QST* and other amateur radio journals either. I was attempting to time my announcements to hit just about the date I would appear, but in the case of *QST*, I missed the deadline. I learned a lesson here, and next time the news will go out well in advance, even if I do have to request the release be delayed for better timing.

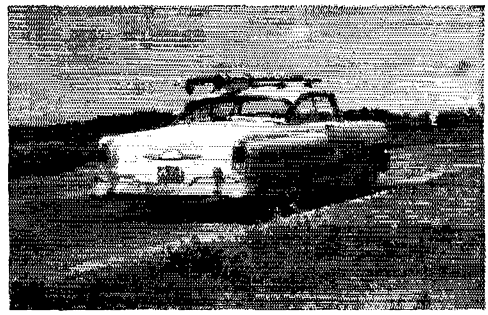
Ed Handy of the ARRL came to my aid and issued an Official League Bulletin, which was timed very appropriately.

Last, just before I left home I mailed about 125 cards announcing my trip to previous W/VE Contest participants and other well-known competitors in similar affrays.

Comments I received over the air indicated that each of the above communications reached hams interested in Prince Edward Island contacts. I consider the time and small cost consumed in preparing and mailing these announcements to be well spent.

With the car trunk full of radio gear, the back seat full of luggage and the roof graced with the disassembled beams, we lit out on Saturday, September 22nd. After overnight stops at Boston and St. John we arrived at Charlottetown, P. E. I. on Monday evening. I missed connections with VE1ACL, but hunted up the lodge he thought might serve my purpose. By this time it was raining, blowing and getting chilly. A quick, and wet, inspection in the dark proved that this place would never do for a ham station location, so we returned to Charlottetown for the night.

Doug, VE1ACL, must work 24 hours a day, because the next morning when I went to his home he was gone again. Undaunted, we set out on our own to find a place to stay. We headed



En route — note disassembled beam antennas on car top.

toward the Prince Edward Island National Park on the north shore, about 25 miles from Charlottetown. Here, Anne and I with our usual luck in finding elegant vacation spots, ended up at the Shining Waters Lodge. The rooms in the lodge were cheerful and pleasant, the food excellent, and Mrs. Andrew, the owner, settled the radio station problem by inviting me to set up business in one of her vacant cabins.

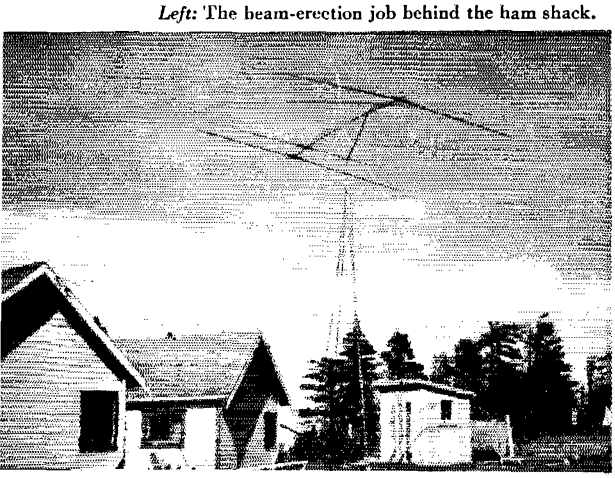
But Hazards

Here was a ham's Utopia: plenty of good food, a nice place to sleep, a private radio station, convenient trees for an antenna anchor, and a beautiful view of the Atlantic Ocean only a quarter mile away. That is speaking figuratively at this point, because the weather was really awful. The wind was blowing a gale, it was raining hard and the temperature was about 40 degrees.

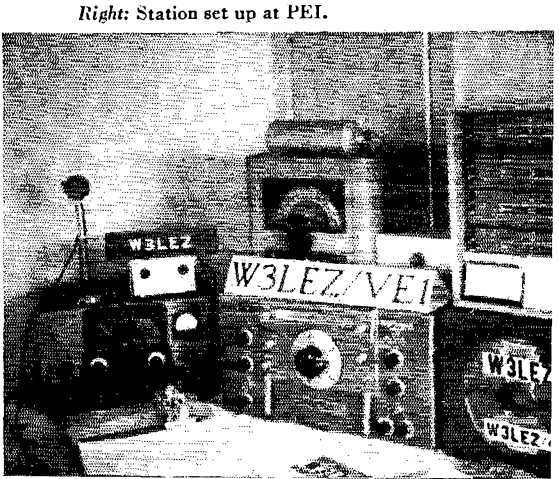
I had come a thousand miles to get on the air, and I was not about to let a little old storm bother me. I unloaded and set up my station equipment and started scouting for a tree, nicely located 135 feet away. The rain must have shrunk the distance because the first tree proved much too near after I went to all the trouble of pulling up my antenna. Down it came, and I tackled a dead pine, more distant from the cabin. Did you ever try to heave a line over a tree branch thirty feet in the air, thirty feet away, thru dense undergrowth, in the middle of a nor'easter? Well, I did it but I can assure you that a lead fishing weight won't pull your line over a branch. An

(*Continued on page 148*)

Left: The beam-erection job behind the ham shack.



Right: Station set up at PEI.



Happenings of the Month

ELECTION RESULTS

Recent balloting in ARRL elections has resulted in the selection of two new directors and five new vice-directors to take office January 1. **John G. Doyle, W9GPI,** was elected Director of the Central Division, first in a field of four. The tally:

Mr. Doyle	1790
Harry M. Matthews, W9UQT	580
Edmond A. Metzger, W9PRN	327
George E. Keith, W9QLZ	304

Jack, a retired automobile dealer now managing properties, was director of his division in 1949-1950, and has also served as assistant director. Active in club work, W9GPI is president of the Wisconsin Council of Radio Clubs and a director of the Milwaukee Radio Amateurs Club. He was the general chairman of the 1948 ARRL national convention, and is a member of MARS.

The new vice-director of the New England Division, **Frank L. Baker, jr., W1ALP,** accumulated 1401 votes to defeat Roger C. Amundsen, W1HYF, with 731. Frank is an expediter with the American Machine and Foundry Co., and he returns to the post that he held from 1951–1954. An assistant director and SCM for Eastern Massachusetts from 1941-1956, W1ALP is a past officer of the South Shore Amateur Radio Club, an EC, OBS, Radio Officer, and a member of the Greater Boston TVI Committee.

Howard S. Pyle, W70E, assumes the office of vice-director, Northwestern Division, defeating the three other candidates. The results:

Mr. Pyle	896
George D. Wilson, W7HF	207
Robert R. Perkins, W7JCJ	193
Norman K. Fitz, W7BON	96

"YB" is a supervisory electronic engineer with the CAA. He is active in League affairs as an ORS and member of the AREC and A-1 Operator Club.

P. Lanier Anderson, jr., W4MWH, was re-elected as Director of the Roanoke Division with 776 votes to 589 for his opponent, Benj. Riley Fowler, W4RRH.

Working with him as Vice-Director will be **Thomas H. Wood, W4ANK,** who defeated Theodore P. Mathewson, W4FJ, 706 votes to 661. W4ANK is an administrative assistant in Communications at the Naval Base at Charleston. An assistant director and SCM of S. C. from 1952-1956, he has held offices in the Charleston Amateur Radio Club, and is currently president of the Naval Base Charleston Amateur Radio Club. He holds ORS and A-1 Operator Club certificates and operates in AREC and MARS.

The new Vice-Director of the Southwestern Division is **Virgil Talbott, W6GTE,** with the following score:

Mr. Talbott	913
Robert E. Hopper, W6YXU	824
Thomas H. Wells, W6EWU	317

OM Talbott is head accountant of the Rancho Los Amigos Hospital and has been secretary of the following clubs: Southeast Radio Experimental Association; Federation of Radio Clubs of the Southwest; Metropolitan Radio Club of Los Angeles; and the 50 Club of California. He is also an AREC member.

Grady A. Payne, W5ETA, becomes the new Director of the West Gulf Division by the following vote:

Mr. Payne	1291
John F. Skelton, W5MA	443
G. Merton Sayre, W5ZU	325

W5ETA is a division chief clerk for the Humble Pipe Line Co., and has been assistant director 1955–1956. He is currently a director of the Houston Amateur Radio Club.

Formerly vice-director from 1953–1954, **Carl C. Drumeller, W5EHC,** returns to the post after defeating Ray Birch, W5OZ, by a vote of 1232 to 802. Carl is an electronic engineer with the CAA. He has held offices in the Pikes Peak Amateur Radio Association and the Oklahoma City Amateur Radio Club, and is presently secretary-treasurer of the Aeronautical Center Amateur Radio Club. In addition to his club work, W5EHC is active as an OPS and a member of AREC and MARS.

NEW CONELRAD RULES

Effective January 2, 1957, several new sections are to be added to the amateur rules to require observance of Conelrad procedures after that date. We publish below the complete text, for the information of amateurs. Observance can be through one of several types of automatic indicating gadgets such as have been described in *QST*'s pages (or advertised by manufacturers) the past year. Or it can be simply through checking for normal operation of broadcast stations — either continuously or on some periodic basis (but not less often than ten-minute intervals).

12.190 *Scope and Objective of CONELRAD.* CONtrol of ELectromagnetic RADiation applies to all radio stations in the Amateur Radio Service and is for the purpose of providing for the alerting and operation of radio stations in this service during periods of air attack or imminent threat thereof. The objective is to minimize the navigational aid that may be obtained by an enemy from the electromagnetic radiations emanating from radio stations in the Amateur Radio Service while simultaneously providing for a continued service under controlled conditions when such operation is essential to the public welfare.

12.191 *The CONELRAD RADIO ALERT* is the term applied to the Military Warning that an air attack is probable

or imminent and which automatically orders the immediate implementation of CONELRAD procedures for all radio stations. The CONELRAD RADIO ALERT is distinct from the military or Civil Air Defense Warnings YELLOW or RED, but may be coincidental with such warnings.

12.192 *Reception of RADIO ALERT.* (a) The licensee of a station in the Amateur Radio Service is required to provide a means for reception of the CONELRAD RADIO ALERT or a means for the determination that such ALERT is in force.

(b) All operators of stations in the Amateur Radio Service will be responsible for the reception of the CONELRAD RADIO ALERT or indication that such ALERT is in force by:

(1) reception of a CONELRAD RADIO ALERT MESSAGE which will be broadcast by each standard, FM and TV broadcast station on its regular assigned frequency before they leave the air; or

(2) reception of standard broadcast stations operating under CONELRAD requirements during the period of the ALERT on 640 or 1240 kc; or

(3) determining that an ALERT is in force by lack of normal broadcast station operation (observations made before amateur station operation is begun and at least once every ten minutes during operation thereafter will be considered as sufficient for compliance with this Section); or

(4) other means if so authorized by the Federal Communications Commission.

12.193 *Operation During an ALERT.* During a CONELRAD RADIO ALERT the operation of all amateur radio stations, except stations in the Radio Amateur Civil Emergency Service (RACES) and stations specifically authorized otherwise, will be immediately discontinued until the RADIO ALL CLEAR is issued. Stations in the RACES and such others as are specifically authorized to operate during the ALERT will conduct operation under the following restrictions.

(a) No transmission shall be made unless it is of extreme emergency affecting the national safety or the safety of life and property.

(b) Transmissions shall be as short as possible.

(c) No station identification shall be given, either by transmission of call letters or by announcement of location (if station identification is necessary to carry on the service, tactical calls or other means of identification will be utilized in accordance with 12.246).

(d) The radio station carrier shall be discontinued during periods of no message transmission.

12.194 *Special Operation.* In certain cases, the Federal Communications Commission may authorize specific stations to operate during a CONELRAD RADIO ALERT in a manner not governed by these Rules, provided, such operation is determined to be necessary in the interest of National Defense or the public welfare.

12.195 *Resumption of Normal Operation.* At the conclusion of a CONELRAD RADIO ALERT, each standard, FM and TV broadcast station will broadcast a CONELRAD RADIO ALL CLEAR MESSAGE. Unless otherwise restricted by order of the Federal Communications Commission, normal operation of stations in the Amateur Radio Service may be resumed upon reception of the CONELRAD RADIO ALL CLEAR. Only the CONELRAD *RADIO* ALL CLEAR will authorize termination of the CONELRAD RADIO ALERT.

12.196 *CONELRAD TESTS.* So far as practicable, tests and practice operation will be conducted at appropriate intervals.

TRAFFIC WITH COSTA RICA

The Republics of Costa Rica and Nicaragua have signed agreements with the United States permitting amateurs of the two countries to exchange messages or other communications with U. S. Amateurs on behalf of third parties. As in previous agreements with Canada, Chile, Cuba, Ecuador, Liberia, Panama and Peru, communications are limited to remarks of a personal or technical nature for which by reason of their unimportance recourse to public systems is not justified. Bonafide emergency traffic may be handled in the event regular telecommunications facilities are not readily available. No compensation is permitted, of course. The agreements went into effect in early December.

EXAMINATION SCHEDULE

The Federal Communications Commission will give Extra and General Class amateur examinations during the first half of 1957 on the following schedule. Remember this list when you need to know when and where examinations will occur. Where exact dates or places are not shown below, information may be obtained, as the date approaches, from the Engineer-in-Charge of the district. *Even stated dates are tentative and should be verified from the Engineer as the date approaches.* No examinations are given on legal holidays. All examinations begin promptly at 9 A.M. except as noted. (NOTE: Only General Class and Amateur Extra Class license examinations are given at FCC offices and examining points listed. All examinations for Novice, Technician and Conditional Class licenses are conducted by volunteer supervisors.)

Albuquerque, N. M.: April 6 at 8:00 A.M.
Anchorage, Alaska, 53 U. S. Post Office Bldg.: By appointment.
Atlanta, Georgia, 718 Atlanta National Bldg., 50 Whitehall St., S.W.: Tuesday and Friday at 8:30 A.M.
Bakersfield, Calif.: Sometime in May.
Baltimore 2, Md., 400 McCawley Bldg.: Monday through Friday. When code test required, between 8:30 A.M. and 9:30 A.M.
Bangor, Me.: May 15.
Beaumont, Texas, 329 P. O. Bldg.: By appointment only.
Billings, Montana: May 3.
Birmingham, Ala.: March 6, June 5.
Boise, Idaho: Sometime in April.
Boston, Mass., 1600 Customhouse: Wednesday through Friday 9:00 A.M. to 10 A.M.
Buffalo, N. Y., 328 P. O. Bldg.: Thursday.
Charleston, W. Va.: Sometime in March and June.
Chicago, Ill., 826 U. S. Courthouse: Friday.
Cincinnati, Ohio: Sometime in February and May.
Cleveland, Ohio: Sometime in March and June.
Columbus, Ohio: Sometime in January and April.
Corpus Christi, Texas: March 7, June 6.
Dallas, Texas, 500 U. S. Terminal Annex Bldg.: Tuesday.
Davenport, Iowa: Sometime in January and April.
Denver, Colo., 521 New Customhouse: 1st and 2nd Thursdays, 8 A.M.
Des Moines, Iowa: Sometime in January and April.
Detroit, Mich., 1029 Federal Bldg: Wednesday and Friday.
El Paso, Texas: June 19.
Fort Wayne, Ind.: Sometime in February and May.
Fresno, Calif.: March 15, June 14.
Grand Rapids, Mich.: Sometime in January and April.
Hartford, Conn.: March 13.
Honolulu, T. H., 502 Federal Bldg.: Monday through Friday.
Houston, Texas, 326 U. S. Appraisers Bldg.: Tuesday and Friday.
Indianapolis, Ind.: Sometime in February and May.
Jackson, Miss.: June 6.
Jacksonville, Fla.: April 13.
Juneau, Alaska, 6 Shattuck Bldg.: By appointment.
Kansas City, Mo., 3100 Federal Office Bldg.: Friday, 8:30 A.M.
Klamath Falls, Ore.: Sometime in May.
Knoxville, Tenn.: March 20, June 19.

(Continued on page 144)

Correspondence From Members-

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

NOVICE ACCENT

R.R. #3
Washington, Indiana

Editor, *QST:*

"Your Novice Accent" by Keith S. Williams, W6DTY, in November *QST*, is just what I have been looking for. . . . Perhaps if we Novices were informed we wouldn't be such pills. Hil. . . .

— *Lulu A. Perrine, KN9BZU*

35 Park Lane
Rochester 10, N. Y.

Editor, *QST:*

. . . It really hits the nail on the head. I have made several of these common mistakes in the past, and am so much the wiser now. There are so few really good examples in the Novice bands to follow, it's no wonder an isolated "Novice Accent" has appeared. Some of Keith's descriptions were so realistic that I was "rolling in the aisles" before I was through.

— *Bill Fabrey, KN2TLP*

125 Hillcrest Avenue
Hinsdale, Illinois

Editor, *QST:*

. . . Since I have been a General Class op. for only 2½ weeks, I settled down and read it. The article is greatly helping me to improve my operating. . . .

— *George A. Guerin, K9BFI*

10847 E. Freer Street
Temple City, California

Editor, *QST:*

. . . I really enjoyed it. I think *QST* could use more easy-to-read articles such as this one.

There was just one point in Keith's thinking with which I did not agree, and that was the relative unimportance he attached to the exchanging of handles. Myself, I think that it's the greatest innovation since milk. If a fellow tells me his handle is Zeke, for instance, I intersperse his name in the ensuing conversation frequently or occasionally, depending upon whether band conditions are rough, or quite good. Then if he loses me for a short while, I believe that he will find it a great assistance to identify my signal again if he hears his name. . . .

— *Robert E. Devine, W6AVW*

89 Summer Street
Fitchburg, Mass.

Editor, *QST:*

. . . The article on Novice operation was excellent. Perhaps our club could use some copies of operating aid No. 2 and some copies of the article.

— *Al Schatz, WN1MDS*

Birch Street
Pearl River, N. Y.

Editor, *QST:*

. . . it should be incorporated in the new *Handbook!* I would appreciate a copy of ARRL Operating Aid No. 2 (how about No. 1, too!). I don't want to be known as a lid!

— *Arthur V. Stiffey, K2QJV*

Haskell House
The Lawrenceville School
Lawrenceville, New Jersey

Editor, *QST:*

. . . I would like to ask where Mr. Williams got his information to the effect that the procedure signal for "End of QSO" is VA.

I have always been under the impression that the correct signal for this phrase was SK. It has always before been printed in amateur journals and ARRL operating aids (see the one printed at the end of his article!) as SK. . . .

— *H. Cowles, W8JWZ*

4 Spring Street
Newport, N. H.

Editor, *QST:*

Your article was really good. I wish all Novices would read it. . . .

— *Betty Bagley, WN1MOI*

4996-63rd Street
San Diego 15, Calif.

Editor, *QST:*

. . . It is a really fine article and I hope that every ham, novice or not, reads it. It should be printed and sent out to every ham who is active. . . .

— *Dick Gird, KN6PZE*

NOVICE INTERFERENCE

22 Avondale Road
Winnipeg 8, Man., Canada

Editor, *QST:*

While I agree with the sentiments expressed in your editorial comment (Oct. *QST*) regarding Novice interference with foreign fone on the 21-Mc. band, I think it is most unfair to single out the 21-Mc. Novices.

Surely more blameworthy are the foreign fone men who chop up the few kilocycles left to the 14-Mc. c.w. operators.

Some justification for the Novices can be found in the limited bands available to them but little can be said for the "Best Best Regards" gang when one considers that they already control more than 70% of our three high-frequency DX bands.

— *G. V. Lawrence, VE4DB*

Mill Street
Milton, N. H.

Editor, *QST:*

I was deeply shocked to read your very untimely editorial in the October issue of *QST*, regarding the Novices on 21 Mc. and their interference to DX stations. It seems to me that this group of beginners should be given every favor when you consider the small space that they are given in our frequency spectrum for their operation. It seems a shame that you, the editors of *QST*, should have the nerve to ask these beginners to get off the bands that have been allocated to them to help them in becoming a permanent member of our organization. What if a few do lose those elusive DX stations? We will most certainly gain a lot of good operators in return, and to me that is a bargain well worth obtaining. . . .

— *Frank R. Nutter, W1KKT*

(Continued on page 144)

Hints and Kinks For the Experimenter

A SIMPLE CONELRAD ALARM CIRCUIT

A SIMPLE visual-type indicator circuit for Conelrad monitoring is shown in Fig. 1. The arrangement permits full compliance with Conelrad regulations as they affect radio amateurs, and can be installed in a few minutes at a cost of less than $1.00. The indicators, ordinary pilot lamps identified in Fig. 1 as I_1 and I_2, flash brightly on audio peaks developed by an a.c.-d.c.

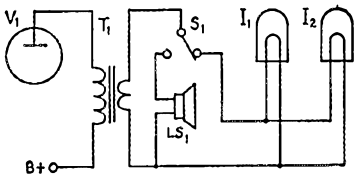


Fig. 1 — Circuit diagram of the W3BFO Conelrad monitor. The alarm components — two pilot lamps and a toggle switch — may be built into an a.c-d.c. broadcast receiver or they may be mounted in a small box as illustrated in Fig. 2.

receiver tuned to a modulated broadcast carrier. Inasmuch as most broadcast carriers are almost constantly modulated, the indicators glow without appreciable interruption as long as the broadcast station continues normal operation. When the lamps go out, it is an indication that the station has ceased operation for one reason or another, or that either the receiver or lamps have failed.

In Fig. 1, LS_1, T_1 and V_1 are the loudspeaker, audio output transformer and output tube, respectively, of a small a.c.-d.c. broadcast receiver. S_1 is a s.p.d.t. toggle switch which transfers audio voltage developed across the output winding of T_1 to either the speaker or the indicator lamps, I_1 and I_2. Thus, while the receiver is being used as a Conelrad monitor, the speaker may be silenced to prevent annoying background noise. I_1 and I_2 are standard 6.3-volt 150-ma. (No. 40 or 47 will do) pilot lamps. Using two or more lamps connected in parallel (I use 3 lamps here at W3BFO) reduces the possibility of a *false* alarm that could be caused by lamp burnout in a single lamp arrangement.

Unless the broadcast signal is extremely weak, the lamps will glow quite brightly after the receiver has been tuned, S_1 thrown to the monitor position and the audio gain control advanced to the full-on setting. Remember to back off on the gain control before returning S_1 to the speaker position; otherwise you'll hear a most unpleasing blast of radio.

The lamps and the switch may be mounted in a small box located in some convenient spot at the operating position. Ordinary hookup wire may be used for the leads between the indicator unit and the control receiver.

— Harry T. Ebner, W3BFO

EDITOR'S NOTE: Shortly after W3BFO submitted his Conelrad alarm circuit, Earl W. Douglas, W9BBG, forwarded his ideas on the same stunt. However, Doug uses a small Christmas tree lamp as the visual indicator and points out an additional feature of the simple alarm. The bulb or lamp *flashes* when activated by the audio peaks derived from a broadcast carrier modulated by music, voice or other forms of entertainment. However, the lamp glows brightly *without* flashing when the 1000-cycle Conelrad signal is being transmitted. In other words, the simple visual indicator actually differentiates between normal broadcast programming and Conelrad alert signals.

—•••—

THE CONEL-BAND AID

THE simple Conelrad monitor by W3BFO — and his comment about a small housing for same — made us think immediately about one of the most readily available (especially if you have any junior ops in the house) and inexpensive metal boxes that we know of — the containers used to package Johnson & Johnson Band-Aids. These small boxes can be drilled or punched with ease, soldered to without difficulty, have a hinged cover, and come in at least two different sizes.

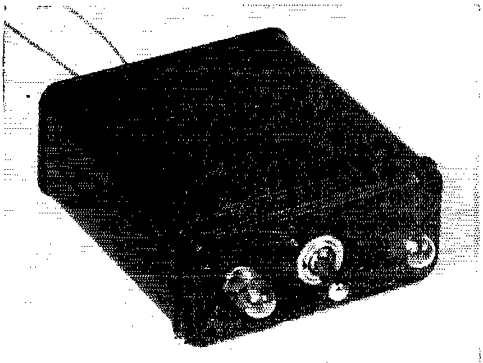


Fig. 2 — The pilot lamps and toggle switch for a W3BFO-type Conelrad monitor may be mounted on the lid of a "Band Aid" container as seen in this view.

And, as W1CUT commented after seeing us at work on the alarm, the trade name involved holds some interesting possibilities as to trick names that can be given to ham gear built into the containers. Now, you should appreciate why our version of the W3BFO alarm is called "The Conel-Band Aid."

(Continued on page 134)

10th V.H.F. Sweepstakes, Jan. 5th and 6th

Certificates to Winners, Gavel to Leading Club

THE TENTH ANNUAL V.H.F. Sweepstakes, open to all amateurs who can work 50 Mc. or higher, gets under way at 2:00 P.M. your local time Saturday, January 5th, and continues until midnight Sunday, January 6th.

Call "CQ Sweepstakes" on phone or "CQ SS" on c.w. to raise other contestants, and exchange SS data as shown in this announcement. You can rework a station for credit on other bands, so ability to work several v.h.f. bands pays off in score points. When an exchange of SS information has been completed in both directions, count two points. Multiply the total of these contact points by the number of different sections worked to determine final score.

Certificate awards will go to V.H.F. Sweepstakes top-scorers in each of the 73 ARRL sections from which entries are received. In addition, a certificate will be given to the top Novice or Technician in each section where *at least three* such licensees submit valid contest logs.

Clubs are urged to get their members on the air from their individual stations to compete for the certificates which go to leading club operators. The club whose members accumulate the top aggregate score will also receive a cocobolo gavel with a sterling-silver band engraved with the name of the winner.

Contest reporting forms are now available from the ARRL Communications Department. If you don't use these forms, please follow the log arrangement shown. ARRL welcomes all contest reports to assist in cross-checking and to make complete results in *QST* possible. Novices and Technicians: be sure to report your totals, large or small, to help the license-class leader in your section qualify for a certificate.

Rules

1) *Eligibility:* Amateur operators in any ARRL section (see page 6) operating at home, or mobile or portable *under one call* on or above 50 Mc. are invited to take part.

2) *Object:* Participants will attempt to contact as many other stations in as many ARRL sections as possible.

3) *Contest Periods:* The contest starts at 2:00 P.M. your local time, Saturday, Jan 5, 1957, and ends at midnight, Sunday, Jan. 6, 1957.

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

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

(b) Final score is obtained by multiplying total contact points by the number of different ARRL sections worked (the number in each of which at least one SS point has been credited).

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

Station..... Class License..... ARRL Section.....

	SENT (1 point)						*RECEIVED (1 point)*							
Freq. Band (Mc.)	*NR*	*Stn.*	*CK-RST*	*Section*	*Time ..ST*	*Date (Jan.)*	*NR*	*Stn.*	*CK-RST*	*Section*	*Time*	*Date (Jan.)*	*Number of Each Different New Section as Worked*	
50	1	W1AW	57	Conn.	4:15 P.M.	5	3	W1PHR	47	Conn.	4:18 P.M.	5	1	2
50	2		43		4:35 P.M.	5	7	W1QAK/1	59	Conn.	4:40 P.M	5	..	2
50	3		58		9:09 P.M.	5	6	W1KCS	359	R. I.	9:11 P.M.	5	2	2
144	4		49		9:30 P.M.	5	32	W1OOP	58	E. Mass.	9:36 P.M.	5	3	2
144	5		57		9:50 P.M.	5	15	WN1KFS	58	Conn.	9:46 P.M.	5	..	2
50	6		54		11:30 P.M.	5	11	K2EIJ/2	48	N. Y. C.-L. I.	11:32 P.M.	5	4	2
420	7		58		11:35 P.M.	5	30	W1PHR	57	Conn.	11:35 P.M.	5	..	2
144	8		57		11:45 P.M.	5	21	W3TOM	59	Md.-Del.-D. C.	11:56 P.M.	5	5	2
144	..	....	...	...	.....	..	18	W9DRN	449	Ill.	12:34 A.M.	6	6	1
144	9	W1AW	34	Conn.	8:50 A.M.	6	7	W1RFU	59	W. Mass.	8:47 A.M.	6	7	2
50	10		479		9:18 P.M.	6	12	W7VMP	379x	Arizona	7:20 P.M.	6	8	2
50	11		589		10:40 P.M.	6	20	VE3DIR	569	Ontario	10:35 P.M.	6	9	2

Claimed score: 23 points × 9 sections = 207. Bands Used: 50, 144 and 420 Mc. 9 Sec., 23 Pts.

Names and calls of operators having a share in above work.....

Participating for club award in the.....*(name of club), of which I am a member.*

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

Tube line-up..... *Signature*.....

Number of QSOs..... *Address*.....

EXPLANATION OF V.H.F. SS CONTEST EXCHANGES

Send Like Standard NR Msg. Preamble		*Call*	*CK*	*Place*	*Time*	*Date*
Exchanges	Contest numbers 1, 2, 3, etc., a new NR for each station worked	Send your own call	CK (Readability and strength or RST of station worked)	Your ARRL section	Send time of transmitting this NR	Send date of QSO
Purpose (example)	QSO NR tells how you are doing (NR1)	Identification (W1AW)	RS or RST report (589)	See page six for section list (Conn.)	Time and date must fall in contest period (6:55 P.M. Jan. 5)	

6) *Conditions for Valid Contact Credit:* (a) Repeat contacts on other bands confirmed by completed exchanges of *up to two points per band* may be counted for *each different station* worked. (*Example:* W1HDQ works W1RFU on 50 and 144 Mc. for complete exchanges of 2 points on each band; 2 + 2 gives 4 points but only *one* section multiplier.)

(b) Cross-band work shall not count.

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

(d) A transmitter used to contact one or more stations may not be used subsequently under more than one other call during the contest period.

(e) Contacts with aircraft mobiles cannot be counted for section multipliers.

7) *Awards:* Entries will be classified as single- or multi-operator, a single-operator station being defined as one manned by an amateur who neither receives nor gives assistance to any person during the contest period. Certificates will be awarded in each ARRL section to the top-scoring amateur in the single-operator classification. In addition, a certificate will be awarded to the top Novice or Technician in each ARRL section where *at least three* such licensees submit valid contest logs. Multioperator work will be grouped separately in the official report of results in *QST*.

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

A gavel with an engraved sterling-silver band will be offered the club whose secretary submits the greatest aggregate score, provided such scores are confirmed by receipt at ARRL of the *individual contest logs* from such members. Only the score of a bona fide club member, operating a station in local club territory, may be included in club entries. Claims from federations, radio club councils, or other combinations of radio clubs, will not be accepted. Special memberships granted for contest purposes will not be recognized.

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

9) *Reporting:* Reports must be postmarked no later than January 21, 1957, to be considered for awards.

A.R.R.L. QSL BUREAU

The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. Its operation is made possible by volunteer managers in each W, K and VE call area. All *you* have to do is send your QSL manager (see list below) a stamped self-addressed envelope about 4¼ by 9½ inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

W1, K1 — D. W. Waterman, W1IPQ, 99 Flat Rock Rd., Easton, Conn.

W2, K2 — E. F. Huberman, W2JIL, Box 746, GPO, Brooklyn 1, New York.

W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Penna.

W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.

W5, K5 — Robert Stark, W5OLG, P.O. Box 261, Grapevine, Texas.

W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.

W7, K7 — Joseph P. Vogt, W7ASG, 5399 Karen Ave., Salem, Ore.

W8, K8 — Walter E. Mugrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.

W9, K9 — John F. Schneider, W9CFT, 311 W. Ross Ave., Wausau, Wisc.

WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.

VE1 — L. J. Fader, VE1FQ, 125 Henry St., Halifax, N. S.

VE2 — Harry J. Mabson, VE2APH, 122 Regent Ave., Beaconsfield West, Que.

VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, 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, 883 10th St. N., North Lethbridge, Alta.

VE7 — H. R. Hough, VE7HR, 2316 Trent St., Victoria, B. C.

VE8 — W. L. Geary, VE8AW, Box 534, Whitehorse, Y. T.

VO — Ernest Ash, VO1A, P.O. Box 8, St. John's, Newfoundland.

KP4 — E. W. Mayer, KP4KD, 1061, San Juan, P. R.

KH6 — Andy H. Fuchikami, KH6BA, 2543 Namauu Dr., Honolulu, T. H.

KL7 — Box 73, Douglas, Alaska.

KZ5 — Catherine Howe, KZ5KA, Box 407, Balboa, C. Z.

September V.H.F. Party—Final Results

THE 290 logs turned in following the V.h.f. Party Sept. 15th and 16th represent a slight falling-off from recent totals for the spring and fall contests. This was to be expected, in view of dismal weather and subnormal propagation conditions over most of the country. But interest in v.h.f. contests has reached a point now where even the worst the weatherman can cook up for us fails to dampen enthusiasm appreciably.

Highlights of the party reported last month, mentioned the increase in 50-Mc. activity. At an all-time low of 12 per cent participation in the last contest before the band was opened to use by Technician licensees, 6 has bounded back to major status in the v.h.f. contest picture. The number of contestants reporting use of the 50-Mc. band has increased steadily since the June, 1955, party, with the September contest showing 58 per cent of contestants active on the band. The 2-meter band continues to lead the way, however, with 78 per cent operating there. 220 shows a slow but steady growth, with 13 per cent of the stations using it. The 420-Mc. band was used by 8.5 per cent. There was scattered activity on 1215 and 10,000 Mc. as well. Here's how the final tabulation shapes up:

SCORES

In the following tabulation, scores are listed by ARRL Divisions and Sections. Unless otherwise noted, the top scorer in each section receives a certificate award. Columns indicate the final score, the number of contacts, the section multiplier, and the bands used. A represents 50 Mc.; B, 144 Mc.; C, 220 Mc.; D, 420 Mc.; and E, 1215 Mc. or higher. Multiple-operator stations are shown at the end of each section tabulation.

ATLANTIC DIVISION

E. Pennsylvania

W3TDF....2584-136-19-B
W3ARW....1738- 76-22-ABC
W3DEX....660- 60-11-AB
W3HYO....642-107- 6-B
W3WED....582- 97- 6-B
W3CLQ....536- 67- 8-B
W3TXO....450- 50- 9-A
W3MFT....225- 25- 9-B
W3MDO....108- 27- 4-B
W3UQJ.....92- 23- 4-A
WN3GVW...75- 15- 5-B
W3OWP....36- 18- 2-B
W3BNR....22- 11- 2-B
W3KX/3[1]...(8 oprs.)
12,600-301-40-ABCD

W3LXM/3..(W3s BPZ BYF HPL LXM TEB)
1695-113-15-AB
W3TF.....(W3s HPD RVU TF UCA VUF)
1122-102-11-B
W3ZRQ/3..(W3s CMA FLJ ZRQ)
70- 35- 2-B

Md.-Del.-D.C.

W3TOM....2106-117-18-AB
W3CGV
1462- 82-17-ABCD
W3GKP....1442-103-14-B
W3OTC....294- 42- 7-A
W3LCC....144- 24- 6-A
KN5GWT/3[2]
115- 23- 5-B

KN5GXZ/3 95- 19- 5-B
W3EAW....92- 23- 4-A
WN3FYL...39- 13- 3-B
W3WAF....14- 7- 2-B
W3PGA/3..(4 oprs.)
2790-150-18-ABC
W3BBG (W3s BBG YQO)
804- 67-12-AB

S. New Jersey

K2ITP....2790-155-19-AB
K2DCF....1560-130-12-B
K2JVX....1220-122-10-B
W2ZUL....1089- 99-11-AB
K2HOD....624- 48-13-B
W2BLV....585- 42-13-BD

Western New York

W2ALR....891- 81-11-B
W2ERX/2..567- 63- 9-B
W2QNA...305- 61- 5-AB
W2RXG...248- 31- 8-B
W2EQO...126- 21- 6-B
W2QY.....66- 22- 3-B
W2GRN....56- 14- 4-B
K2ALZ....42- 21- 2-A
W2SJV....28- 14- 2-B
K2DYC....28- 28- 1-A
W2UPT/2[1] (W2s JGJ RZP UPT)....2877-137-21-AB
K2DLW/2 (K2s DLW QLH)
2392-101-23-ABC
K2IXJ (W2SPU K2s DBB IXJ)....1230- 82-15-AB
K2CEH/2 (W2s ALL JTE K2s CEH HIT)
1155- 77-15-AB
K2ERQ (W2YLM, KZ5RU)
328- 41- 8-A
W2TQY/2 (6 oprs.)
129- 43- 3-B

W. Pennsylvania

W3IHF/3..462- 42-11-AB
W3TIF.....68- 22- 3-A
W3HZU/3 (11 oprs.)
962- 74-13-AB
W3KWH (W3s RXT WHY ZPZ ZUZ)
432- 54- 8-AB

CENTRAL DIVISION

Illinois

W9DRN...1391-100-13-ABCD
W9QKM...1320-120-11-AB
W9OBW...1030-102-10-ABD
W9EET....774- 86- 9-AB
W9USI.....558- 61- 9-ABC
W9PBP....490- 70- 7-B
W9YLY....490- 70- 7-B
W9ULF....480- 80- 6-AB
W9KLD...476- 68- 7-B
W9GLR....427- 61- 7-B
W9ROS....372- 93- 4-A
W9PPA....270- 54- 5-B
W9CT.....256- 64- 4-B
K9BBK....240- 60- 4-A
W9ROZ....225- 45- 5-B
W9BUK/9..168- 42- 4-B
W9ADO....60- 20- 3-B
W9IFA....45- 15- 3-B
W9KCW...44- 22- 2-B
W9CX.....20- 10- 2-B
W9DUP (KN9s DEM DUD)
255- 51- 5-B
W9AML (6 oprs.)
52- 13- 4-B

Indiana

W9KLR...2754-151-18-ABC
W9SWH...504- 84- 6-A
W9MHP...312- 52- 6-AB
W9ORW...228- 38- 6-B
W9OVL....195- 36- 5-AC
W9BUM...84- 21- 4-B

Wisconsin

W9JFP[3]...312- 78- 4-A
W9TQ.....195- 39- 5-B
K9AKI....128- 32- 4-A

W9ZUZ....116- 29- 4-B
W9GXC....90- 30- 3-A
W9DSP....50- 10- 5-AB
W9RTZ/9..9- 9- 1-A
W9UJM....4- 2- 2-B

DAKOTA DIVISION

Minnesota

WØRGO....46- 23- 2-A
WØHGH....45- 15- 3-B

DELTA DIVISION

Tennessee

W4HHK...216- 27- 8-AB

GREAT LAKES DIVISION

Kentucky

W4VLA....660- 66-10-AB
K4HTO....24- 8- 3-A

Michigan

W8RMH...2310-151-15-ABC
W8NOH...1000-100-10-AB
W8URO....684- 76- 9-AB
W8PT.....600- 75- 8-B
W8ARR....330- 55- 6-AB
W8FEU....300- 60- 5-AB
W8JXU....144- 48- 3-B
W8HJR[4]...140- 35- 4-A
W8SDK....117- 39- 3-A
W8CBM....108- 36- 3-B
KN8AYR...108- 36- 3-B
W8BGY....81- 27- 3-B
W8GYU....78- 26- 3-B
W8RFW....76- 19- 4-A
W8TIN....76- 19- 4-A
W8DDO....75- 25- 3-AB
W8MM8....54- 27- 2-B
W8SEB....62- 31- 2-B
KN8AKQ...60- 30- 2-B
W8UML....9- 9- 1-A
W8CVQ (2 oprs.)
680- 68-10-AB
W9SEK/8 (W9s RPH SEK K9s APQ CTT)
513- 57- 9-AB

Ohio

W8LPD....2235-144-15-ABC
W8ILC....1469-113-13-B
W8JSW....1035-115- 9-AB
W8HQK....774- 86- 9-AB
W8TPL....666- 74- 9-AB
W8LUZ....546- 78- 7-B
W8NEE[3]...350- 60- 5-AC
W8NAF....280- 70- 4-AB
W8INQ....272- 67- 4-AC
W8SVU....264- 66- 4-A
W8EDS....228- 38- 6-B
W8IPT....220- 55- 4-B
W8LOF....198- 33- 6-B
W8PLQ....168- 42- 4-AB
W8WUP....148- 37- 4-AB
W8BMO....132- 44- 3-AB
W8LCY....75- 15- 5-B
W8VZE....66- 22- 3-B
W8RXM....22- 22- 1-B
W8RLY....10- 10- 1-B
W8LFZ....1- 1- 1-B
W8SFG (W8s RVJ SFG SRW)....1843- 97-19-AB

HUDSON DIVISION

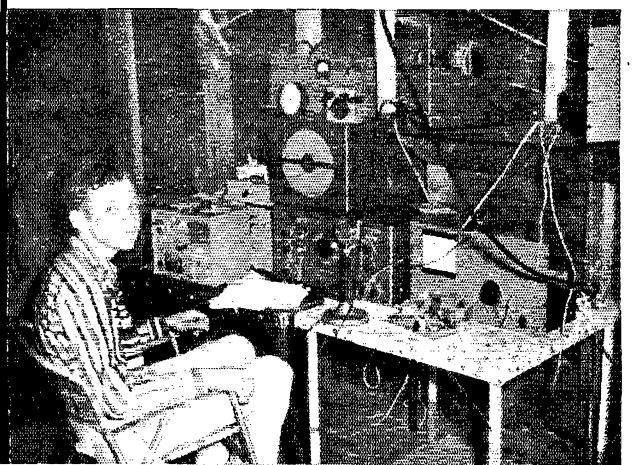
Eastern New York

K2HPN/2..3380-126-26-ABC
W2WHX...1040- 80-13-B
K2LBI.....155- 31- 5-A
K2OAX....80- 20- 4-A
W2HBC/2 (6 oprs.)
5736-212-26-ABC
K2JQY/2 (K2s CIB JQY)
1364-124-11-A

N.Y.C.-L.I.

K2JLR....1170-117-10-B
K2DDK...837- 93- 9-B

(Continued on page 144)



Two-meter operating position of W7PUA/7, Pack Mountain, Wash., top-scoring station in the Northwestern Division in the September V.h.f. Party. WN7CNN is the operator.

QST for

The World Above 50 Mc.

CONDUCTED BY EDWARD P. TILTON,* W1HDQ

AN INTERESTING and potentially useful by-product of the widespread F_2-layer 50-Mc. DX encountered during the fall of 1956 was back-scatter. Here is a form of propagation that was discovered a generation ago, but few hams recognize it, or make much use of its potential for work into areas that may be hard to reach by other means.

It can be heard on 28 Mc. almost any day, but we still get breathless letters now and then from fellows who have just run into it for the first time, and they think they've discovered a new phenomenon. This unawareness probably results from back-scatter signals being obscured by the much stronger direct-path propagation most of the time. When the band is in marginal condition, operators probing for DX may find, instead, that they can hear many W stations within the skip zone. Checks on beam headings turn up the fact that the antennas are aiming at a common distant point. When beams are turned toward one another communication is lost, unless the two stations happen to be within tropospheric range.

Back-scatter was observed at least as far back as 1935, though it wasn't recognized as such at the time. A series of articles in *IRE Proceedings* describing the use of steerable rhombic antennas for communication between New York and London[1] makes mention of off-path reception, sometimes when no signal was received on the "right" heading. As this was discernible only when ionospheric disturbances washed out the normal circuit, it was first assumed to be associated with a disturbed ionosphere, or possibly a southerly aurora.

More recent developments have shown the true nature of back-scatter: that it results from a signal travelling via an ionospheric route and then being reflected back from a distant ground point.[2] Thus, any two well-equipped stations that have open ionospheric paths to a common point on the earth's surface can communicate with each other by aiming their antennas at that point. We say "well-equipped" because the strength of back-scatter signals is low, compared to that when a direct path is involved.

On 10 meters the direct-path signals usually smother the back-scatter, so what little work is done that way is usually over distances of 200 to 800 miles, or inside the normal skip zone. But that is by no means the limit, as recent 6-meter experience has shown. During the morning of Nov. 11th, for example, everyone was looking for South American signals. Few were heard, but W signals were showing up from all over the country. W5VY, San Antonio, Texas, was a prime example. His c.w. signal was heard for a couple of hours in W1, while Pat was working stations in several call areas. Beams in W1 had to be aimed south rather than southwest for best reception. Just a bit later, K6EDX and W6AJF were heard by several W1s. It was the right time for a transcontinental opening to break, so around into the west went the beams — but out went the West Coast signals. Checking over reports that have come in since, we find that back-scatter was being heard in nearly every part of the country around this time.

Some of the signals were good enough for voice work. K6EDX and W4GJO worked on phone by the back-scatter route, for what is one of the longest hauls yet reported for this mode. It takes a fair amount of power and a good antenna system to make such things possible, but with the aid of c.w. back-scatter contacts can be made with typical 50-Mc. setups, if the operators are willing to use it. One thing seems sure: utilization of back-scatter to its fullest potential would go a long way toward filling out many of the 50-Mc. WAS lists that now stand around the 40 mark.

Take a look through the states-worked boxes and check up on the leaders. Whether they be 6-meter or 2-meter men, you'll find that the fellows in the upper brackets of accomplishment on either band, in any section of the country, are those who know how to make the best possible use of all the opportunities that v.h.f. propagation affords. Meteor showers, F_2-layer DX by direct path and back-scatter, aurora reflection work — these are some of the ways by which they made the grade. They ride their hobby for

W7SLB at the 6-meter position of W7PUA/7, September V.h.f. Party.

[1] Feldman, "Deviation of New York to London Signals," *Proc. IRE*, Oct., 1939, p. 635.

[2] Villard and Peterson, "Instantaneous Prediction of Transmission Paths," *QST*, March, 1952, p. 11.

all it's worth — and they enjoy it far more, because of that, than the fellow who does his v.h.f. hamming casually, and only when it is easy or convenient.

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

Since s.s.b. first appeared on the v.h.f. bands years ago, we've been wondering if it would make voice communication possible during aurora conditions. The reduction in distortion due to selective fading that s.s.b. affords indicated that it should help in aurora work. But for one reason or another no very good checks have been made until very recently.

A widespread aurora Nov. 14th provided the best test yet. W1REZ, Fairfield, Conn., and W2JJC started things rolling with a c.w.-s.s.b. QSO. W1REZ found that W2JJC's s.s.b. signal was perfectly readable via the aurora path, though Arnie's voice was a ghostlike whisper. Later, W2JJC hooked up with W3HWN, Mechanicsburg, Pa., for what was probably the first two-way s.s.b. QSO on 144 Mc. via the aurora.

W3YHI, Andrews Air Force Base, near Washington, heard the W2JJC-W1REZ QSO, and found that he could read W2JJC's aurora signal, even though he could find no trace of signal on the direct path. At 2112, when W2JJC and W3HWN were working, he broke in to make it a three-way. The aurora was spotty by then, so the QSO soon reverted to direct path, but contact was maintained long enough to demonstrate that s.s.b. has a tremendous advantage over a.m. in work via the buzz. W3YHI says that a hi-fi enthusiast wouldn't care for the voice quality, it being a rather hoarse whisper, but it was readable.

Recent additions to the 144-Mc. s.s.b. fraternity include W1IZY, Middleboro, Mass., K2POA, Bethpage, L. I., W3SST, Dover, Pa., and W7LHL, Seattle, Wash. Ernie is the first s.s.b. operator on 144 Mc. in the Northwest. His rig starts out with the single-side-band generator described by W2EWL in March, 1956, *QST*. S.s.b. output from the 6AL5 balanced modulator is on 8.3 Mc. This is fed through a Class A amplifier 6BA6 into a 6AK6 mixer. A 12AT7 oscillator-doubler on 13.6 and 27.2 Mc. mixes with the 8.3 Mc. to give 35.5 Mc. This is amplified by a 6AK6 grounded-grid stage and fed to another 6AK6 mixer. Injection for this stage is taken from a 12AT7 double-doubler, at 108.8 Mc., its excitation being furnished by the previous 12AT7. The second mixer output is on 144.3 Mc. From there on, a 6AK6 grounded-grid stage and a 6360 Class AB2 amplifier bring the power level to a point where a 100-watt amplifier can be driven readily.

The auroras of November helped to stretch the states totals of quite a few of the 2-meter gang. W4UMF, Falls Church, Va., never expected to pick up two new states in the same night, but on the night of the 10th he picked up W9GAB and W4HJQ, for Wisconsin and Kentucky. He heard W4HHK and WØBKV (Tennessee and Missouri) which gives some idea of the extent of this one.

W1REZ reports that from 1800 Nov. 14th and on through about 0600 the following morning was one long aurora binge. Conditions were erratic until after midnight, when Ray heard W4HJQ, Glendale, Ky., relaying information about W4RFR, Nashville, Tenn. At 0230, W1REZ worked W4RFR, for the first Connecticut-Tennessee aurora QSO on 144 Mc. Peaking the beam for best signal strength, W4RFR was found to be coming in from only 10 degrees north of west. Later, Ray swung the beam around to WSW, and W4RFR was in for a couple of minutes T9. Next, Ray worked W9WOK, and got W1MMN, Orange, Vt., out of bed by telephone to provide John with a Vermont contact. W9WOK tried to do as much by routing out WØIFS for Ray, but no signal could be heard over that path. From this, W1REZ suspects that stations to the west may not always be aiming their antennas in the optimum direction. He (and we all) would like to see fellows west of W9 try more southerly headings for their beams during aurora openings. This might be particularly important when stations far to the south are getting into the act. W1REZ's Tennessee contact with W4RFR gives Ray undisputed possession of first place in states worked on 144 Mc. among the W1s.

The aurora of the 11th produced another 220-Mc. aurora QSO, again between W3LZD, Dunmore, Pa., and W8DX, Detroit. Signals on 220 appeared to be at least as good as those on 144, ranging from S3 to S8, with strong peaks and considerable fading. Contact was held on 220 for about 15 minutes, beginning at 1815 EST. W3LZD was running 500 watts input to 4-65As, but he has a 1-kw. rig about ready to go. A 64-element array will also be up soon at W3LZD. Ted would like to hear from anyone who would be interested in aurora checks on 220 Mc.

Contacts over a path seldom worked heretofore on 144 Mc. are reported by W2AMJ, Bergenfield, N. J. On Nov. 3rd, Frank worked VE2FF and VE2KH in Montreal. W2SMX and W1CLH also got in on this. Montreal is about 350 miles to the north. Propagation was tropospheric.

Letters continue to come in from fellows interested in amateur television, wanting to get in touch with others similarly interested. Two recent ones: Mike Regan, KN6-QBZ, 624 E. 19th St., Long Beach, Cal., and S/Sgt. J. D. Fisher, WØAHL/4, 3rd Radio Relay Sqdn., Det. 2, 3400 Support, Langley AFB, Va.

2-METER STANDINGS

	U. S. States	Areas	Miles
W1REZ	22	6	910
W1FZJ	21	6	1120
W1RFU	19	7	1150
W1HDQ	19	6	1020
W1KCS	18	6	850
W1AJR	17	6	810
W1IZY	17	6	750
W1UIZ	17	5	680
W1AZK	17	6	850
W1BCN	16	5	650
W1KHL	16	5	540
W1AFO	15	5	810
W1MMN	15	6	800
W2ORI	27	8	1040
W2NLY	24	7	1050
W2AZL	23	8	1050
W2BLV	22	7	1020
W2DWJ	21	6	720
W2OPQ	20	6	970
W2AMJ	20	6	960
K2CEH	20	7	910
W2PAU	20	6	880
W2UTH	19	7	880
W2AZP	19	7	650
K2IXJ	19	6	925
W2CBB	19	6	740
W2KIR	19	6	—
K2IEJ	18	6	745
W2AOC	18	6	660
W2LHI	18	7	620
W2RXG	17	6	675
W2SHT	16	6	650
W2PCQ	16	5	650
W3BGT	28	8	740
W3RUF	25	8	950
W3GKP	22	6	800
W3FPH	21	8	—
W3KCA	21	7	—
W3LZD	20	7	—
W3TDF	20	6	720
W3KWL	19	7	740
W3NKM	19	8	660
W3IBH	19	7	650
W3YHI	19	6	800
W3BNC	18	7	750
W3LNA	16	7	720
W4HHK	29	9	1280
W4AO	23	7	950
W4HJQ	22	7	750
W4UMF	21	6	720
W4MKJ	20	8	725
W4JCJ	20	6	660
W4DWU	19	6	675
W4JFV	18	7	830
W4OLK	18	6	720
W4VLA	17	7	825
W4WNH	17	7	750
W4TLV	16	7	1000
W4CLY	15	5	720
W4ZBU	14	5	800
W4WCB	14	5	—
W4TCR	14	5	720
W4IKZ	13	6	720
W4SOP	13	5	680
W4CPZ	12	5	650
W4UDQ	11	5	850
W4MDA	11	5	680
W4GIS	9	2	335
W5RCI	21	7	925
W5JTI	19	7	1000
W5HEH	15	7	830
W5AJG	14	5	1280
W5ABN	12	5	780
W5QNL	10	5	1400
W5CVW	10	5	1180
W5SWV	10	3	600
W5MWW	9	4	570
W5ML	9	3	700
W5NDE	8	3	520
W5FEK	8	2	580
W5VY	7	3	1200
W6NLZ	6	3	1000
W6WSQ	5	3	1280
W6DNG	5	3	600
W6AJF	5	2	640
W6RRZ	4	2	360
W6PJA	3	3	1390
W6ZL	3	2	1400
W6AJF	3	2	640
W6BAZ	3	2	400
W6MMU	3	2	388
W6ORS	3	2	365
W6LSB	2	2	360
W7VMP	6	4	1280
W7LEE	6	3	1020
W7LHL	4	2	1050
W7JU	4	2	353
W7JIP	3	2	850
W7YZU	3	2	240
W7JUO	2	2	140
W8WXV	28	8	1200
W8RMH	28	8	800
W88FG	26	7	850
W8LPD	25	8	750
W8DX	25	8	720
W88RW	27	7	850
W8LOF	23	8	700
W8ILC	23	8	770
W8WVI	22	8	725
W8JWV	22	8	710
W8BAX	21	8	685
W8WRN	20	8	670
W8EFP	18	7	800
W8PT	18	6	610
W8ZCV	17	7	970
W8RWW	17	7	630
W9KLR	29	8	950
W9ZHL	25	8	760
W9EQC	25	8	820
W9EHX	24	7	725
W9FVJ	23	8	850
W9BPV	23	7	1000
W9GAB	23	7	850
W9WOK	22	8	860
W9UCH	22	8	750
W9UED	22	7	960
W9KPS	21	7	690
W9MUD	19	7	640
W9REM	19	6	—
W9LF	19	6	—
W9AIU	18	7	800
W9JGA	18	6	720
W9MBI	16	7	660
W9JYI	15	7	560
W9LEE	15	6	780
W9DBP	15	6	760
W9DDG	16	6	700
WØEM8	27	8	1175
WØIHD	26	7	870
WØGUD	25	7	1065
WØUOP	18	6	—
WØONQ	17	6	1000
WØINI	17	5	830
WØUSQ	14	6	750
WØOAC	14	5	725
WØTJF	13	4	—
WØZJB	11	4	650
VE3DIR	26	8	915
VE3AIB	25	8	910
VE3BQN	17	7	790
VE3DER	16	7	820
VE3BPB	13	6	715
VE2AOK	12	5	550
VE3AQG	11	7	800
VE1QY	11	4	900
VE7FJ	2	1	365

50-Mc. DX Summary

Though the fall of 1956 was only 9 years from the peak of the previous cycle, 50-Mc. DX was rampant from late October through November. The m.u.f. went phenomenally *high across the North Atlantic*, not *that it did anyone much* good, there being no 6-meter band in any European country. Morning after morning on frequencies up to 53 Mc., and some days even higher, there were signals of every kind except amateur, to be heard in northeastern U.S.A. Video buzz-saws, facsimile, teletype, harmonics of ship and shore stations — take your choice. They were all in there daily, except when ionospheric disturbances wiped out high-frequency communication on the European circuit. The BBC Channel 2 video, 51.75 Mc., was heard clearly, even on 50-Mc. mobile receivers, day after day. BBC TV sound on 53.5 Mc. furnished almost broadcast-quality reception for several hours on Nov. 18th, when the North-Atlantic path was open from about 0800 to 1400 EST, the longest opening on record. There being no 6-meter band in Europe, the word was a bit slow in getting around, but by Dec. 1st crossband work was getting underway. See the box insert, page 10, for further details.

The m.u.f. seemed higher than anticipated on paths involving fairly high latitudes. Transcontinental openings were frequent, with W1-W7 work providing some of the strongest signals. Alaskan teletype signals near the low edge of the band were heard frequently all over the country, and notably along the East Coast. The BBC's video was reported in nearly all parts of the country. Japanese amateurs running low power had frequent contacts with Communicator stations in the Northwest. South American work seemed more rare, following only on the heels of ionospheric disturbances, as far as the more northerly stations were concerned. Below is a digest of reports received to date.

Oct. 27th: LU9MA worked VE1QY W3VSJ K2ITP K2ITQ W1UAR W1FCP W2MEU W1HOY W1AEP W1HDQ W1KAY W2ZKE W1SJZ (?) W4UMF W2IDZ W3LFC W1AQR W1BYY W1DZH K2QKX W1BJ K2RRG, 0755 to 0920 EST; heard KH6NS, 1600. KØADM worked PZ1AE 1045 CST. K6EDX worked W3VXJ W3MXW, 0754 to 0815, and JA1AUH 1452 PST. W3VXJ worked LU9MA and K6EDX; heard LU3BBX. W4GJO worked W6s and W7ERA.

Oct. 28th: K6EDX worked W4GJO, 0845, and CO2XZ, 0857 PST. W9MHP and W3OJU worked PZ1AE.

Nov. 3rd: W1VNH worked K6EDX W6VDG, 1220 to 1240 EST; heard W6RLB. W2TTM heard W7ERA. PZ1AE worked by WØSMJ and KØADM.

Nov. 4th: Many transcontinental contacts, beginning about 1120 EST. Band still open to Europe on East Coast at this time. KL7DKA reported worked in Boston area; not yet confirmed.

Nov. 5th: W1HDQ heard by G6LX and GI3ZX, 1000 EST, and by W. J. Skinner, Plymouth, England, 0910.

Nov. 6th: W7ACD worked JA1AU, 1610 MST. W7VOG worked JA3JJ. W7UGK worked JA1AUH JA1JJ JA1IF, 1515 PST.

Nov. 7th: W7ACD worked JA8CF, 1557 MST. W1HDQ heard by F3CT, 0750 EST and by F8OL and GI3ZX. Many transcontinental QSOs. W7ERA worked JA3JJ JA8CF JA8CX JA1QC JA1GP.

Nov. 8th: JA1AN worked W7VOG, 0850 JCT. W7ACD worked JA1ALZ JA1AGF; heard JA1AUH JA7GB JA8CF, 1550 to 1625 MST. W1HDQ heard by F3CT, 0850 EST. W7QDJ worked VE1EF, 0836 MST. W7MKW worked JA7GB JA2QR JA1GP JA8CX JA8CF KA2DS JA1ALZ JA3JJ, 1415 MST. Many transcontinental QSOs around noon EST. Many JAs worked from Washington and Oregon.

Nov. 9th: W3AMO worked W6BAZ, 1046 EST. F3CT heard W1HDQ.

Nov. 11th: W6NLZ worked KH6PP KH6NS KH6BRJ, 1000 PST, and many stations by backscatter. K6EDX heard LU2EW, 0755 PST; worked PZ1AE, 0305, K4AYW, 0825, TI2AFC (1st TI — W 50-Mc. QSO?), 0827, many Ws on backscatter, 0850 to 0935, KH6PP, 1055; heard TG9JW and CE? W1s and W2s heard W6s by backscatter.

Nov. 12th: W1FOS and W1HDQ heard by F3CT.

Nov. 15th: K6RNQ worked KH6PP KH6NS KH6BRJ, 1030 to 1530 PST.

Nov. 16th: W7ERA worked KH6BRJ, 1130 PST. W7WQZ worked KH6PP, 1330 PST. K6RNQ heard KH6s, 1025 PST; worked KX6BQ, Marshall Islands, 1220 PST.

WØZJB	48	W4QN	44	W8NQD	45
WØBJV	48	W4UCH	44	W8UZ	45
WØCJS	48	W4FLW	43	W8RFW	45
W5AJG	48	W4OXC	41	W8SQU	45
W9ZHL	48	W4UMF	41	W8LPD	44
W9OCA	48	K4DJO	41	W8HJR	43
W6QB	48	W4MB	40	W8YLS	41
WØINI	48	W4IKK	39	W8PCK	35
W1HDQ	48	W4FNR	39		
W5MJD	48	W4IUJ	38	W9BRN	48
W2IDZ	48	W4RFR	37	W9ZHB	48
W1LLL	48	W4AKX	36	W9QUV	48
WØDZM	48	W4AYV	36	W9VZP	47
WØHVW	48	W4NWB	35	W9RQM	47
WØWKB	48	W4GJO	35	W9ALU	47
WØSMJ	48	W4AZC	31	W9QKM	47
WØOGW	48	W4ZBQ	34	W9UIA	45
				W9UNS	45
W1VNH	47	W5VY	48	W9MHP	43
W1CLS	46	W5SFW	47	W9MFH	42
W1CGY	46	W5LFQ	47	W9JFP	42
W1LSN	46	W5GNQ	46	W9JCI	41
W1AEP	46	W5ONS	45		
W1KHL	42	W5JTI	45	WØORE	48
W1FOS	43	W5ML	44	WØQIN	47
W1DJ	41	W5PSC	44	WØNFM	47
W1RFU	41	W5JLY	44	WØTKX	47
W1ELP	39	W5JME	43	WØYKF	47
W1SPX	36	W5VV	42	WØMVG	47
W1UHE	34	W5FAL	41	WØJOL	46
W1WAS	31	W5HEZ	41	WØTJF	44
		W5BNA	41	WØURQ	44
W2MEU	47	W5HLD	40	WØJHS	43
W2AMJ	46	W5FXN	40	WØIPI	43
W2BYM	46	W5EXZ	38	WØCNM	42
W2RLV	45	W5HFF	33	WØFKY	42
W2FHJ	45	W5NSJ	32	WØPKD	41
W2RGV	44	W5ZVF	31	WØZTW	41
W2GYV	40			WØUSQ	40
K2JNS	40	W6WNN	48	WØZTW	36
K2AXQ	39	W6UXN	48	WØVIK	35
W2SHV	39	W6TMI	46	WØWNU	34
W2QVH	38	K6EDX	46		
K2HPN	38	W6ANN	45	VE3AET	45
K2HRB	37	W6IWS	41	VE3AIB	35
W2ZUW	37	W6CAN	40	VE1QZ	34
W2JORA	36	W6ABN	39	VE1QY	32
K2ITQ	33	W6GCG	35	VE3DER	31
K2ITP	31	W6BWG	34	VE1EF	28
		W6OJF	31	XE1GE	27
W3OJU	47	K6GTG	30	CO6WW	21
W3TIF	45	K6ERG	27	VE4HS	20
W3NKM	41			CO2ZX	16
W3MQU	41	W7HEA	47	LU9MA	16
W3MXW	41	W7ERA	47	PZ1AE	15
W3OTC	40	W7BQN	47	JA1AUH	4
W3FPH	40	W7FDJ	46		
W3RUE	41	W7DYD	45		
W3KMV	39	W7ACD	45	Calls in **bold** face are holders of special 50-Mc. WAS certificates listed in order of award numbers. Others are based on unverified reports.	
W3LFC	37	W7JRG	44		
W3TDF	34	W7BOC	42		
W3AMO	32	W7JPA	42		
W3UQJ	28	W7FIV	41		
		W7CAM	40		
W4FBH	46				
W4EQM	46	W8CMS	47		
W4CPZ	45	W8OJN	46		

Nov. 17th: PZ1AE worked W1s LGE HDQ FTX AEP, 0858 to 0920 EST. Transcontinental opening.

Nov. 18th: W1HDQ heard by G6CJ. TG9JW worked by W7AAD and W7ERA, 0930 PST. PZ1AE worked W1s and 2s, 0855 to 0920 EST. XE1GE worked VE1QY W1CRV W1ELP W1VNH W1RMF W1PWW. G6DH heard W2MEU, W1BYY and VE1EF 1000 to 1120 EST. W3LCC and W3OJU worked PZ1AB.

Nov. 19th: Transcontinental opening 1150 to 1400 EST.

Nov. 20th: Transcontinental opening 1230 to 1300 EST.

Nov. 24th: G6DH heard W1HDQ.

Nov. 25th: KØGKE, Lakewood, Colo., heard JAs. Many JAs worked by W6s and W7s.

Meteor Shower Skeds Pay Off

At press time last month reports on hand indicated that 144-Mc. skeds during the Orionids meteor shower had accomplished little beyond reception of bursts at something above the *normal* rate. Then, too late to include them in

(Continued on page 128)

A.R.R.L. COUNTRIES LIST • *Official List for ARRL DX Contest and the Postwar DXCC*

AC3 ..... Sikkim
AC4 ..... Tibet
AC5 ..... Bhutan
AP ..... Pakistan
BV, (C3) ..... Formosa
C (unofficial) ..... China
C3 ..... (See BV)
C9 ..... Manchuria
CE ..... Chile
CE9, KC4, LU-Z, VK1, VP8 ..... Antarctica
CEØ ..... Easter Island
CM, CO ..... Cuba
CN2, KT1 ..... Tangier Zone
CN8 ..... French Morocco
CP ..... Bolivia
CR4 ..... Cape Verde Islands
CR5 ..... Portuguese Guinea
CR5 ..... Principe, Sao Thome
CR6 ..... Angola
CR7 ..... Mozambique
CR8 ..... Goa (Portuguese India)
CR9 ..... Macau
CR10 ..... Portuguese Timor
CT1 ..... Portugal
CT2 ..... Azores
CT3 ..... Madeira Islands
CX ..... Uruguay
DJ, DL, DM ..... Germany
DU ..... Philippine Islands
EA ..... Spain
EA6 ..... Balearic Islands
EA8 ..... Canary Islands
EA9 ..... Ifni
EA9 ..... Rio de Oro
EA9 ..... Spanish Morocco
EAØ ..... Spanish Guinea
EI ..... Republic of Ireland
EL ..... Liberia
EQ ..... Iran
ET2 ..... Eritrea
ET3 ..... Ethiopia
F ..... France
FA ..... Algeria
FB8 .. Amsterdam & St. Paul Islands
FB8 ..... Comoro Islands
FB8 ..... Kerguelen Islands
FB8 ..... Madagascar
FB8 ..... Tromelin Island
FC ..... Corsica
FD ..... French Togoland
FE8 ..... French Cameroons
FF8 ..... French West Africa
FG ..... Guadeloupe
FI8 ..... French Indo-China
FK8 ..... New Caledonia
FL8 ..... French Somaliland
FM ..... Martinique
FN ..... French India
FO8 ..... Clipperton Island
FO8 .. French Oceania (e.g., Tahiti)
FP8 .. St. Pierre & Miquelon Islands
FQ8 ..... French Equatorial Africa
FR7 ..... Reunion Island
FS7 ..... Saint Martin
FU8, YJ ..... New Hebrides
FW8 ..... Wallis & Futuna Islands
FY7 ..... French Guiana & Inini
G ..... England
GC ..... Channel Islands
GD ..... Isle of Man
GI ..... Northern Ireland
GM ..... Scotland
GW ..... Wales
HA ..... Hungary
HB1, 9 ..... Switzerland
HC ..... Ecuador
HC8 ..... Galapagos Islands
HE ..... Liechtenstein
HH ..... Haiti
HI ..... Dominican Republic
HK ..... Colombia
HKØ ..... Archipelago of San Andres and Providencia
HL ..... Korea
HP ..... Panama
HR ..... Honduras
HS ..... Siam
HV ..... Vatican City
HZ ..... Saudi Arabia
I1 ..... Italy
I1 ..... Trieste
I5 ..... Italian Somaliland
IS1 ..... Sardinia
JA, KA ..... Japan
JY, ZC7 ..... Jordan
JZØ ..... Netherlands New Guinea
K, W ..... United States of America
KA ..... (See JA)
KAØ ..... Bonin & Volcano Islands
KB6 .. Baker, Howland & American Phoenix Islands
KC4 ..... (See CE9)
KC4 ..... Navassa Island
KC6 ..... Eastern Caroline Islands
KC6 ..... Western Caroline Islands
KG1 ..... (See OX)
KG4 ..... Guantanamo Bay
KG6 ..... Mariana Islands
KH6 ..... Hawaiian Islands
KJ6 ..... Johnston Island
KL7 ..... Alaska
KM6 ..... Midway Islands
KP4 ..... Puerto Rico
KP6 .. Palmyra Group, Jarvis Island
KR6 . Ryukyu Islands (e.g., Okinawa)
KS4 ..... Swan Island
KS6 ..... American Samoa
KT1 ..... (See CN2)
KV4 ..... Virgin Islands
KW6 ..... Wake Island
KX6 ..... Marshall Islands
KZ5 ..... Canal Zone
LA, LB ..... Jan Mayen
LA, LB ..... Norway
LA, LB ..... Svalbard (Spitzbergen)
LU ..... Argentina
LU-Z ..... (See CE9, VP8)
LX ..... Luxembourg
LZ ..... Bulgaria
M1 ..... San Marino
MP4 ..... Bahrein Island
MP4 ..... Kuwait
MP4 ..... Qatar
MP4 ..... Trucial Oman
MS4 ..... (See I5)
OA ..... Peru
OD5 ..... Lebanon
OE ..... Austria
OH ..... Finland
OHØ ..... Aland Islands
OK ..... Czechoslovakia
ON4 ..... Belgium
OQ5, Ø ..... Belgian Congo
OX, KG1 ..... Greenland
OY ..... Faeroes
OZ ..... Denmark
PAØ ..... Netherlands
PJ2 ..... Netherlands West Indies
PJ2M ..... Sint Maarten
PK1, 2, 3 ..... Java
PK4 ..... Sumatra
PK5 ..... Netherlands Borneo
PK6 ..... Celebes & Molucca Islands
PX ..... Andorra
PY ..... Brazil
PZ1 ..... Netherlands Guiana
SM ..... Sweden
SP ..... Poland
ST ..... Sudan
SU ..... Egypt
SV ..... Crete
SV ..... Dodecanese (e.g., Rhodes)
SV ..... Greece
TA ..... Turkey
TF ..... Iceland
TG ..... Guatemala
TI ..... Costa Rica
TI9 ..... Cocos Island
UA1, 3, 4, 6 ..... European Russian Socialist Federated Soviet Republic
UA1 ..... Franz Josephland
UA9, Ø ..... Asiatic Russian S.F.S.R.
UB5 ..... Ukraine
UC2 ..... White Russian Soviet Socialist Republic
UD6 ..... Azerbaijan
UF6 ..... Georgia
UG6 ..... Armenia
UH8 ..... Turkoman
UI8 ..... Uzbek
UJ8 ..... Tadzhik
UL7 ..... Kazakh
UM8 ..... Kirghiz
UN1 ..... Karelo-Finnish Republic
UO5 ..... Moldavia
UP2 ..... Lithuania
UQ2 ..... Latvia
UR2 ..... Estonia
VE, VO ..... Canada
VK .. Australia (including Tasmania)
VK1 ..... (See CE9)
VK1 ..... Heard Island
VK1 ..... Macquarie Island
VK9 ..... Nauru Island
VK9 ..... Norfolk Island
VK9 ..... Papua Territory
VK9 ..... Territory of New Guinea
VO ..... (See VE)
VP1 ..... British Honduras
VP2 ..... Leeward Islands
VP2 ..... Windward Islands
VP3 ..... British Guiana
VP4 ..... Trinidad & Tobago
VP5 ..... Cayman Islands
VP5 ..... Jamaica
VP5 ..... Turks & Caicos Islands
VP6 ..... Barbados
VP7 ..... Bahama Islands
VP8 ..... (See CE9)
VP8 ..... Falkland Islands
VP8, LU-Z ..... South Georgia
VP8, LU-Z ..... South Orkney Islands
VP8, LU-Z .. South Sandwich Islands
VP8, LU-Z .. South Shetland Islands
VP9 ..... Bermudas
VQ1 ..... Zanzibar
VQ2 ..... Northern Rhodesia
VQ3 ..... Tanganyika Territory
VQ4 ..... Kenya
VQ5 ..... Uganda
VQ6 ..... British Somaliland
VQ8 ..... Chagos Islands
VQ8 ..... Mauritius
VQ9 ..... Seychelles
VR1 ..... British Phoenix Islands
VR1 ..... Gilbert & Ellice Islands & Ocean Island
VR2 ..... Fiji Islands
VR3 .. Fanning & Christmas Islands
VR4 ..... Solomon Islands
VR5 ..... Tonga (Friendly) Islands
VR6 ..... Pitcairn Island
VS1 ..... Singapore
VS2 ..... Malaya
VS4 ..... Sarawak
VS5 ..... Brunei
VS6 ..... Hong Kong
VS9 ..... Aden & Socotra
VS9 ..... Maldive Islands
VS9 ..... Sultanate of Oman
VU2 ..... India
VU4 ..... Laccadive Islands
VU5 .. Andaman and Nicobar Islands
W ..... (See K)
XE ..... Mexico
XE4 ..... Revilla Gigedo
XW8 ..... Laos
XZ2 ..... Burma
YA ..... Afghanistan
YI ..... Iraq
YJ ..... (See FU8)
YK ..... Syria
YN ..... Nicaragua
YO ..... Roumania
YS ..... Salvador
YU ..... Yugoslavia
YV ..... Venezuela
YVØ ..... Aves Islands
ZA ..... Albania
ZB1 ..... Malta
ZB2 ..... Gibraltar
ZC2 ..... Cocos Island
ZC3 ..... Christmas Island
ZC4 ..... Cyprus
ZC5 ..... British North Borneo
ZC6 ..... Palestine
ZC7 ..... (See JY)
ZD1 ..... Sierra Leone
ZD2 ..... Nigeria
ZD3 ..... Gambia
ZD4 ..... Gold Coast, Togoland
ZD6 ..... Nyasaland
ZD7 ..... St. Helena
ZD8 ..... Ascension Island
ZD9 ..... Tristan da Cunha & Gough Islands
ZE ..... Southern Rhodesia
ZK1 ..... Cook Islands
ZK2 ..... Niue
ZL ..... Kermadec Islands
ZL ..... New Zealand
ZM6 ..... British Samoa
ZM7 ..... Tokelau (Union) Islands
ZP ..... Paraguay
ZS1, 2, 4, 5, 6 .. Union of South Africa
ZS2 . Prince Edward & Marion Islands
ZS3 ..... Southwest Africa
ZS7 ..... Swaziland
ZS8 ..... Basutoland
ZS9 ..... Bechuanaland
3A ..... Monaco
3V8 ..... Tunisia
4S7 ..... Ceylon
4W1 ..... Yemen
4X4 ..... Israel
5A ..... Libya
9S4 ..... Saar
..... Aldaba Islands
..... Cambodia
..... Mongolia
..... Nepal
..... Viet Nam
..... Wrangel Island

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How:

Now and again one will hear specious comment to the effect that "glamorizing DX" is responsible for inordinate QRM levels on our high-frequency bands. To some extent this is doubtless true. Intense interest in operational ham radio, by the laws of something or other, *must* result in QRM. After all, it's axiomatic that the average amateur, when embraced by his headphones, transmits almost 50 per cent of the time and receives about 50 per cent of the time.

This fifty-fifty transmit/listen radio holds closer in some operating facets than others. It appears quite true, for example, in the vast and honorable realm of casual rag-chewing. On 40 meters of an evening it's likely there are nearly as many hams transmitting as listening, especially on c.w. And at times in the Novice segments of 40 and 80 there possibly are even more operators transmitting than listening, for the novelty of calling CQ still is fresh. On the other hand, the traffic game features a remarkably low transmit/listen ratio; a single-frequency net with a dozen or so members normally allows but one to transmit at a time. Perhaps in no other major phase of operating is so little QRM caused by so many![1]

Our DX angle, while it can't challenge traffic's minimal T/L ratio, certainly stands head and shoulders above casual rag-chewing in the same regard. For one thing, DXCC itself bears a unique compensating mechanism for limiting the ambient QRM level on DX bands. How's that? Well, just consider yourself a 200-country man complete with gallon and 3-element ejector, primed for the stratosphere of DX achievement. Are you going to sit around chewing the fat with random Gs, VKs, or the local gentry? Not by a darned sight. You're going to tune. You're going to *listen*.

Check the potent pattern: A country-conscious DXer takes pains to emit a louder and louder signal; so the louder he becomes, the more countries he disposes of; but the more countries he knocks off, the less he transmits because the harder he must scratch for those countries he still needs; and the more he listens, the less QRM you get from his stunning wallop. Indeed, DXCC Honor Roll aspirants automatically become the most diligent "SWLs" the world has ever known.

So next time you encounter one of those earth-shaking melees centered on AC5PN or ZC3AC you might count some blessings. Or would you prefer all those intermittently concentrated db. spread out and spitting continuously?

What:

Hap-py New Year! DXwise a joyful year indeed, if 1957 confirms its pregnant promise. And we close your 1956 DX diary on a theme of propagational prosperity unprecedented, reminding you that in the text to follow, frequencies (in number of kc. above the lower band limit) appear within parentheses, times without. E.g., (9) = 14,009 kc. if the paragraph treats 20-meter work. Times are GMT, using the nearest whole-hour figure, such as 7 for 0720, or 0 for 2349. . . .

10 phone DX enthusiasts, a peculiar breed of 11-year locusts, are really livin' it up. This month we'll reverse the callphabetical order of reports, giving the Zeroes a break, because the call of a given DX station normally is mentioned herein but once per band-paragraph. So, at *WØQGI:* **DU1AP, TF2WBG, UA1AB, ZK1BS, ZS7C,** still using mere 2E26 final. *W9NDN:* KA2KK 1, **KGs 4AC 6NAC** (540) 2, **VP7NZ** 15, missed on **KB6BC** 2. *W9WHM:* **LZ1WD** (330), **SVØWE** (310) of Rhodes, **ZC4VP** (400). *W8LY:* **CR9AH** (310), **CT2AH** (310), **LX1AC** (450), **MP4KAC** (300), **OD5AB** (400), **ST2DB** (300), a DU. *W8PCN:* first attempt at DX phone, **HP3FL, OK1MB, VP7NS.** *W5ERY:* **EA8CF, VU2EJ, YU1AD.** *W5TFB:* tapped jackpot for **CRs 4AP** 22, **5AC** 0, **7AD** 19, **CT2AC** 21, **ET2MZ** 22, **FA3JR** 20, **FQ8AK** 20, **HI8WL** 18, **JA1CO** 22, **KA2NA** 22–23, **KX6ZB** 23, **OD5DA** 14-15, **OQØDZ** 19-20, **TF3AB** 21, **VK9DB** 22, **VQ3AC** 21, **ZB2s I P** 18, **ZDs 4BV** 20-21, **6JL** 19, **6RM** 17, **3V8FA** 17, **4X4DR** 16-17, CR9 MP4 ST2 ZK1 and decries superfluous CQ-DXing by W/Ks. *K4HNA:* **LX1AI, VQ2NA, ZE2KL.** *W3ZKH:* **CRs 6BH 7BB 7DS, HE1RS, UC2KAB, UQ2AN, VQs 3ES 4GF, YU3BC, ZC4IP, ZD4BR, 4X4FQ, 5A2TZ,** runs 125 W. to 3-el. spinner. *W3MQC:* 120 worked now, **LZ2KN, YU2DB, 4X4FS,** HE (IC2 ZD6 ZC4, uses new 4-el. beam. *W1AF* (KØBIB at mike): **CN8AS** (492), rarish **CO1AF** (376), KØGSC/**VE8. SP9KAD** (506), **VP6AM** (485), **5A1TZ** (494), operated by Harvard U. Wireless Club. *W1EKU:* **DU7SV, KA2s MA MR** (YL), **KA5ZS, KG1LH, KV4BQ, UA1BE** (400), **VPs 5ML** of Turks, **8BP** of Antarctica, **8BU** on So. Orkneys, **3V8AX, 9S4AX** (400-800), heard about **CEØAC** (410) 20, notes too-frequent auroral effects on 10. *W1GOU:* now claims 150 confirmed on 28-Mc. phone plus **CR6AF, EAs 8CC 0AC, EL12H** (now EL1H), **FG7XB, FY7YE, IT1ZDA, JA1BFC, KA2EB, KB6BD,**

* 4822 West Berteau Avenue, Chicago 41, Illinois.

[1] A key factor in hypothetical QRM considerations, the transmit/listen ratio proportions the estimated number of amateurs transmitting to the estimated number of amateurs listening, instantaneously per given operating activity. Crediting where credit is due, roundtables, transmitter hunts, much multioperator operation, ARRL OBS, OO, FMT, code practice and similar activities help to minimize ham radio's over-all T/L ratio. The League's annual Field Day with its traditional loggers and kibitzers also is outstanding. (Of course, carried to a theoretical extreme, the "perfect" transmit/listen ratio of zero would mean *no* QRM — and no amateur bands.)

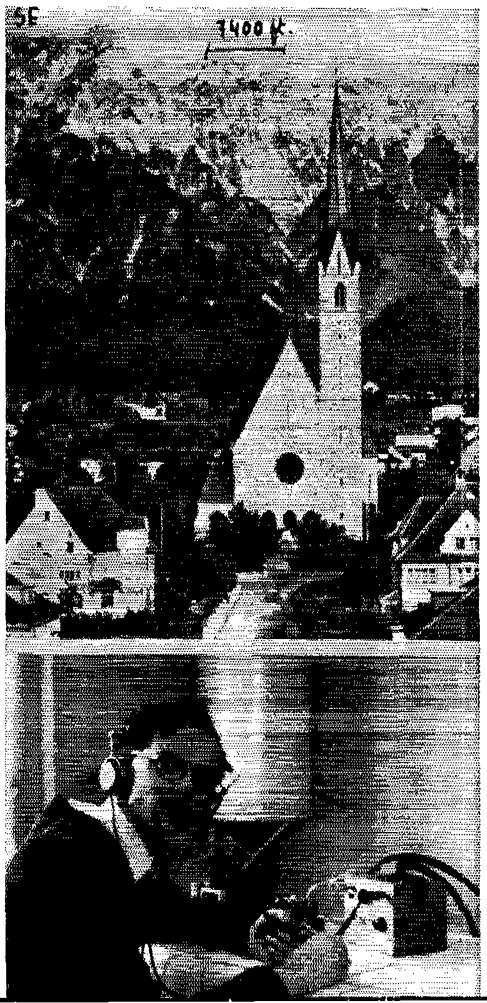
KW6CA, KX6AF, UB5WF, VPs 2MY 8BY, VQ4RF, YU1AA, 4X4BO, CR7 HE OQ MP4 UC2 UQ2 VK9 ZC4 . . . . . Last October 20th JA3BB grabbed VK4HD, VS6CY, W6KFQ, ZS1DC, LU3BU and OH5PE within a span of 29 minutes. "Among JAs this is a new record for short-time WAC, breaking the record of 34 minutes held by JA6AO," writes Shigeo. Thus JA3BB takes possession of the J5CC Memorial DX Trophy, if only temporarily.

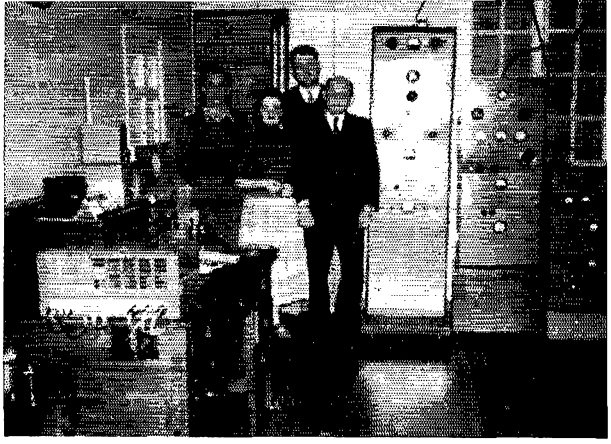
10 c.w. displays a widening variety of catchables. At *W9NDN:* CEs 3AG 4AD, CRs 6DA 7AF, CXs 1FB 5PV, DM2AEN, FA9RZ 15, GD3UB (29) 17, JAs 1CO 3BN 7AU 9BE all 22-0, LZ1KDP 15, OE5JK 15, OQ5RU 2, OX3AY 16, SP6GB 18, VK9DB 2 of Papua, VQs 2GW (73) 19, 4GF 20, XE1A 19, YO3ZA (64) 18, YV5DE 16, 9S4AX (102) 15, missed UAØGF (75) 1-2. *W8LY:* HZ1HZ (100), VK9XK (130), VS6CT (190), plus UB5UB (130). *W7DJU:* JAs 5DF 6PK. *W6WLY/Ø:* OKs, YO3GY. *K5AGI:* myriad Europeans, DM3LCN, FA8RJ, YU3s EU KT. *K4CXC:* CR7BS, JA3AB, SVØWT, XE1H, YU, up to 43 with 50 watts. *K4EEK:* swears by a vertical dipole because of DM3US, FA8CR, HR1CB (on 11), UAs 3KBA 6KAB 6KTB, UB5KAW, VP6GT, VQs 2AS 4FK, XW8AB, YV4FU, 4X4s BX IX, 5A2TZ, GD, 33 Gs. *K4HNA:* FQ8AF, GC3HFE, HP1BR, JA1VX, KW6CA, LZ1WD, OQ5CP, PJ2AN, SP8CK, VQ4FK, ZC4IP, ZE3JP, ZK1BS, 4X4FS, 9S4s BS CM, now 105 worked. *K2EQD:* finds less DX-hoggishness on 28 Mc., plus GD3IBQ (33) 17, ZD1FG (73) 18, FQ8 KW6 ZK1. *K2MQP:* KA2NA. *KP4KD:* SVØ for No. 65 on ten (Ev has 210 on twenty, 104 on fifteen, 105 on forty, 66 on 80).

15 phone lost some business to 28 Mc. but there's still plenty of DX to go around. Here and there, at *WØBJH:* SV1s AB AD. *WØQPI:* CN8JW, HZ1AB, VP7NB. *WØZZT:* CR9AH, HI8WL, I1NU/Trieste, LX1-DC, TF2WBG, VP8s BP BU, W4OAZ/KS4. *W9WHM:* cleaned up on CR6AO (245), DU6IV (245), ET2FM (180), KW6CA (270), KX6ZB (330), MP4BBW (246), SPs 1BC (340), 5KAB (357), ST2DB (150), TF3KA (230), UC2KAB, VP8BR (220) of Antarctica, W6JFM/FO8 (300), VR4AA (250), VS6BO (300), ZD6RM (170), ZK1BS (170), ZM6AR who is leaving British Samoa, 4S7s GE (230), YL (225). *W8PCS:* CR9, OQ5AU, PZ1RM, TG9AD. *W6ZZ:* BV1US, JA3BB, KA2s FQ KS, KV4BD, KW6 KX6, LU4DMG (YL), VPs 4KL 6ZX 7NS, advises that FCC now is checking 21-Mc. band and subband limits closely. *W4ZMC:* FO8AD, A.C.T. VK1ASB, EA8AO, KR6RB, VK9DB, ZD6DT, BV1 HI 487. *K4BUG:* CN8FF, CR6BH, HH7W/m, HR3HH, KG4AN, KT1WX, MP4KAC, OQ5GT, HZ1, on 100 watts and 3-el. twirler. *K4DAP:* VPs 4TM 7NF, ZE2KR. *K4GIE:* HP3FL, HR1s CB LW, TG9s AP TU, VPs 2GC 6UN 9DA, VR2BC, XE1XX, HI HZ1 KX6. *K4HCS:* VPs 5MS 7NS, XEs 1DU 2FL, even finds DX on sparsely-populated 11 meters (CX and KP4). *K4HNA:* VP5DH of Turks' guided-missile crew. *W1PNR:* at 101/89, CR5SP, M1AB (208), SV1AE (232), UA3EG (182), UB5KBA (248), UQ2AN (169), VPs 2AD (223), 3YG (192), 8BT (160), VQs 2SB (235), 5GC (140), ZE2KJ (169), CR6 CR9 HZ1 ZD6, writes, "Enjoy reading of Miles' activities as W6ZZ. As W1WV years ago he gave me the initial push and tutelage in ham radio."

15 c.w. solidifies its position as No. 2 c.w. DX band, second only to King Twenty. We lead off with *WØZZT:* SP1KAA, UA3HI. *W8DLZ:* 152/135, OD5AV (70), OY7ML (65), UAs 3CR 4FE 9CC (45), UC2s AA (62), KAB (53), UQ2AS (30), VK9DB (88), XW8AB (45), 3A2BH (48), 4X4FA (45). *W8IBX:* CE3s AG DZ, VE8AB, XE1XX. *W8PCS:* LZ1KAA, OY1R (150), UB5FW, ZK1BS. *W8SRK:* CN8s AS DJ, CR6CS, ET2RP, JA3BB, VQ4RF, ZE3JP, 4X4BX, RAFman G3IDC/VS9. *W7DJU:* JA4AF. *W7QNI:* FA8RJ (30), KA2KS (100), JA7AD (60), XE1PJ (70). *W6RZS:* CR7BS, YO8MS, ZC4IP, ZE3JJ, 9S4DE. *W6WLY/Ø:* ZC4AA, 4X4FA, 9S4AX, CR7 UC2. *W6ZZ:* JA1ACB, now has worked *1875* different Gs! *K6JTG:* CE2AT, KW6CH, OA5H, SP3PL, UA3BF, VK9XK, VP7NS, VQ2GV, ZP5AM. *K6OPI:* HA5BI, JAs 3AH 4JU, KX6NC/KC6 (85) 4, SP3PJ 17, TF5TP (85) 23, UA4NA, UB5CI, KW6 OD5 UC2 UA9. *K5AAK:* HA5BW, JA1s CR VX, UA3EG, VQ2RH. *W4HBK:* CR7BH, UQ2KAL, VR2BZ. *W4NBV:* XW8. *W4YHD* (erstwhile

The DXpeditionary dust of 1956 still is settling and Swiss amateurs certainly stirred up their full share of it. At lower left HB1CM/HE (HB9CM) used a p.p.-1619s crystal oscillator, 3-stage t.r.f. receiver, and half-wave skywire in mountainous Liechtenstein last February to work W1BB for the first recorded 160-meter HE-W/K contact. Philo's shack was located deep in the principality's central valley to left and rear of that imposing church. (Permanent resident HE9LAA radiates from quarters in the right background.) . . . . . Below, HB9KB and Swiss SWL HE9RDX take five for refreshments outside the 3A2BH rooftop shack where the pair rolled up 2247 QSOs on 3.5 through 28 Mc. from September 30th through October 11th. By bands, 123, 524, 1366, 214 and 20 contacts were collected on 3.5, 7, 14, 21 and 28 Mc., respectively. The base mounting of their trusty vertical is visible at right. HE9RDX states, "Each of our QSLs bears one of the special stamps which were issued on the occasion of the marriage of H.H. Prince Rainier and Princess Grace."





If your S-meter never has been pinned by HK3AB's 20-meter phone signal you don't work 20 or you don't have an S-meter. In this photo two visiting Hamyankees tour the HK3AB Bogota hamshack, escorted by Hector (right) and daughter. HK3AB, one of South America's foremost amateur radio pioneers, has been at it since 1932. You may have worked him as HKØAB. (*Photo via W3IKD*)

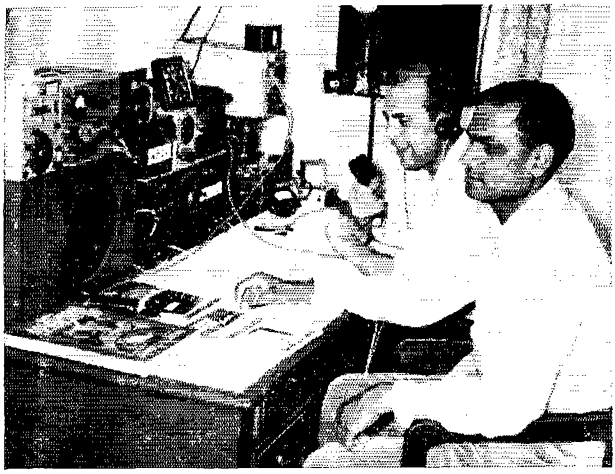
♦

K2QQO): **CR**s 6AI 6CZ 7AG, **FF8**BL (92) 23, **HZ1**HZ, **OD5**LX, **PJ2**ME, **ST2**NG, **SVØ**WT, **UB5**UB, **VQ**s 2AS 2GR 2GW 4CC 4KPB 4RF 5GC, **ZE**s 1JV 3JP, **ZD6**BX, **4S7**GE (110) 18, heard **XZ2**OM 12, asserts "Boy, conditions are good [in W4] — I should never have moved north!" *W4ZMC:* **SP5**KAB, **TF5**TB. *K4BUG:* FA8. *K4DAP:* JA1ADN, W8QOH/OQ. *K4DRO:* KH6s. *K4HCS:* **VQ4**DT (75) 22, **YU3**s AV EU. *W3WPG:* CR6 CR7 ZE 9S4. *K2EQD:* **FK8**AO (64) 6, **IS1**CXF (90) 17 new on 21 Mc., **VQ3**TL (30) 22, **4S7**GE (96) 18. *K2MQP:* CM9AA, **CE**s 2AX 7AQ, **CN8**s MM, MV, CP5EQ/**CP6**, **CR7**AH, EA8BV, EL2D, **ET2**PA, **HH2**JL, **HI8**WL, **HP3**FL, **HZ1**AB, KM6AX, **KT1**WX, **KR6**RB, **OA3**L, **OQ5**s AG GA HP, **PI1**RRS (just Holland), **PJ2**AO, **TF2**s WBG, WBH, **VP**s 2GC 2LU 4TE 5ML 6FR 7NB 8BP, **XE**s 2GS 3BA, YN1ARM, **YV5FL**, **ZD4**BV, 4X4DK, 5A2TZ, plus **BV1**US, muses "Still can't figure out where the rare Pacific ones hang out on 15." *K2PGP:* **ZB2**I, **UA9**DN, UC2 4X4. *W1CTW:* up to 115 on 21 Mc. with 101 confirmed, **FQ8**AR, **TF3**MB, **UB5**KBA, **YO3**KAB, **4X4**s BD FN, **9S4**BW. *I1ER:* all Yank call areas save 3rd, 7th and 10th. *KP4KD:* many juicies plus **LX1**AS, **ZD1**FG, **ZD8**SC, now 219/208.

15 Novice reports, from all U. S. call areas except KN8 this month, affirm the omnifarious DX qualities of our newest DX band. Down the line, at *KNØDQI:* **PJ2**AA, **VP6**HT, **YU3**KT, on Globe Scout plus folded dipole. *KNØDRI:* now 29/11, **PY1**AC (102) 17, Russian antarctic outpost **UA1**KAE (102) 16, VE3PS/VO6 15, **WP4**AEW, YV4AU 0-1, 4X4BX 21, uses Novice gallon with 4-wavelength-per-leg Vee beam, plus ARRL *Handbook* "One-Element Rotary Beam." *KNØGJD:* CP5EW, **FA8**DA, **HK3**PC, **JA1**ACB, **OE6**RP, **SPs** 1KAA 2BE 3PJ. **SVØ**WT, **TF5**TP, **UC2**KAB, **VPs** 4KL 6RG. **VQ2**IE, **YU3**s AV EK, **ZS6**UN, ZL 4X4, applied for WAC. *KN9CZU:* Euros, **LA5**QC, **VK2**QZ, on DX-35, SX-71, folded dipole. *KN9DCF:* **CE3**TH, **CR6**CS, **ZL2**FT, Euros, needs one more continent (Asia). *KN9DMQ:* found his DX-35 good for **KC4**USV (150) 2 of McMurdo Sound, Antarctica. *WN7BEC:* **FA8**RJ, **JA3**AH, VE8OW, VO6Y, **WL7**BSS, Euros, on 65 watts, 1-el. beam. *KN6SCZ:* **DU**s 6IV 7SV, **JA**s 1ADN 5AF, **WL7**s BUS BWY, with AT-1, NC-98. *KN5EZV:* **CE3**RE, **LU2**DAW, JA, needs only Africa for all continents on DX-35, S-85, 2-el. rotary beam. *KN4HQD:* many Euros, **OE2**WC (110) 20, **VQ4**KRL (104) 20, **ZS4**KH, uses 2-el. spinner. *KN4JFE:* **CN8**BK, **LU7**DDG, **OE1**FF, three VKs. **VP6**s GC HT, ZL ZS6s. *WN8HEA:* **CN8**DT, ZS. *KN2ROR:* **ZS6**CJ, 38 states, still needs Asia upon discovery that DU is Oceania. *WN1HDK* (now W1HDK): 24 countries, 44 states in six-month Novice career. *WN1JWZ:* **SP3**PL, ZL, ZS, hears **TF2**WBG. *WN1KGR:* **PY7**DQ, ZL, Europe.

20 c.w., as they often say, "needs no introduction." And then they usually go ahead and give one, but we'll just leave our opening ceremonies up to *VE1PQ:* **BV1**US (20) 0, **OD5**AV, **UAØ**KJA (60) 13, **VR2**AD (80) 10, **ZA1**AB (20) 0 who has 'em wondering, now is 186/145, took time out for trip to VE6-land. *W9UBI:* **CR6**AI, JA6CS, **TF3**AB, **UAØ**KCA, is avid electromagnetic propagation student. *W8DLZ:* **FE8**AE (40), **LZ2**KRS (25), **PJ2**ME (43), **UA9**s AA (35), DN (56), **UL7**CB (55), awaiting first postfreeze U.S.S.R. QSLs. *W8IBX:* **HH3**DL, **KV4**AA (85) 19-21, VE2AXE/VE8 on Baffin Isle. *W8IOS:* **FK8**AB, VR4, **YJ1**AA. *W8SRK:* **HI8**FR, antarctican **UA1**KAE, **UA9**CM. *W7DJU:* **JA**s 1KF 6EC, **KA9**MF, **UAØ**KFF, UPOL6, **VS2**FF, **YV5**HL. *W7UDG:* **LZ1**KSP (28) 23, **UA9**VA (50) 14, **UL7**KBA (60) 14, **UQ2**AP 3, **YO3**RF 3, **ZD6**RM (65) 14, offers Idaho and 100-per-cent QSL to WAS-hunters. *W7VRO:* reached 68 on **CR7**CI, **FA8**RJ, **GD3**FBS, **LZ1**KSZ, **OD5**LX, **OQ5**CP, **UAØ**KAD, **UC2**KAB, **UF6**KAC, **UG6**AB, **UP2**AA, **UQ2**s AH KAA, **YO3**AQ, **ZB1**BF. *W7WMY:* **HA5**s BW (80) 20, DX (60) 19, **OD5**LJ (60) 2, scads of UAs plus **UA9**s OB KCC, **UB5**s CA (60) 18-19, KAG (70) 15, **UF6**KAF (90) 19, **UL7**AB (70) 15, **UR2**KAA (70) 16, **YO5**LC (80) 15, YUs, writes "Put my 3-element short-beam up to 50 feet from 17 feet; *what* a difference!" *W6RZS:* **FY7**YE, Dutch St. Martin, many Russians, U.S.S.R. antarctic. *W6WLY/Ø:* **HA5**AL, KA2USA, **KC4**USV, **OY7**ML, LZ1KPZ, **UA9**KEC, other UAs galore. **UB5**KAW, **UP2**KBC. **VS6**CG, **ZB1**HKO, **ZC4**IP. *K6EC:* up to 142/108 with fresh DXCC diploma, **LU3ZM** (32) 22 of So. Orkneys, **UA**s 9KSA (40) 12, **ØKFE** (37) 6, **ØLA** (16) 5, **UI8KAA** (94) 16, **VK**s 1RW (110) 14, 9WF (18) 12, **VP8**BK (6) 2 on So. Georgia, **VQ2**W (46) 16, **ZD9**AE (45) 18, **ZS9**R (73) 17. *K6KYH:* CE3CB 0, CX6AD 1, not-too-plentiful A1 Mexicans **XE**s 1MB 1RM 2BM. *K6UIZ:* **JA1**QI 15. *W5JPC:* **FA8**JO (16) 8, **KJ6**BS, **KW6**CB (20) 10, **LZ1**UR (58) 7, **TF2**WBG (10) 11, UA9 UB5, **UP2**KBA (37) 10, **UR2**KAB (8) 7, **VK9**XK (4) 7, **VR2**AK (73) 8, **ZD1**FG (28) 8, 115 worked, hears **JZØ**PA (20), plus JAs working HL1AC. *W4NBV:* KC4 UB5 ZD1. *W4YZC:* **FB8**BR 7, **SU1**IM 23, **UA9**HD 21, **4S7**MR 12, QRL with school. *W4YE* (W4YZC's OM): **VSIGZ.** *K4DRO:* **HH3**DL, **HR1**AT, **JA8**AA to complete WAC possibility, **FP8**AP, **VP7**NZ, W4EMF/**KS4**. *W3CMN:* EA1BC. *W3WPG:* **EA8**BF (50) 3, **FY7**YG (70) 1-2, **UD6**DD (60) 4-5, long-path VK5MY (60) 22-23, **ZC4**IP (85) 20, now 120/102. *W3MOT:* **EAs 8**BK (46), 9BJ (78), **FA8**ZZ (41), **FG7**XC (22), **EA6**AW (32), **SP9**EU (79), **UI8**KBA (85), **UB5**DU (63), **UR2**AO (44), **VP3**AD (57) **VQs 4**DT (55), 5GJ (55), **VR3**B (56), **ZS9**Q (49), **4S7**WP (73), **4X4**GV (40), **9S4**CH (55), Sint Maarten, OD5 UA9 UG6 ZA ZB1 3A2. **9S4**CH (55), an OT traffic man gone long-haul. *W2DGW:* **FM7**WR. *W2GVZ:* Rhodes' **SV1**LP (71) 17, **UAØ**KQB (79) 23, UD6, **ZS9**J (65) 21, at 219/198. *W2HMJ:* No. 227 on the wall (VQ1JO), **AP2**RH 13, **CR7**CO 4-5, **DU7**SV (90) 13, **ET2**RH 21, **FB8ZZ** 13 of Amsterdam Isle, **FQ8**AF 4-5, **KAØIJ** (39) 13 of Iwo, **OQØ**VN 21-22, **UA1**-KTO/FJ (72) 0 (see "Whence"), **UAØs** KOA (2) 2, OM (68) 12-13, SK 13, **UI8**AE (55) 2, **VP8**BW (80) 23 of Deception Isle, **VQs 2**AS 5, 5DM (35) 18-19, **VS2**CR (27) 11, **VU2**AC (90) 12, **ZK1**BS 6-7, **5A2**FB (71) 22-23, BV1 KS4 UL7 VS6 3A2 4S7, reports U.S.S.R. QSLs coming through in quantity from "easier" Russian call areas. *K2BJA:* **FG7**XD (95) 23, JA6MW (85) 11, **OY5**S (30) 2, **KA2**PG (80) 12, **ST2**NG (30) 24, **UB5**KED, **VP8**BS (30) 1, DU FY7 KW6 OD5 UA9 4S7 9S4. *K2EQD:* **KJ6BP** (50) 4, VQ8AG (16) 3, **ZD3**A (50) 21, FQ8, deplores 14-Mc. DX-hog performances. *K2PGP:* Andorra, Luxembourg, using Adventurer, would like to see such a DXCC QSO Party as briefed on p. 57, October '56 *QST. W1BFK:* climbed to 91 with UA1 UP2 UR2. *W1BPW:* **EL2**IC (60) 0-1, **IT1**TAI, on c.c. 50 watts. *W1DBA:* East German **DMs** 2ADJ 2AGO 3KBG/P, **HC1**LE, **OEs** 5AW 6BM, **SPs** 2BE 6BY 8AG 8CK 9ED all 21-0, **TF3**KA (40) 2, **TI2**BX (60) 22, **UA9**MI (40) 22, **UB5**KBG (25) 21, **VP8**BN (65) 1, **VQ2**GR (60) 22, Mr. Contest XE1A (40) 20, FG7 LZ UD6 UP2 UQ2 9S4, has 0.1 kw., ground-plane. *W1ORP:* **VS1**HA (10) 12, YA-1AM (50) 2, UD6 UI8, missed **UL7**KAA (80), **ZC5**SF (10), **ZK2**AB (33), heard tabooed 3W8AA (70) 12, is raising his 2-element spinner to the 100-foot level. *I1ER:* **PZ1**AP **KL7**BXH.

20 phone hits its lowest seasonal ebb as 15 and 10 ride highest. W9RBI hung on for Grahamland's **LU4ZV** (200) 4-8, **UAØ**KJA of Blagoveschensk, and **VK9**AJ (110) 4-7 in the Cocos-Keelings . _ . _ . _ K2BJA fished out TA3US (165) 23 . _ . _ . _ **HC1**GM, **HH1**HB, **KG4**AO, **TG7**CB, **VP5**AK and a KS4 candidate interested K4DRO . _ . _ . _ Stalkers of the West Gulf, No. Calif., and Willamette Valley DX Clubs worked, called, heard worked, or heard called the following 14-Mc. vocal prospects: **AP2**U (102) 13, **BV1**US, **CN8**MM (125) 22, **CRs 4**AD (103) 0-1, **5SP** (152) 6, **7AH** (120) 5, **CTs 2**AH (146) 1, **3**AN (171) 0, **DU1**VVS (187) 13, **EAs 6**AR (160) 5, **8**BB (100) 3-4, **9AZ** 7, **9BC** (155) 3, **EL5**A (185) 7, **ET2**s RL (198) 5, US (128) 4, **FA9**AB (130) 3, **FB8**s BC (128) 3, ZZ (164) 13, **FC9**UC (175) 4, **FK8**AO (115) 16, **FM7**WN (135) 3, **FO8**AB (123) 7, **FY7**YE (130) 1-2, **HA5**KBA (180) 5, **HH2**Y (140) 6, **HZ1**TA (110) 4, **IS1**BV (175) 4, **JZØ**PA (146) 15, **KAs** 2WP (124) 7, **ØIJ** (136) 13, **KG6**s BF (230) 4, FAR (215) 11, **KR6**s AE (147) 14, AF (125) 15, USA (125) 14-5, **KX6**AF (255) 11, **LX1**DA (136) 4, **LZ2**KN (155) 5, **M1B** (152) 1, **OD5**BO (152) 2, **OQs** 5FH (137) 5, ØDZ (130) 21, **SPs** 5CC (160) 5, 8CK (192) 15, **SU1**AS (115) 1, **SVØs** WH WN WS WT all 1-6, **TF2**WBJ (190) 1, **UAs** 1AB (165) 6, 1KBB (162) 6, 3CR (140) 5-6, 3KAH (180) 4-5, **UB5**KBA



AP2U (right) disseminates Pakistan contacts on 3.5, 7 and 14 Mc. by way of a v.f.o. exciter, 1625 final modulated by p.p. 1625s, 80-meter long-wire, and 8-tube superhet. His visitor of the moment is a DLØPI club-station staffer passing through Quetta on a rugged Asian motorcycle journey. (*Photo via AP2RH*)

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(163) 2, **UC2s** KAB (120) 4, KBA (127) 6, **UQ2AN** (127) 6, **UR2KAA** (130) 4, **VK1HJ** (133) 13 of Macquarie, **VS6**CG (107) 13, **VU2ES** (122) 12, **XZ2**OM (176) 12-13, **YI2**DF (190)0, **YK1**DF (185) 6, **YO3s** VA (150) 2, VI (110) 1, **ZB1s** BG (151) 5, CA (105) 6, **ZD6**DT (122) 14, **ZM6**AT (161) 7, **ZSs** 2MI (180) 16 of Marion Island, 8I 15-16, 9O (175) 15, **4S7s** WP (102) 12, YL (132) 1-2, **4X4s** BO (260) 5 and FR (105) 4.

40 c.w. makes the comeback-of-the-month, encouraging W4YHD to soak up **CR7**CO 4, **DU7SV** 9, **HZ1HZ** (5) 3, **JA1**CJ 11, that OA3EE guy, **SVØWT** (19) 4, **UB5s** KBV (38) 2, KMA (10) 2, WF (15) 3, **UR2KAA** (58) 5, **VK9XK** (19) 8, **VQ5GC** (20) 2, **YOs** 2KAB 6XU (30) 2, 4X4DR 4 and **9S4BS** 4. Jim had trouble with **UP2KBC**, **UQ2KAA** and **UH8KAA** . . . . . Here's the West Coast slant on things, K6OIZ reporting: **JAs** 1CE 1EF 1HP 1NI 2OF 5BI 6MG all 13-14, **VS1GV** 14, some of these working phone to Walt's c.w. . . . . W6ITH writes, "Quite a bit of s.s.b. activity among the Asian stations on 40 meters. Several Japanese stations noted, and JA1AEA, 7100 kc., was worked at 0740 GMT. He listens on 7200-up for calls, but advises he cannot operate higher than 7100." . . . . . W6LJH is another who finds himself overwhelmed by JAs, having worked enough of 'em on 40 to earn AJD, WJDXRC and Suginami Radio Club S-10 certifications . . . . . Forty is tough from Iowa, but W6WLY/Ø collected a brace of Gs, **YU3s** EU IG and OV . . . . . W3ZNB used high power (70 watts) to capture **LZ2**KAC (2) 1-2, **OE5**JK (30) 4-5, **PJ2ME** (15) 20, VE8OW (5) 8, **9S4**DF (10) 0, **WH6s** BTX BYT, **YUs** 1RW 2ACD 3AF 3AJK, **YV5**RJ (7) 5, other Europeans and three ZLs; then raised Gs, **XE1**KD (1) 6 and **YU2**GAB (4) 2 with his 3-watt driver . . . . . The 2nd call area is well represented by *W2DGW:* **CT2**BO, **IT1**AGA, **SP5**KAB, **TF3**AB, **VP6**RG, **YO3**RCC. *W2DRD* (report by J. Tommasin): **HA5**KC, **SP2**GS, **YU3**PL, more Euros. *W2JBL:* **PY7**AFK (13), YV3BI (1), reports PJ2ME losing patience with climbers-on. *K2EQD:* **OE5**SD, **ZE3**JP (15) 4. *K2QJR:* his first DX, **VP7NZ**, CM2.

80 c.w. bends to the DX will of the more tenacious, giving up miscellany like **CE3**AG, five Gs, DJ OK PAØ, **VK6**EJ, **XE1**A, **YV5DE** and **ZL1**CI to W9PNE's 300-watt 813 and raising Brice to the 3.5-Mc. 50-country mark . . . . . K2PGP says K2CHQ works **DL1**FF on 80 as a regular thing, while K2PHF grabbed **DJ2**HC 'way up on 3605 kc. one night.

160 c.w. paid off early in the season when **VP3**AD and W1BB scored the first British Guiana-U. S. A. two-way in mid-September. Portent of things to come? . . . . . W4UWA/4 clipped **XE1**A (1823) 6 with that WHUB BC tower mentioned in November's column, Al's 4th 1.8-Mc. country. "Very few people have the same problem I have. My vertical antenna is *too long* for 160 meters! I don't think the antenna knows it though, because it just goes ahead and works like [one] sixty." . . . . . Other low-band notes courtesy W1BB: KP4KD can only listen on 160 this season under new regulations, unfortunately. . . . EI9J will stay QRT this season, discouraged by the amount of red tape he must cut to secure the necessary special authorization. . . . XE1A also worked WØHO and KØHEM in late October . . . . . This month's dates for W1BB's announced 160-meter DX tests are January 13th and 27th. Check last month's "How's" for details — good fishin'!

Where:

Deposition from G3ANK via W1VG: "VS9AS was operated by G3ANK on 20 meters between November, 1955, and July, 1956, and now is QRT. I am very gradually getting through the QSLs, and please tell the chaps that all *will* receive their cards. . . . I don't know what has happened to the other VS9AS stations but they are not in VS9 now, the reason being that some of them operated 'in the services' and left for other QTHs. I am receiving QSLs from guys who worked the previous VS9ASs but I don't know who or where they are now." Look for G3ANK around 14,100 kc. . . . . "Recent activity by YI2DF will be QSLd 100 per cent. There is other YI activity, some of it undercover and some not located in Iraq." This from Derek of YI2AM, now closed down, who also advises W1WY that YI2s AC CW and OT specifically are not in Iraq . . . . . OA4s AT and AV of RCP document official reproval of 7-Mc. OA3EE activity . . . . . JZØs ADM and ACK changed calls to JZØs PA and PC. That's the third label for JZØPA, formerly PK7ADM, and late of MP4QAH. W8GZ has it that JZØPB is another fresh Netherlands New Guinea activation . . . . . Answering QSLs as received, YV5BZ had dispensed some 1200 Aves YVØAA confirmations by mid-September. A stack of 300 W/K cards greeted Louis upon his return from the islands to Caracas. Lines to W1WPO of the ARRL DXCC desk: "We have spent over 150 dollars already in stamps to mail all cards. Nevertheless I will keep on sending cards to anyone claiming no receipt. . . . There are guys who will each get a total of about 10 cards one way or another!" Patience . . . . . Past and/or present Pakistan licensees include AP2s AB AC AD B BP D E F G H M N O P Q S SAS T W X Y Z. AP4A. AP5s AC HQ T and TM in West Pakistan; APs 2V 5CP and 8B in East Pakistan. Current APs are QSLable via AP2RH and RSGB . . . . . Formerly besieged by parties beseeching QSLs, VR3D dryly observes that a mere 50-per-cent return greeted the 900 Christmas Island cards he did send out . . . . . F3NB tells W8DLZ that REF will urge XW8AB to submit logs to the society if Marcel can't otherwise surmount his three-kiloQSL backlog . . . . . The latest SVØWX declares himself not responsible for SVØWX QSOs dating prior to November 1, 1956. Note his address to follow . . . . . SCDXC understands that 700 ZD9AE confirmations are to reach the breathless outside world via mailboat which departed last October . . . . . From W6ITH re 1956 FS7RT-PJ2MC forays: "All cards received were answered. It is not practical, with several thousand QSLs, to send out direct cards from the log, for it would take forever to look up each address. . . . A large percentage would be incorrect." Reg preferred his QSLs sent direct in order to embellish each with authentic postmark and postage. The bill for FS7 stamps amounted to 150,000 francs, and that for PJ2M-land about 400 guilders. Drop W6ITH a line if your deserved FS7RT and/or PJ2MC pasteboard has strayed . . . . . ZM6AR assures W9WHM he'll wipe out all QSL debts upon early return to New Zealand . . . . . W1s EKU NI OJR WPO WPR, W2s CJX JBL, K2EQD, W3s SOH SUJ, W4s HBK YZC, K4s DRO HNA, W5JPC, W6s AFI YY, K6OPI, W8s GZ QXW, W9s CFT KA LNQ YFV, WØQGI, KA5ZS; No. Calif., So. Calif., West Gulf and Willamette Valley DX Clubs; and *Newark News* Radio Club suggest these individual specifications:

CN8CC (to CN8MZ)
CP1CJ, Cliff Banyas, USAF Mission to Bolivia, % U. S. Embassy, La Paz, Bolivia
CR9AK, F. M. Pinto, % Postmaster, Macao, Asia
CR9AL (via CR9AK)
ex-**DL4SL** (to W9LYA)
EA9BJ (via URE)
ET2LB (via W2FIR)
ET2RP, APO 843, New York, N. Y.
ex-**F7EH** (to W1SWX)
FO8AP/MM (via REF)
FQ8AE, Box 338, Ft. Lamy, Tchad, Fr Eq. Africa
ex-**FW8AB**, Adrien Monjoie, % Mrs. Riviere, 6 rue Dugommier, Paris, France
FY7YE (via W5JLU)
G3IDC/VS9/etc. (to G3IDC or via RSBG)
GB3GPW (via RSGB)
GC3LFJ, H. R. Mesny, Oxenford House, St. Lawrence, Jersey, C.I., U.K.
HS1MQ, L. M. Moreno Quintana (LU8BF), Argentine Legation, Bangkok, Thailand
JZØPA-JZØADM-PK7ADM (via VK6MK)
JZØPO-JZØACK (via VK5AB)
K4GJF/VO4, S/Sgt. Don Barker, 6605th Airbase Sqdn., APO 864, New York, N. Y.
KA5MC, 1st Marine Air Wing Radio Club, R. F. Krist, MAG-12, 1st MAW, FPO, San Francisco, Calif.
KG6BU, % CAA, P. O. Box 45, Guam, Guam
KR6RY (via W7DQN)

LU1ZM, Emilio Romero, Bulnes 229, Buenos Aires, Argentina
ex-**MP4BAF** (to VU2JA)
OD5CD, Lily, Box 3647, Beirut, Lebanon
OQ5FH, M. & B. De Roeck, Box 614, Jadotville, Belgian Congo
PY4AEX, P. O. Box 314, Belo Horizonte, Brazil
PY7AFK, J. Gueiros, Rua Goncalves Maia 193, Recife, Brazil
SP3PJ, Box 150, Poznan 1, Poland
SP6BZ, W. Ziolkowski, Box 7, Wroclaw 18, Poland
SP9KAD, P. O. Box 320, Krakow, Poland
SV0WN/Crete (via W2QIHH)
SV0WX (via W0WVS; see text preceding)
TF2WBJ, 933rd AC&W Sqdn., APO 81, New York, N. Y.
TI1YR/MM, Radioman, *SS Lugano*, Harbour Dock Office, Mosbay, Workington, Cumberland, England
UA3BJ, Shishkin L.S., Box 898, Moscow, U.S.S.R.
UA4KKC, Box 42, Uljanovski, U.S.S.R.
UC2KAK, Box 231, Kaunas, Lithuanian S.S.R.
UP2AC (via UC2KAK)
VE8OJ, Doug Brabner, RCS Stn., Port Radium, N.W.T., % Box 160, Edmonton, Alta., Canada
VE8OO (via VE8OJ)
ex-**VK1RW** (now VK9AJ)
VK9AJ, R. C. Widows, HMWT Stn., Direction Island, Cocos-Keeling Group, Indian Ocean, via Singapore
VP2AB, MCB 6, FPO, New York, N. Y.
VP5DH, % D. Higgins, 2367 NW 8th St., Miami, Fla.
VP5ML (via W2OVF)
VP7RV, % Box 3443, Caracas, Venezuela
ex-**VQ2DT** (to ZD6DT)
VQ3TL (via RSGB)
VR2DA (via VR2AS)
ex-**VR4AE** (to VK5AE)
ex-**VS5KU-ZC5KU**, R. M. Herbert, 17 Selcroft Rd., Purley, Surrey, England
VS9AH, R. J. Henning, 2734441 LAC, Saltpans, RAF, Khormaksar, Aden
VS9AS (see text preceding)
W5TOR/KS4, % CAA, Swan Island, via Tampa, Fla.
YI2DX (via GI3KEV)
YI2RM (via GI3KEV)
YO2KAC, Box 100, Timisoara, Roumania
YO3VA, Dr. Mircea Avram, Box 105, Ploesti, Roumania
YU1SJ, Bokal, P. O. Box 48, Belgrade, Yugoslavia
YV3BI, J. Vargas, Oficina Radiogramas, Barquisimeto, Lara, Venezuela
ZB1ZR, % I. S. Davies, G3KZR, 19 Ridings Ave., Winchmore Hill, London N. 21, England
ZC4TB, H. A. C. Blake, 48 Edward Rd., Northolt, Middlesex, England
ex-**ZC5CA**, I. Harris, 24 Braid Hills Rd., Edinburgh 10, Scotland
ZD4CF, Dr. Hugh De Glanville, P. O. Box 473, Accra, Gold Coast
ZD6DT, P. O. Box 89, Zomba, Nyasaland
ex-**ZM6AS**, L. R. Reid, 13 Totara Ave., Pukekohe, New Zealand
ZP6CR (via ZP5BX)
ZS9R, Box 23, Francistown, Bechuanaland
3V8AO, Box 303, Tunis, Tunisia
4S7VS, P. A. Gurusinghe, Revg. Stn., Manington, Colombo, Ceylon
5A1TA, APO 231, New York, N. Y.

Whence:

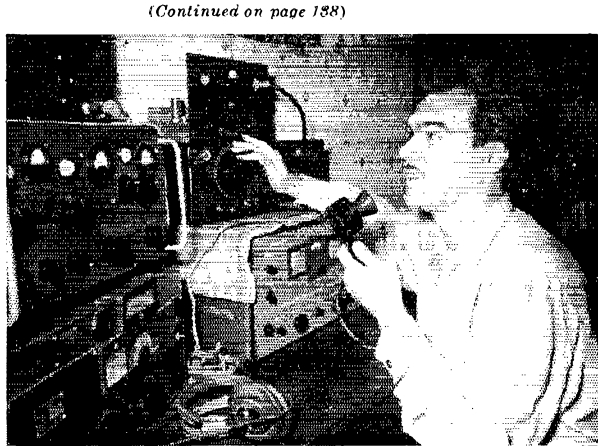
Asia — Don't throw away your old Nepalese, VU5 and C8 QSLs. JA1AA, via W7DJU, hints that JARL is drawing up plans for an Asia-wide DX award. Meanwhile, three of the Japanese society's existing certifications provide interesting DX diversion. AJD (All Japan Districts) requires proof of QSO with a station in each of Japan's ten call areas; WAJA (All Japan Prefectures) is based on confirming contact with a station in each of the nation's 46 "states"; and JCC (Japan Century Cities) calls for confirmed contacts with 100 of Japan's 400-plus major cities. Write JA1AA, Oversea Committee, JARL, P. O. Box 377, Tokyo, for the finer points . . . . . W7DJU, on behalf of KA2FC, also calls attention to the Far East Auxiliary Radio League's three available certifications: WFKAS (Worked Five KA Stations), WSKAD (Worked Seven KA Districts) and WTFKAS (Worked Twenty-Five KA Stations), whose titles are quite self-descriptive. Write Awards Manager KA2FC, FEARL, Box 111, APO 500, San Francisco, Calif., for further details . . . . . KA2LA, secretary-treasurer of the Navy Mike and Key Club, broaches another possibility for wallpaper seekers: WAY (Worked All Yokosuka) requiring proof of communication with three Yokosuka KA2s subsequent to November 1, 1956. KA2s AA AD LA MP NY RM and RR are candidates workable on 20, 15 and 10 meters. KA2LA will supply more data upon request . . . . . IARC (Israel) now offers to omit the QSLs requirement formerly necessary in applying for its 4X4 = 16 diploma. The society henceforth will obtain its own primary certification of your claimed 4X4 QSOs by direct reference to the 4X4 logs concerned . . . . . KH6OR, scrambling up the DXCC phone ladder, laments lack of Korean confirmation, especially inasmuch as he scheduled HL1US thrice weekly for traffic during 1951 and '52 . . . . . MP4KAC tells W0QGI he hungers for South Dakota and Utah contacts . . . . . According to W1WPO, VU2JA hopes to pick up more W5 QSOs with the skyhook described by W3KPO in last July's *QST*. Joe's picture appeared in October 1953 *QST*, then as MP4BAF . . . . . Courtesy W1WY: YI2AM, for four years an Asian stand-by on DX bands, has had no success in attempting to renew its expired license. Thus RAF's Habbaniya Amateur Radio Club winds things up with a 170/155 DX record and 34 states worked. When the Middle East geopolitical outlook takes a turn for the better YI2AM may still get to complete that WAS . . . . . NCDXC hears that JA1CR received HL1AA's QSL for contact with a Mt. Chii climbing party about a year ago. Korea (plus Cambodia, Vietnam, Republic of Indonesia and Iran) still is taboo for W/Ks . . . . . W6ITH reports that Japan's IGY project chiefs relented and will include ham radio on its antarctic agenda: "About ten men will be left in Prince Harald Land including a radio engineer with a complete amateur radio station. This party will plan to make contacts with world-wide amateurs as time remaining from other duties permits."

Africa — Tidbits from the W6YY DX notebook: ZE3JO disowns connection with apparently spurious VQ9JO 14-Mc. emanations . . . . . A modulator shipped by W6YY will enable ZD1FG (ex-ZL2FG) to give the A3 boys a break. . . . VQ6LQ paid personal U. S. A. visits as far inland as Cleveland before Suez developments forced an abrupt return to Hargeisa. . . . ZS6DT's monstrous long-path signal takes off from a 15-wavelength Vee. . . . LREM (Mozambique) still certifies collections of fifteen CR7 QSLs for QSOs dating after December 1, 1949. Write CR7BS for particulars on W-CR7-A . . . . . W3WPG and others warn that current FE8 and FL8 operators maintain DX-hog blacklists of ready reference. *Careful* . . . . . After two tonsil-trying years CN8GT (W4NUZ) has amassed sufficient wherewithal to apply for phone DXCC . . . . . Active since 1953, ZS6AJO pleads for a Utah 20-, 15- or 10-meter contact to complete WAS. Times have changed; remember when Nevada and Delaware were the most usual WAS clinkers? Utah and South Dakota appear to have taken over in that regard . . . . . Via NCDXC: I5s FT LV MG NR RAM and REX all pitch in to make Italian Somaliland less scarce. . . . VP5RR departs Grand Turk Isle for ZD8. . . . ZS8O is readying for DX action at an 11,000-ft.-high QTH.

Oceania — From Fiji, VR2BC (ex-VP1GG) tells of plans to operate from Rotuma Island in March or April, accompanied by VR2BZ. According to *Webster's* the place must be a tourist heaven: "Beautiful, healthful, remains unexploited." Greg keeps busy on 10 and 15 searching for his remaining six WAS states and any Africans who will take his bait. VR2DA, ex-VK2PA, is a new member of Fiji's thriving ham family . . . . . Ex-VR3IJ, now assisting the KM6AX gang in production of Midway DX contacts, expects to remain there for another year or so. Chas. left his Christmas diggings in the hands of G3FYW but high-pri fission-fusion doings may prohibit hamming thereabouts for some time . . . . . Ex-ZM6AS hopes to retrieve his old ZL1AJJ alias after closing shop in Apia. OM Reid looks forward to resuming DX-band activities in New Zealand by late spring . . . . . Active daily from 0500 to 1300 GMT, KX6BP (K6TYF) desires traffic contacts with New England, New York and the Pacific Northwest on phone around 14,265 kc. . . . . According to W5JPC, KJ6s BP and BS have QSYd to Stateside bases. Briefies! . . . . . Colorful souvenirs, map-style, pertaining to the transpacific voyages of raft *Tahiti Nui* as mentioned here last month, are declared available by REF and FO8AD. If all goes well *Tahiti Nui*

(Continued on page 188)

♦



UA3EG of Moscow flicks a wicked bug on several DX bands and frequently is found on 10 or 15 phone. Recognize any of the gear in Valentin's layout? *(Photo via W9WHM)*

January 1957

23rd ARRL International DX Competition

Phone: Feb. 8th–10th and Mar. 8th–10th; C.W.: Feb. 22nd–24th and Mar. 22nd–24th

To those who've checked the spectrum lately, it will be no surprise that the DX is rolling in as it hasn't for years. And wherever you are, from Aden to Zanzibar, from Alabama to Wyoming, from Alberta to Yukon . . . if you're an earth dweller and a licensed radio amateur, you'll want to get your share in the 23rd ARRL International DX Competition, to be held over four week ends in February and March. U. S. and Canadian operators will be out to build up DXCC country totals, others to raise new states and provinces for WAS and WAVE, and everyone to pit his skill with others in his country or ARRL section.

As in the past, certificates are offered to the top single-operator phone and c.w. scorer in each country and ARRL section. A special category recognizes multioperator stations in sections or countries from which at least three such entries are received. Within an ARRL-affiliated club, single-operator entries may compete for the certificates given to the highest c.w. and phone scorers. A gavel with an engraved silver band is also earned by the club whose members pile up the biggest aggregate score.

Stations outside W (K) and VE/VO will call CQ W/VE and strive to trade contest exchanges with U. S. and Canadian participants. The DX will send 5- or 6-digit numbers indicating the signal report and power input. U. S. and Canadian amateurs, in turn, will transmit an RS or RST report plus the appropriate state or province.

The contest rules are the same as last year's except for minor rewordings. Rules 12a and 12b now define "bona fide club member" more explicitly, and Rule 14 dealing with disqualification policy has been similarly clarified.

The award and scoring systems are designed to encourage the widest use of our bands. Thus repeat QSOs are permitted on additional bands. G2PU, for example, might contact W6AM on 10, 15, 20 and 40 meters, raising his contact-point total and also his multiplier. The latter, for DX operators, derives from the sum of USA/Canada licensing areas worked per band. On the other hand, the W/VE multiplier consists of the sum of different countries (on the ARRL Countries List) worked per band. No credit for W/VE-to-W/VE QSOs is allowed.

It is suggested that, for purposes of conformity, W/VE c.w. competitors use these abbreviations on the air, and the DX may find them handy for checking off states and provinces worked.

W1 — CONN MAINE MASS NH RI VT
W2 — NJ NY
W3 — DEL MD PA DC
W4 — ALA FLA GA KY NC SC TENN VA
W5 — ARK LA MISS NMEX OKLA TEXAS
W6 — CAL
W7 — ARIZ IDAHO MONT NEV ORE UTAH WASH WYO
W8 — MICH OHIO WVA
W9 — ILL IND WIS
WØ — COLO IOWA KANS MINN MO NEBR NDAK SDAK
VE1 — NB NS PEI
VE2 — QUE
VE3 — ONT
VE4 — MAN
VE5 — SASK
VE6 — ALTA
VE7 — BC
VE8 — NWT YUKON
VO — NFLD LAB

CONTEST TIMETABLE

Phone Section:

Time	*Starts*		*Ends*	
GMT	Feb. 8th	2400	Feb. 10th	2400
AST	Feb. 8th	8:00 P.M.	Feb. 10th	8:00 P.M.
EST	Feb. 8th	7:00 P.M.	Feb. 10th	7:00 P.M.
CST	Feb. 8th	6:00 P.M.	Feb. 10th	6:00 P.M.
MST	Feb. 8th	5:00 P.M.	Feb. 10th	5:00 P.M.
PST	Feb. 8th	4:00 P.M.	Feb. 10th	4:00 P.M.
	The second period of this contest starts at these same hours Mar. 8th.		The second period of this contest ends at these same hours Mar. 10th.	

C.W. Section:

GMT	Feb. 22nd	2400	Feb. 24th	2400
AST	Feb. 22nd	8:00 P.M.	Feb. 24th	8:00 P.M.
EST	Feb. 22nd	7:00 P.M.	Feb. 24th	7:00 P.M.
CST	Feb. 22nd	6:00 P.M.	Feb. 24th	6:00 P.M.
MST	Feb. 22nd	5:00 P.M.	Feb. 24th	5:00 P.M.
PST	Feb. 22nd	4:00 P.M.	Feb. 24th	4:00 P.M.
	The second period of this contest starts at these same hours Mar. 22nd.		The second period of this contest ends at same hours Mar. 24th.	

EXPLANATION OF DX CONTEST EXCHANGES

Stations in U. S. and Canada Send:

	RS or RST Report of Station Worked	*Your State or Province (or Abbreviation)*
Sample (c.w.)	579	ORE
Sample (phone)	57	Oregon

Stations Outside U. S and Canada Send:

	RS or RST Report of Station Worked	*Three-Digit Number Representing Your Power Input*
Sample (c.w.)	579	075
Sample (phone)	57	500

LOG, 23rd INTERNATIONAL DX COMPETITION

Call..... *ARRL Section* .....

Band 14 .....Mc. *Sheet* 1 .....*of* 3 .....

Country	*Station Worked*	*Date*	*Time (GMT)*	*Sent*	*Received*
France	F8VJ	2/23	1300	589CONN	479075
	F9MS	2/23	1345	569CONN	579080
England	G2DC	2/23	1306	589CONN	469150
	G4CP	2/24	1245	579CONN	469125
	G2QT	2/24	1255	569CONN	579100
	G3HJJ	3/23	1430	469CONN	559100
	G6ZO	3/24	1822	579CONN	589125
	G5RI	3/24	1851	469CONN	459075
Germany	DJ1BZ	2/23	1315	559CONN	449050
	DL1JW	2/24	1149	469CONN	559080
	DL7AH	3/23	1502	559CONN	559045

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

«

U. S.-Canadian amateurs have quotas on c.w. (see Rule 10) but none on phone. Whether competing on c.w. or phone, DX amateurs have no quotas. They will QSO as many stations as they can in the 19 W (K) and VE/VO licensing areas on each band.

Send a copy of your log, in the form shown, to ARRL right after the contest. All reports are welcome. Convenient forms are now available free from the ARRL Communications Department, 38 La Salle Road, West Hartford 7, Conn.

Phone fanciers, don't forget to try both a.m. and s.s.b. Newcomers, here's a chance to cut your DX eyeteeth. Ten, 11 and 15 meters should be hot during these days of soaring m.u.f.'s, so don't pass up the higher bands. Regardless of your equipment, power, and antenna setup, there will be scads of operating enjoyment free for the taking in February and March. All set?

Rules

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

Sample of report form that must be used by W/VE phone entrants and *all* participants outside U. S. and Canada, phone and c.w. This example is a U. S. A. phone log. Foreign competitors, of course, would have reverse information in the "Sent" and "Received" columns; their "Received" column would show exchanges like "579CAL," "589ONT" (or, on phone, "46 Vermont," "58 Georgia," etc.), indicating signal reports received and different states and provinces worked; their "Sent" column would carry signal reports and power indicators transmitted.

LOG, 23rd A.R.R.L. INTERNATIONAL DX COMPETITION

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

Date & Time GMT	*Station Worked*	*Country*	*Record of New Countries for Each Band*							*Exchange*		*Points*
			1.8	*3.5*	*7*	*14*	*21*	*27*	*28*	*Sent*	*Received*	
Feb. 9												
0005	HR3HH	Honduras				1				56 Maine	57080	3
Feb. 10												
1300	PA0ULA	Netherlands							1	58 Maine	47075	3
1306	G3COJ	England							2	58 Maine	46150	3
1345	PA0VB	Netherlands							2	56 Maine	55080	3
2030	LU1DDV	Argentina							3	58 Maine	57750	3
2310	VP9L	Bermuda				2				57 Maine	56050	3
Mar. 9												
1020	ZL1MB	New Zealand				3				58 Maine	58075	3
1035	VK5LC	Australia		1						47 Maine	46100	3
1105	VK2RA	Australia		1						46 Maine	45100	3
1421	PA0XD	Netherlands							3	45 Maine	57100	3
Mar. 10												
0925	EI5I	Ireland				4			3	57 Maine	57050	3
1245	G2PU	England									46125	2
1255	G3DO	England							3	56 Maine	57100	3
1350	G2PU	England							3	57 Maine		1
1430	G5BA	England							3	46 Maine	55100	3
2320	KZ5VO	Canal Zone				5				58 Maine	58500	3

SUMMARY, 23rd A.R.R.L. INTERNATIONAL DX COMPETITION

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

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

Transmitter Tubes ..... *Power Input* .....

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

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

Bands	*1.8 Mc.*	*3.5 Mc.*	*7 Mc.*	*14 Mc.*	*21 Mc.*	*27 Mc.*	*28 Mc.*	*Total*
No. Countries QSOd		1		5			3	91
No. of Contacts		2		5			3	15

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

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

462	×	9	=	4158
(*Points*)		(*Multiplier*)		FINAL SCORE

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

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

.....
Operator's Signature and Call

[1] Figure in this box is multiplier.
[2] Count 3 points per completed QSO; see rule 8a.

Sample of summary sheet that must accompany all reports.

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

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

4) *Entry Classifications:* Entry may be made in either or both the phone or c.w. sections; c.w. scores are independent of phone scores. Entries will be further classified as single- or multiple-operator stations. Single-operator stations are those at which one person performs all the operating functions. Multiple-operator stations are those obtaining assistance, such as from "spotting" or relief operators, or in keeping the station log and records.

5) *Contest Periods:* There are four week ends, each 48 hours long; two for phone work and two for c.w. The phone section starts at 2400 GMT, Friday, February 8th and Friday, March 8th, ends 2400 GMT, Sunday, February 10th and Sunday, March 10th. The c.w. section starts at 2400 GMT, Friday, February 22nd and Friday, March 22nd, ends 2400 GMT, Sunday, February 24th and Sunday, March 24th.

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

7) *Exchanges:*

a) *Amateurs in U. S. and Canada* will transmit a three-figure number, representing the RST eport, plus their state or province. (The latter may consist of an appropriate abbreviation.) Phone participants will transmit a two-figure number consisting of the readability-strength report plus the state or province. *Example:* W6YY might transmit "579CAL" on c.w., "57 California" on phone.

b) *Amateurs outside W (K) and VE/VO* will transmit six-figure numbers, each consisting of the RST report plus three "power" numbers; the power indicator will represent the approximate transmitter power input. Phone contestants will transmit five-figure numbers, each consisting of a readability-strength report and the three "power" numbers. *Example:* VK2GW, with 100 watts input, might transmit "569100" on c.w., "56100" on phone. If the input power varies considerably on different bands, the "power" number should be changed accordingly.

8) *Scoring:*

a) *Points:* One point is earned by a W (K) or VE/VO station upon receiving acknowledgment of a contest exchange sent, and two points upon acknowledging an exchange received. Two points are earned by any other station upon receiving acknowledgment of a contest exchange sent, and one point upon acknowledging an exchange received.

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

Countries will be those on the ARRL Countries List. There are 19 licensing areas: 10 in the United States, 9 in Canada (VO, VE1–VE8). [See Countries List on p. 56 — Ed.]

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

(*Continued on page 132*)

YL News and Views

BY ELEANOR WILSON,* W1QON

Five Year Mark

This column occasions the beginning of the sixth years of reporting *YL News and Views*. Five full years have sped by since January, 1952, when we tried to justify the start of this new department in *QST*. Numerically-speaking we scarcely could do it, for we constituted only about two per cent of the entire amateur fraternity. We wrote something about "the quality, not the quantity" counting. Today, while our numbers have increased somewhat (actually only a slight rise percentage-wise), we still hearken back to the old adage. We're prejudiced, to be sure, but we feel that our gals are in there pitching for the best interests of amateur radio all of the time. Enough self-adulation, lest we grow fat, rusty, and inactive.

A word of thanks and appreciation, however, to all for solid support and excellent cooperation. Keep your news, views, gripes, and suggestions coming. It's *your* column!

(We're celebrating our anniversary with a new headdress styled by Gil, W1CJD.)

YL Mobileer

Take it from Helen Kennedy, W9MXI, mobile operation is an art by itself; a YL mobile operator is in a class by herself; and YL mobileering around the streets of Chicago after dark is something else again. She recommends all three for acquiring technical know-how, making friends, and precipitating some unusual experiences.

To quote Helen directly, "At least my head isn't sore from beating it against the wall, competing with strong, fixed stations hunting DX with superior antennas. I'm content to simply contact the local gang on ten-meter ground wave when the skip is out each night. There's a degree of satisfaction and a lot of pleasure in a good mobile QSO; the condition of the battery, the voltage regulator, the gas tank, and your traffic nerves notwithstanding. My many ten-meter friends are ever willing to help me solve a technical problem, or come to my aid, should I call for help. And there have been times! As yet I have caused no pile-up of cars with my rolling hamshack, although the 96" whip and the female in the front seat gripping a microphone have encouraged some profound stares. Some day all of the members of the Chicago police force may recognize my '56 Chevy BelAir and its driver, but until then I must expect to be stopped periodically and questioned about my activities. To date I've been taken for a private eye, a Russian spy, a secret member of the police communications system, and a homeless itinerant. In reality, I'm only an enthusiastic YL looking for a bit of a ragchew on good old ten meters."

Helen believes she is the only YL mobile operator in Chicago at present, XYLs who operate their OMs' rigs not counted. That's a Gonset G-66 receiver and an Elmac AF-67 transmitter tucked under the dashboard of her car.

YL SCMs

For the first time since 1950 (when Ellen White, W1YYM, of Headquarters, then W6YYM, was elected in the San Diego Section) a YL is serving the ARRL as a Section Communications Manager. In fact, we now have *TWO* YL SCMs, both of whom recently assumed office.

The Section Manager, elected by mail ballot, is the "executive" of his district, which is one of 73 sections into which the United States and Canada is divided for organization and operating purposes. As stated in the brochure "Operating an Amateur Radio Station":

"The Section Manager shall appoint a Section Emergency Coordinator, Route Managers, Phone

W9MXI, Helen, operates on Ten from her rolling hamshack.

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

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Activities Managers, Official Observers, Emergency Coordinators, Official Experimental Stations, Official Phone Stations, Official Relay Stations, Official Bulletin Stations (etc.). (He) will render a monthly report or activity summary to Headquarters. He is responsible to the Communications Manager for maintenance of accurate records of his appointments and cancellations and the status of his organization. The Section Manager leads in arranging cooperation of active station-owners in ARRL activities, contests, traffic work, etc. and is authorized an administrative and operating leader to devise and develop special plans, further Section interest and esprit de corps."

Thus the office of Section Manager is a key position in the administration of the League.

With pride we point to our two new YL SCMs — Ann Chandler, W1OAK, of Vermont, and June Burkett, W1VXC, of Rhode Island. Hearty congratulations to both. May their examples of leadership move other YLs to consider nomination for the office.

The new SCM of Vermont is equally at ease with a key or a rifle. Ann shot her first Buck, a 150 pound, four pointer, at seventy yards on the third day of the current hunting season. With some instruction from her OM, W1MMN, an expert rifle marksman, Ann has been shooting for two years "keeping the home surroundings clear of porcupine and fox." A topnotch c.w. operator, Ann has been handling traffic for her state for several years. She is NCS of the VTN and the IRN, representative to the EAN and has been her section RM for six years. She has received three public awards and an Edison citation (1954). Formerly the Town Auditor, Ann is now employed as Overseer of the Poor in her home town of Orange.

Licensed in 1952, W1VXC has packed a lot activity into her four years of hamming. The founder and first president of the Rhode Island YL Club, June has been PAM and INM for her state since 1954. The wife of W1OGT and the mother of two small boys, June operates two-meter phone and 10-, 20-, 40-, and 80-phone and c.w. regularly. She has a CPC for 20 w.p.m. and holds several traffic net certificates.

Eighth Annual YL-OM Contest

(Conducted by the Young Ladies Radio League)

OMs, have you ever dreamed of being besieged by girls — hundreds of girls? The YLRL makes it possible for your dream to come true, once a year at least. All you have to do is simply go on the air during appointed times and call "CQ YL". Enter the girls; all kinds from everywhere; all calling *YOU*. The mere thought is almost staggering — what?

Those brethren who have already savored of the delights of a YL-OM contest need no further inducement. Among them are connoisseurs who have on their walls such coveted certificates as YLCC, YL/WAS, and YL/WAC to prove it.

Here are the rules, and it's every man for himself and every gal for herself.

Contest Period

Phone —
Starts: Saturday, Feb. 2, 1957, 1:00 P.M. EST.
Ends: Sunday, Feb. 3, 1957, 12 midnight EST.

C.W. —
Starts: Saturday, Feb. 16, 1957, 1:00 P.M. EST.
Ends: Sunday, Feb. 17, 1957, 12 midnight EST.

Eligibility: All licensed OMs and all licensed YLs and XYLs.

Operation: All bands may be used. Cross-band operation is not permitted.

Exchange: QSO number; RS or RST report; state, U. S. possession, VE district, or country.

Procedure: Call "CQ YL" or "CQ OM".

Scoring: One point is earned for each station worked. YL to OM, or OM to YL *only*. Phone and c.w. contest will be handled as separate contests. Submit separate logs. Stations and multipliers will count only once in each contest. Example: A station contacted on phone may be contacted in the c.w. portion of the contest for additional credit. Add the number of points and multiply by the number of different states, U. S. possessions, VE districts, and countries contacted. All phone or c.w. contestants running 150 watts or less input *at all times* may then multiply the final score by 1.25. Maryland and the District of Columbia count as one state.

Deadline: Logs must be postmarked not later than March 9, 1957, or they will automatically be disqualified. Send

logs directly to Mildred Wright, W3YTM/5, P. O. Box 1088, Pasadena, Texas.

Awards: As of this year, all awards will be awarded permanently. First place phone YL — cup; first place phone OM — cup. First place c.w. YL — cup; first place c.w. OM — cup. Second place phone YL — cup; second place phone OM — cup. Second place c.w. YL — cup; second place c.w. OM — cup. Winner of the phone cup is not eligible for the c.w. cup. The highest scoring contestant in each district, where three or more logs are submitted, will receive a certificate.

For Men Only

Here is a contribution by C. W. Hamm, the spouse of the fair C. W. Hamm, pictured in last month's column. The subject should be easily identified.

"With few exceptions, every OM wishes that the good wife would get a ticket and actively join in the GOH (Grand Old Hobby). To out-and-out ask her is decidedly the wrong approach. It's got to be her idea, and she has to have a reason for getting and using a ham ticket.

In certain cases the best teaser is for the OM to maintain a superior attitude because he has a ticket and subtly intimate that perhaps his gal is not quite up to getting the theory. Warning — one mistimed statement or one intimation not subtle enough, and you'll be facing a divorce judge. OMs with a college major in psychology might try this.

The approach most successful is to let her talk to relatives and friends all over the country — then she has more reason to get a license. The danger with this is that you will be pushed out of the shack after she gets her ticket. Then the only way you can get to talk to your wife is from the mobile station, if she lets you break in. If there are junior ops. around, the problem is simplified. Remind your wife that soon they'll be grown up and scattered about the country, and ham radio is her golden chance to keep in touch. The pitfall is that soon the jr. ops. follow with their tickets and appropriate not only your fixed station but the mobile as well.

But a mere OM need not worry — a pocket c.w. transistor rig will probably bring good reports. Good luck from the corner pocket of a successful OM."

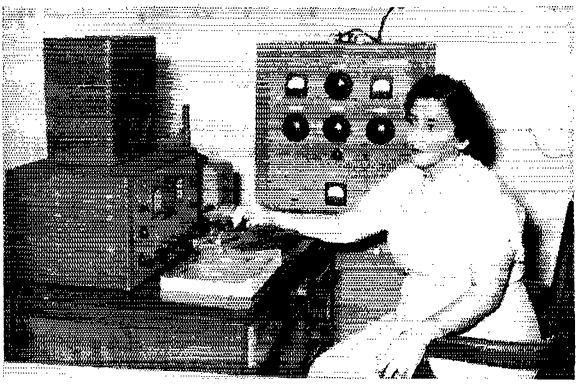
New Certificate

Rules for *The YL-OM 1000 Certificate*, offered by the Texas YL Round-Up Net, follow. Note that this certificate is available to YLs only. The YL Century Certificate is awarded by the Young Ladies Radio League to both YLs and OMs.

1. Two-way communications must be established by a licensed YL on authorized amateur bands with stations mobile or fixed, operated by 1000 different licensed male amateurs. Any and all amateur bands may be used.

2. All contacts may be made from any location as long as it is under the same call, whether fixed, portable, mobile or novice.

3. Contacts may be made over any period of years — past, present, and future.



Brazilian YL PY4AMX operates 40, 20, and 15, phone and c.w., just about every evening. Licensed in 1953, Julieta has worked 130 countries, with 60 confirmed, using a 100-watt home-built transmitter and an HQ129X receiver. The photo is via Mary, LU1DMG.

4. A list of the 1000 OM contacts should be sent to the custodian. This list should contain the following information: station worked, band or frequency, report, date, and time. Contacts should be listed by country, call area, and by call letters in alphabetical order. Note: no cards are to be sent, just the verified list.

5. Have the 1000 confirmations (QSL cards) verified by three (3) licensed amateurs with their signatures and calls at the bottom of the list. In places where there is only one licensed amateur, the following statement should be attached: "I, ..., notary public in (town) ....., (county) ....., (state) ....., do solemnly swear that I have examined these 1000 QSL cards and vouch for the validity of each one. Signed: ....., date ....."

6. Please include 15 cents in stamps with your list to cover postage and handling.

7. All decisions, present and future, will be made by the custodian in case of discrepancies. The present custodian is Lyn Ohlson, W5RYX, 7614 Maxwell Avenue, Dallas 17, Texas.

8. A copy of these rules will be sent to anyone sending a stamped, self-addressed envelope to the custodian.

Keeping Up with the Girls

CLUBS:

YLRL: W9GME has been appointed the new custodian of the YL/WAS award. Send your confirmations to Grace Ryden, W9GME, 2054 North Lincoln Ave., Chicago 14, Ill. The mailing address for 1957 for Vice President W3YTM, Mildred Wright, will be P.O. Box 1088, Pasadena, Texas.

LARK: The 10-meter net, Friday 10:00 P.M. CST, 29,640 kc., is conducted under RACES procedure, and the LARK hopes soon to be a 100% RACES club. W9LDK, Adeline, has been appointed alternate radio officer of the

(Continued on page 134)

«The new KZ5 district chairman for the YLRL, Virginia Harvey, KZ5VR, was born in the Canal Zone and has lived there all of her life. The XYL of KZ5RV, Virginia says that handling traffic for Maritime Mobile stations on 15 meters is her forté.

« W4BWD, Helen Sadler, believes she is the only YL in Augusta, Georgia, at present but hopes there will soon be others. Helen is active in AREC, RACES, and MARS. Her OM is W4ZWT, and the oldest of her three young sons is KN4JPB.

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coordinator
PHIL SIMMONS, W1ZDP, Asst. Comm. Mgr., C.W.
ROBERT L. WHITE W1WPO, DXCC Awards
LILLIAN M. SALTER, W1ZJE, Administrative Aide
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., Phone

Operating Opportunities and the New Year. Any amateurs not now having a direct part in ARRL field organization activity or appointment-holding and who have an experience level equivalent to the General Class FCC license are invited to contact SCMs (address on page 6) to qualify for an operating post along the lines of their natural interest. January brings the quarterly CD Parties with phone and c.w. sections, a bulletin-announced activity for those holding SCM appointment. Activity and reports beyond contest lines are of course required. The appointment requisites are detailed in a booklet available to members on their radiogram request. The types of operational service represented in the available appointments are as follows:

ORS — Official Relay Station. Traffic service . . . 15 w.p.m. c.w. requirement.
OPS — Official Phone Station. Voice operating, example in setting operating standards, activities on voice.
OES — Official Experimental Station. Experimental operating on v.h.f., u.h.f. or s.h.f. bands. Collects propagation data.
EC * — Emergency Coordinator. Organizes amateurs of a community or other area for emergency radio service; liaison with officials and agencies served; also with other local communication facilities. Assists in RACES implementation.
OBS * — Official Bulletin Station. Transmits ARRL and FCC bulletin information to amateurs.
OO — Official Observer. Sends cooperative notices to amateurs to assist in frequency observance, insures high quality signals, and prevents FCC trouble.

* Available where SCM determines vacancies exist or quota is not full. Ask your SCM.

All amateurs *and prospective amateurs* are cordially invited to try the monthly qualifying runs for Code Proficiency Certificates. W1AW and W6OWP schedules are noted in *QST* each month in connection with this program.

The first three months of our new year are just crammed with juicy opportunities for station tests and contests. Besides finding out your range in these, you can snag some new states and countries in connection with operating certificates. The individual communicating ability of both operator and station may and should be advanced through work in contests. Special highlights are indicated in the Activities Calendar which appears each month in *QST*. Don't forget the V.H.F. Sweepstakes January 5–6, the Novice Round-up Feb. 2–17, a Frequency Measuring Test in which every amateur is invited to try his skill Feb. 12, and the ARRL DX Competition with phone and c.w. sections: Feb. 8–10, Mar. 8–10 (phone) and Feb. 22–24, Mar. 22–24 (c.w.).

Also let us end with the reminder that in this year every active operator should be registered in the League's Emergency Corps. Wherever local plans permit, take full part in the RACES program. Complete your mobile and emergency equipment and your ability to work at other than your home QTH. Make sure you are AREC-enlisted. As soon as you rate it get from your EC the League's *Emergency Radio Unit* placard for the rig or for the car. Also from him acquire one of those *Official Mobile Unit* AREC identification cards for the pocketbook.

Extending the Use of the National Calling and Emergency Frequencies. The benefits to be derived from keeping a receiver in the shack "live" on such a frequency when not actively engaged in operating have been mentioned before. *Pacific Area Net News* reports the usefulness proven anew for this technique in a recent test expanding this practice in the Washington Section. The NCE frequencies are given in a chart elsewhere in these pages. Communication for traffic or other purposes is never handled on an NCE frequency. But a quick call and move to a *nearby* frequency (c.w. nets guarding 3550, phone nets 3875 kc., or other of the NCE frequencies specified) permits contacts to be made into desired areas in a matter of seconds instead of long drawn out CQ techniques being tried or necessary.

They're continuing the drive to extend the use of NCE in Washington, sparkplugged by WSN Manager W7OE. PANN also suggests that listening periods 15-to-18 and 45-to-48 minutes past each hour be observed, keeping the NCE frequencies silent except for emergency or QRRR calls, to make this operating tool even more productive for all of us. Let's give this a try, gang. Keep a receiver going when around your station!

Conelrad. Since we remarked that our Conelrad regulations would be effective January 2, 1957 we now express the hope that you have found the best way for yourself to be alerted as painlessly as possible by a means to check the broadcast station service before going on the air and at least once each ten minutes.

Amateur Operator License Suspensions. Supplementing such FCC information in *QST*s of last January, February, July and September '56 *QST* we report the following, covering different types of violations.

FCC ordered (July 20, 1956) that the Technician Class amateur operator license of George D. Canfield, Houston, Texas be suspended effective from July 20, 1956 for a period of three months, that the license be turned in to the FCC, and K5BRZ not be permitted to be operated by any person in the 90-day period, *it appearing that the licensee* on numerous occasions during the period from

September 1955 to June 1956 inclusive violated Sec. 12.23 and 12.136 of FCC's rules, using A3 emission in the 10 and 75 meter bands and failed to maintain an accurate log.

FCC ordered (Oct. 22, 1956) that the Technician Class and Novice class amateur operator license of Leonard M. Weiss, Lincolnwood, Illinois, be suspended for a period of two months, effective from November 11, 1956, that the license be turned in to FCC, and neither K9EQA nor KN9DYK be permitted to be operated by any person during the 60-day period, *it appearing that the licensee* Sept. 19-20 operated K9EQA in the 21.25-21.45 Mc. frequency band, using A3 emission, violating Sec. 12.23 of FCC rules, and that said licensee while engaging in this operation, failed to maintain an accurate radio station log, a violation of Sec. 12.136.

Announcing a New Operating Aid. Operating Aid No. 8, a postal card sized WAS Award record, has recently been made available. Every amateur working along the thorny path of collecting QSLs from the 48 states is invited to drop a line to ARRL requesting this . . . so you have a form to keep track of the calls representing the different states and cards as you get them. Interest in this award has been keen and is still rising. The form summarizes rules for applying for WAS. In sending your QSLs be sure to include postage for their return, likewise send QSLs so they are alphabetically in order by states. —*F. E. H.*

RESULTS, OCTOBER CD PARTIES

The highest claimed scores are shown below. Figures following each call indicate score, number of contacts are number of ARRL sections worked.

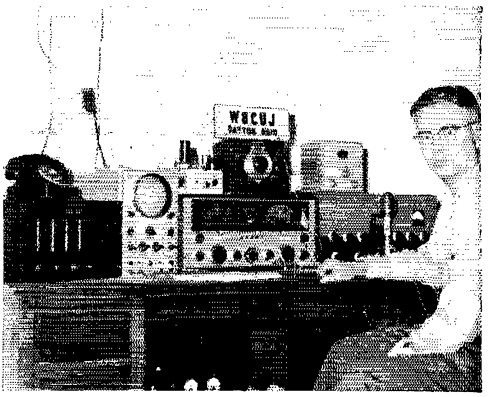
C.W.

W6BIP	192,163-358-59
W6JVA	183,000-330-61
W4YHD	181,440-560-64
W3JNQ	177,940-569-62
W1EOB	176,900-573-61
W4KVX	167,400-540-62
W3VOS	157,075-510-61
W6YHM	154,088-302-56
W4PNK	147,795-501-59
W1TYQ	146,740-499-58
K6BWD	137,225-275-55
W3PZW	135,750-444-61
W4KFC	132,160-441-59
W3NF	127,110-439-57
W1JYH	125,965-420-59
W1AW[1]	115,920-407-56
K6ORT	110,396-232-52
K2OMT[2]	110,200-377-58
W2FEB	108,265-363-59
W9LGR	99,180-342-58
W4TFX	95,930-357-53
W2AEE[3]	95,580-318-59
W2SZ[4]	94,340-350-53
W0PBI	92,910-321-57
VE7KX	91,410-150-66
K2GHS	89,040-329-53
W6CMN	86,735-173-55
W9MAK	85,800-306-55
W0WDW	84,270-313-53
W7VIU	83,369-172-53
W8GBF	82,680-305-53
W4WQT	76,140-277-54
K2ERC	74,880-307-48
W1HUM	73,750-288-50
W9HHN	73,425-263-55
W3DNW[5]	70,890-275-51
K4CFD	70,460-268-52
W3KLA	68,600-245-56
W8TZO	67,600-253-52
K4IXG	67,500-265-50
W3CUL	67,375-239-55
K4DTI	67,340-256-52
W3ARK	67,320-257-51
W3WG	66,080-229-56
W3GJY	65,985-242-53
W0GXQ	65,880-243-54
K4ANB	64,800-266-48
W0EEE[6]	64,480-243-52
W1DYE	63,250-249-50
K6BBD	62,087-144-47
VE6NX	61,659-131-51
K6GUZ	57,324-121-51
W2DMJ	56,810-240-46
K2BHQ	55,430-236-46
W0DDT	53,750-210-50
W2EEN	53,360-228-46
VE7AC	52,532-113-46
K4HOU	52,200-226-45

PHONE

W8NOH	22,755-118-37
W3NF	16,335-114-27
W3BNR	13,520-104-26
W1YBH	13,320-108-24
W2LRO	11,610- 83-27
W8NYH	10,750- 86-25
W2EEN	10,660- 78-26
K2OMT	10,080- 81-24
W1GVK	9240- 88-21
W3EAN	8625- 64-25
W4IA	7665- 66-21
W1CRW	7455- 71-21
K6BWD	6776- 82-22
W2TUK	6100- 54-20
W3ADE	5300- 46-20
W2VCZ	5035- 50-19
W4JUJ	5000- 43-20
VE3AEJ	5000- 45-20

[1] W1WPR, opr. [2] W1UGW, opr. [3] W2AIP, K2DVT, oprs. [4] K2EIU, opr. [5] W3ZSR, opr. [6] K4AGT, W0s WTJ YEP, K0s DEY DGT, oprs.



Bob Montgomery, W8CUJ and official observer of Dayton, scores precision readings (see FMT standings below) with his home-built measuring gear: a four-decade counter at the extreme left; atop receiver on left, a secondary standard using a 1000-kc. crystal and 100- and 10-kc. multivibrators; on receiver under call letters, an audio oscillator with a 10-to-9000 c.p.s. range; under desk, an electronically-regulated power supply for the counter and standard.

SEPTEMBER FMT RESULTS

Open to ARRL Official-Observer appointees and other amateurs, the Frequency Measuring Test of September 13th brought 772 measurements from 196 entrants. Each has been sent a report comparing the accuracy of his readings with those made by a professional frequency-measuring laboratory. The standings of the leaders are given below.

Observers	*Parts/ Million*	*Non-Observers*	*Parts/ Million*
W4JUI	0.1	W8HB	0.0
W8CUJ	0.1	W8GQ	0.3
W0OTR	0.1	W9VZF	0.3
W1MUN	0.4	G6JJ	0.3
W8YCP	0.7	W3PT	3.4
W8GBF	1.9	W5JPM	3.6
W3TFN	2.1	W3YHU	6.1
W6CK	2.5	KP4UY	6.2
W2GOK	2.6	W2CFU	6.5
W1RLQ	3.5	W1WPG	7.4
W1AYG	5.4	W2BHJ	7.5
W1THO	5.7	KN4JGM	7.7
W9HPG	5.9	W8HPR	8.1
W4SHX	6.0	W2IWH	8.6
W3DVO	6.5	W5CKY	8.9

A.R.R.L. ACTIVITIES CALENDAR

Jan. 3rd: CP Qualifying Run — W6OWP
Jan. 5th-6th: V.H.F. Sweepstakes
Jan. 12th-13th: CD QSO Party (c.w.)
Jan. 17th: CP Qualifying Run — W1AW
Jan. 19th-20th: CD QSO Party (phone)
Feb. 2nd-17th: Novice Round-up
Feb. 6th: CP Qualifying Run — W6OWP
Feb. 8th-10th: DX Competition (phone)
Feb. 12th: Frequency Measuring Test
Feb. 15th: CP Qualifying Run — W1AW
Feb. 22nd-24th: DX Competition (c.w.)
Mar. 7th: CP Qualifying Run — W6OWP
Mar. 8th-10th: DX Competition (phone)
Mar. 18th: CP Qualifying Run — W1AW
Mar. 22nd-24th: DX Competition (c.w.)
Apr. 3rd: CP Qualifying Run — W6OWP
Apr. 13th-14th: CD QSO Party (c.w.)
Apr. 16th: CP Qualifying Run — W1AW
Apr. 20th-21st: CD QSO Party (phone)
May 2nd: CP Qualifying Run — W6OWP
May 15th: CP Qualifying Run — W1AW

All of our AREC organization, and most of our RACES organization as well, has in the past been based on membership residences, with little or no thought given to places of business. Yet, in these days of rapid transportation when everyone and his brother owns a car, and when often the place of business is separated from place of residence by many long miles, in an emergency it might be difficult, if not impossible, for AREC members to reach their places of residence quickly to respond to an emergency call if such a call comes during business hours.

It seems to us that consideration of this fact ought to be taken in our AREC/RACES planning. What happens if an emergency befalls while *you* are at work? Can you get home quickly? Do you have bridges to cross, main traffic arteries you must utilize, tortuous roads subject to cave-ins or other forms of blocking? How about deep snow, or ice glaze, or demolished buildings strewing wreckage over your path, making it impossible for you to get home? Can you then be utilized at or near your place of business in an AREC or RACES status?

It is a fact that the trend for residences is suburban, while the need for emergency communications is more often urban. Large cities have a difficult time recruiting amateurs to participate in their AREC/RACES program, while often suburban areas are covered like a blanket. Oh, it is easy enough to say that in case you cannot get home you will simply report to the EC or RO nearest your place of business; but are you prepared to assist him? Do you know the setup, are you signed up in his AREC group or RACES organization? Could you do as effective a job for him, if necessity dictated, as you can for your own EC or RO? If, in thinking it over, you have to answer negatively to these questions, it seems to us that amateurs should sign up in the AREC and in RACES on the basis of their places of business in addition to their residences, so that perfectly good operators and mobile equipment would not be wasted if they are unable to participate with their home group.

Let this become a policy of the AREC, at least: that amateurs are eligible to sign up with the EC having jurisdiction over the area covering their place of business as well as the EC for their home town. An amateur living in Alton and working in St. Louis may very well not be able to get home if an emergency occurs, and should be trained, equipped and otherwise prepared to be useful in either place. A little cooperation between ECs can accomplish much along this line, and better communication can thus be provided for the large urban areas most vulnerable to emergencies.

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Not so long ago one of our ECs inquired if technician licensees are eligible for AREC registration. Of course they are. So are novices. On a great many occasions novice and technician licensees have sent us their Forms 7 for AREC registration. If you ECs are not taking advantages of the potential of the novice and technician in the AREC, you are missing a good bet, both for yourself and for amateur radio. True, they operate under restrictions that make their emergency usefulness limited, but technicians can be formed into six meter nets, novices into two meter nets, and the chief aim of any novice should be to attain general class, after which he (or she) can be as useful in the AREC organization as any other general class amateur. Also, don't neglect the fact that all can be signed up as RACES operators. The wise EC will designate an assistant EC to head up these groups, to train them and organize them as an integral part of the local AREC, to assist novices in getting their general class licenses, and in general to "bring them up right" in the tradition of amateur radio as a public service.

No amateur, novice, technician, general, advanced or extra class, should be prevented from registering in the AREC through lack of someone to issue his registration card. When we get inquiries, we refer them to the local EC, if any. If none, to the SEC, and if no SEC to the SCM. These registrations should be made and confirmation registration cards issued promptly. If they are not, applicants will quickly assume that their services are neither needed nor wanted and bad feeling toward the AREC may result.

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On Oct. 6, a general alarm fire took place in Woonsocket, R. I., which threatened a heavily populated district. The Blackstone Valley Radio Club Net was activated by W1AUT at 2240. Immediate response was made by *W1s* YRC/m IHW/m and DLD. Later *W1s* DZI/m ZYC/m YCW/m and IBM/m checked in. W1DZI/m then established contact with W1MNC/m and W1YNE/m for any Providence traffic. Traffic was handled for the American Red Cross from the scene of the fire and to the area where the evacuated people were taken. Then net was closed at 0300 after normal telephone service was restored. — *W1DOR*

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At midnight on October 16th a call was received that W7NMT had become lost while hunting on the upper Wishkah River, Wash. EC W7UWT contacted *W7s* GXU, UUO and UDC, and they took off in four cars, three of them mobile-equipped, to start the search. Arriving in Grays Harbor County at 0800, they notified the Sheriff's Department before starting the search by patrolling the roads in the area in case W7NMT should come out on one of them. Contact was maintained with W7SFN in Grays Harbor County who maintained contact with W7ZIW and through him W7NMT's XYL to provide any news. The missing hunter was found safe at 1630 and the news passed to his worried XYL in Bremerton through the above channel. Other amateurs who assisted were *W7s* ZPS ZIU MVL DYH PDB DND and GHZ. — *W7UWT, EC Kitsap Co., Wash.*

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On Oct. 16th a flash flood caused by a 16-inch rainfall inundated the business district and a large part of the residential area of Kissimmee, Fla. By 0900 telephone communications were disrupted when the telephone exchange building was flooded. Kissimmee was completely isolated. Fortunately, electric power was not affected, and station WRWB broadcast an appeal for information regarding flood conditions. W4DDW maintained contact with WRWB, enabling local residents to keep in touch with conditions throughout the day. U.S. Engineers at Clewiston were alerted through W4PJU to prepare for a volume of water flowing south through the Kissimmee River into Lake Okeechobee. K4LBX and KN4KVM of Kissimmee, although isolated, managed to keep their rigs on the air, relaying the reports from W4DDW. By late afternoon, partial telephone service was restored, and three of the five highways were passable. W4IYT of Miami arranged for a tape recording to be made of a complete report from W4DDW, which was later broadcast with aerial photos of the flooded areas over WTVJ in Miami. All highways were reopened the following morning, but it was several days before complete telephone service was restored. — *W4DDW, EC Osceola County, Fla.*

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Amateurs were credited with saving the life of a driver in a highway accident near Jasper, Fla., on October 18th. W4UJM of Macon, Ga., after coming upon the accident, called for help from his mobile unit. K4AT of Macon answered, and with the help of an unidentified amateur in Albany, Ga., notified Georgia and Florida state highway patrols, who dispatched an ambulance from Jasper. After making sure that help was on the way, W4UJM administered first aid to the injured man which, along with prompt arrival of medical aid, doctors said saved his life. — *W4GGD.*

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W4SKC reports that on October 28th at Monroe Station, Fla., a car loaded with teenagers reported that one of their group had accidentally blown his thumb off with a rifle. He called a QRRR on 28.6 Mc., but upon receiving no replies he put the injured lad in his car and proceeded to the nearest hospital for treatment. Although lack of local amateurs listening at the particular time did not allow any effective emergency communications, it was reported that two amateurs in Ohio made long distance calls to Miami at their own expense and reports were received from W3TDS and W1CQC.

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Blizzards and high winds on November 2 isolated Rapid City, S. Dak., Scotts Bluff, Nebr. and Cheyenne, Wyo., precipitating extensive AREC and RACES operations in

that area. South Dakota RACES was activated, and South Dakota SEC WØYOB alerted the AREC. The RACES station at the National Guard camp in Rapid City operated under the call letters WØYOB and was manned by *WØs* IEW QHX SVI OII and YOB for three days. Stations from seven states reported into the resulting network, handling 103 messages plus considerable other information. Messages handled included information on people stranded by the storm, airport reports, lost persons, state police and county sheriff reports, cancelled meetings, reports of missing trucks, busses and their drivers, weather and road reports and fatility reports. The following extensive list of amateurs is reported to have participated by WØYOB: *WØs* VAM WBV SWH WKQ QEK OQQ UVL RTD FKE DNV HOJ MZI OFP VKO/m HDE DVB EQV MZJ KXZ DCN BNA CTZ IYN LXM BQS RRN VQC NEO ZWL QGZ HVY NWM TAS GDE DKJ SCT GQH SIF EXX GWS FLP/m ELV CAS IER CJS RSP QDU URC TZW VQR AFG UFZ ORN PUT PNV DQN CTU HVA MKD BBK ZCM GWH FWO, *KØs* ARF CDO CXB CJP HVV APZ CRD BMM AKR CAP BOH/Ø BRS KXD ELQ APX ADI HLT, *W7s* BTA/Ø TCY/Ø HCA YWW UUW TZW IJW BTA ZDT BTO YKR UFB IDO RJR BUK TKB YUB PXR RDM TNJ BWJ.

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Fifteen SECs reported September activities on behalf of 4455 AREC members. This is a decrease from September of last year of two reports and a couple of hundred AREC members. We welcome the new Connecticut SEC (W1EOR) to our list of reporting SECs, bringing us to a total of 33 for the year. Sections reporting: NYC-LI, W.N.Y., San Joaquin Valley, Santa Barbara, Ala., Wis., Santa Clara Valley, Md.-Del.-D.C., Nebr., Ore., E. Pa., Colo., E. Fla., Ont., Conn. Eight sections have 100% reporting records in 1956.

RACES News

FCDA has received an initial printing of 5000 RACES decals which are being distributed through its regional offices to the states. A supply of the USCDARA RACES procedure manual is also being made available through channels in the same fashion. Amateurs locally desiring to receive a supply of the decals and/or procedure manuals should have their local civil defense office request same from the state c.d. office, which should have them on hand by the time this is printed, if not already in distribution from state to local level. Additional printings will be made as the supply is exhausted.

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North Carolina's newly-reorganized AREC organization is now taking definite steps to activate RACES in that state. On October 12th the SEC (W4ZG) visited the state c.d. director and proposed that the AREC attempt to correct the lagging RACES status of the state by developing complete RACES plans. General Griffin agreed, and promised to have any plans submitted to his office passed along to FCDA and FCC for approval.

Consequently, each EC in North Carolina received from the SEC a set of suggestions for getting their district RACES plans in progress, including (1) a form to be filled in to comply with the rules for construction of a local RACES plan, (2) some suggestions on how to go about the job, (3) a complete list of state ECs so that collaboration may be possible, and (4) a complete list of amateurs in each EC's jurisdictional area for recruiting purposes. With this kind of implementation, North Carolina's RACES fortunes should show a decided upturn in the very near future.

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The RACES group in Park Forest, Ill., is starting a course in Radiological Defense under the supervision of a nuclear physicist. The purpose is to give communicators training in the effects of radiation on equipment and personnel and to familiarize them with the reporting system used by field radiological groups. W9LCG advises that it is felt that this will be of considerable value to the communications group both in personal protection and in the intelligent handling of messages concerning radioactivity and fallout.

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The RACES group at Cedar Rapids, Iowa, under the sponsorship of the Cedar Valley Amateur Radio Club, is making plans for the installation of a new control station at city hall. Six and 10 meter beams are being installed, and carpentry work is being done to install shelves, cabinets and other necessities. Target date for putting the station into operation is January 1, 1957.

In St. Lambert, Que., federal and municipal c.d. officials look on while novices get their c.w. routine. VE2MN does the sending as Chief Instructor VE2NY, behind him, looks on. Standing at the rear are the St. Lambert c.d. director, the federal c.d. supply officer, and federal c.d. chief instructor. The photo was taken in the South Shore Amateur Radio Club room. (*David Bier Studios, Montreal*)

OPERATION ALERT ADDENDA

Since the appearance of our Operation Alert article in November *QST* ("OPAL 1956"), several additional reports have found their way to us. Because none of these omissions was the fault of the person who submitted the report, we think they ought to be included in the record, to wit:

We lost W1WNP's excellent report from Concord, Mass., in the pileup of papers, so it was conspicuous by its absence. However, Concord c.d. went on the air at 1400 EDST July 20th with its control station in contact with Sector 1-D in Cambridge on 29,460 kc., operating under the RACES Plan. The auxiliary station in West Concord went on at 1900, contacting ten 10-meter mobiles until 2200, the link between the two controls being maintained on 147,275 kc. At this time, a series of very successful tests was run with mobiles of Bedford RACES, all stations securing at 2300. Receiver troubles marred the operation slightly. On July 21st the control station went on the air at 1400 and operated until the net secured at 2000. At 1500 a 2-meter NCS was set up to contact three mobiles participating in a drill with the Auxiliary Fire Dept. Conelrad observations were made by all operators and forwarded to state c.d. headquarters. Ten amateurs, seven of them operating mobile units, participated.

We were sorry not to receive the report from Oak Ridge, Tenn., in time to be included in the original OPAL article. They had an extensive test lasting four days. Operation commenced at 1000 on July 20th when W4RRV put the club station W4SKH into operation at c.d. headquarters and shortly contacted NCS W4DDF on 3975 kc. During the following 36 hours 66 messages were moved by W4SKH; all of an official c.d. nature and averaging 80 words per message. Most of the operation was on 75 meters, but some was also conducted on 3505.5 and 3635 kc. W4SKH also was in operation on Sunday, July 22nd, but activity was light that day. On Monday, July 23rd, W4SGI covered a public demonstration of the Rescue squad, using hand-carried units on 3980 kc. to relay from the demonstration area to a 50-Mc. mobile parked outside the area, which in turn relayed to c.d. headquarters. Seven operators participated in this drill. On Tuesday, July 24th, W4SGI conducted a mobile drill on 50 Mc. in which mobiles were directed to various vantage points to report the condition of Oak Ridge after the simulated nuclear attack. One unit was sent to the radar station near Lake City where AEC officials had moved their headquarters, and traffic was moved between Knoxville Red Cross and Oak Ridge c.d. headquarters as well as between the radar station and Oak

Ridge. This drill was a complete and unqualified success. Five mobiles participated and five fixed stations assisted in Oak Ridge, Knoxville and Clinton. W4CXY, Oak Ridge EC and RO who submitted this report, included along with it a critical summary of observations which has been forwarded to FCDA.

There was plenty of activity in Kent County (Grand Rapids), Mich. Amateurs arrived at 0800 on July 20th to get equipment set up at W8DC, Kent County RACES control station, and it was operable on the predetermined RACES frequencies before the alert time at 1005. All equipment utilized emergency power. Police, C.A.P. and Conservation Dept. were also represented. Equipment was used on 80, 10 and 6 meters with six transmitters and six receivers either in operation or on standby, plus 15 mobile stations on location and two on standby. Michigan Area 4 was in operation with five of six counties represented, and contact with state civil defense through W8AUD. Approximately 300 messages were handled, including 22 to state c.d. headquarters at Lansing. The mimeographed report of OPAL 1956, prepared by W8GWE, included a summary of "Difficulties and Shortcomings" and "Gripes and Groans" which pointed up some of the things that need correction in future drills.

Recently awarded a letter of appreciation from the Chief of the Bureau of Naval Ordnance was Fred Sanford, W1BLH, for his work for the Naval Proving Ground at Dahlgren, Va., during Operation Alert. Fred is 17, a senior in High School, belongs to two radio clubs. During Operation Alert, W1BLH provided communication with other ordnance activities throughout the country supposed to have been deprived of commercial communications by simulated bombings.

TRAFFIC TOPICS

Maybe in this issue, maybe not, you will find an article entitled "Handling Traffic by System." Anyway, it has been written and submitted. It is the story of the National Traffic System, the first "up front" article on the system since it was inaugurated in the fall of 1949 (Sept. '49 *QST*).

We hope you will all read it carefully, either in this issue of *QST* or whenever it is printed. It is important that you do. It has been very evident among traffic circles that very few traffic men know what NTS is, how it operates, and what it is supposed to do. Many who think they know, don't. Unfortunately, NTS is one of those very simple arrangements of nets and traffic schedules that are simple in essence, yet hard to describe in words. We hope that you will read it, understand it, and help others to understand if they are confused. Above all, we hope that the article will bring out more and better participation in NTS at all its levels.

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Transcontinental Phone Net reports, for month of October: First Call Area, 1409; Second Call Area, 1402; Fourth, Ninth and Tenth Call Areas, 451; total, 3262. North Texas-Oklahoma net reports 31 sessions, 284 messages, 934 checkins for October.

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National Traffic System. It looks as though we may be headed for some basic changes in NTS. The current proposed change is to add an "early early" regional net session, giving the region three sessions per night, at 1700 (or some time before the early section net session), at 1945 and at 2130. Or, alternatively, replacing the 2130 session with a session before 1900. At this writing, regional net managers are being canvassed. The other proposal, arising out of the above, is to change the NTS time schedule so that regional nets have two meetings, section and area nets one, per evening, in this order: regional nets at 1900; section nets at 1930; regional nets again at 2030; area nets at 2100. These are just a couple of concrete proposals that have been coming in as a result of our request for comments. They are *not* yet (and may never be) in effect. So far, these are the only proposals we have received for changes that would affect the entire system, but we expect to get more. When we do, we'll let you in on them.

October reports:

Net	*Sessions*	*Traffic*	*Rate*	*Average*	*Representation*
1RN	27	381	0.75	14.1	95.2%[1]
2RN	28	303	0.48	10.8	98.8%[1]
3RN	44	266	0.58	6.0	60.6%
4RN	24	48	....	2.0	.....
RN5	51	802	1.33	15.7	60.1%
RN6	49	407	....	8.3	.....
RN7	45	201	....	4.4	29.6%
8RN	50	178	....	3.5	80%
9RN	62	740	0.48	11.9	83.1%
TEN	78	1955	....	25.3	71.8%
ECN	19	64	0.41	3.4	71.9%[1]
EAN	24	930	1.82	38.7	90.3%
CAN	28	1104	1.41	39.4	100%
PAN	27	737	0.59	27.0	100%
Sections[3]	478	4109		8.6	
TCC East	..	219			
TCC Central		1791			
TCC Pacific	101[2]	759			
Totals	1034	14992	EAN	11.8	.....
Record	1034	14992	1.82	12.3	100%
Late reports:					
RN6 (Sept.)	45	387	....	8.6	.....

[1] Regional net representation based on one session per night. Others are based on two or more sessions per night.

[2] TCC out-of-net schedules, not counted as net sessions.

[3] Section nets reporting: MSN (Minn.); CN & CPN (Conn.); ILN (Ill.); S. Dak 75 Phone; Iowa 75 Phone; QKS, QKS SS & QKN (Kans.); TLCN (Ia.); SCN (Calif.); GSN (Ga.); AENB AENP & AENT (Ala.); KYN (Ky.); Tenn. C.W.; Tenn. 160 Meters; WVN (W. Va.).

All regions and areas were heard from this month for the first time in many moons, as previous NTS records continue to topple. Nice going, fellows. Some of the reports just got in under the wire, taking advantage of our copy being a few days late. We can't promise that this will happen every time; in fact, we've on several occasions promised the managing editor it wouldn't happen again. NCS: get your QNS reports in to your net managers promptly, so his report will not be delayed waiting for you, particularly to report sessions occurring near the end of the month. Delay in reporting by NCS is the chief cause for lateness in net reports. Section net managers: we cannot list your reports, if late, under "late reports" above. If they do not reach us in time, you've had it.

NYS has just completed its 14th consecutive perfect attendance month on 2RN; W2TUK and W2RG have been NCS over a year on Tues. and Thurs. respectively, with hardly ever a miss. Western Penna. has been very lax on 3RN, spoiling an otherwise good attendance record. W4PIM reported partial 4RN data in the temporary absence of manager W4BVE. VE7ASR reports he has been getting "nibbles" from Wyoming and Montana, but Alberta, Sask., and Alaska are still nonexistent as far as this net is concerned. W6ZRJ is having a rough time sandwiching RN6 into his school work, but reports that RN6 is going strong. W4KKW reports that 9RN is now a two-session *daily* (incl. Sunday) regional net; W4QCD is the latest recipient of a 9RN certificate. When Al issues these certificates he sends a special letter of congratulations along, so the recipient will know he's not just getting another certificate. They have to *work* for them. TEN held special sessions during the SET, handled 126 SET messages; this regional net now holds *three sessions daily*, with the early session at 1700 CST handling by far the most traffic. VE3GI reports that ECN traffic and attendance are steadily improving, but still not enough activity to justify operating the com-

plete NTS schedule. CAN operation is almost perfect, with Saturday sessions now almost up to average; W9DO predicts the most efficient level ever this winter.

Transcontinental Corps. We have a new Eastern Area TCC Manager, gang. It's W3WG, who will need no introduction to any of you. W8UPB's October report was his last, and we want to thank Carty for the job he did these past years on TCC. Let's make Boyd's job as easy as we can by giving him all possible support in getting the Eastern Area assignments filled. WØSCA reports simply that everything is going fine on Central Area TCC; take a look at that traffic total and you'll see what he means. WØKQD submits her usual complete and detailed report; all Pacific Area TCC assignments are filled, but there is a fairly rapid turnover and alternates are still needed. Some of the assignments have no counterparts in the Eastern Area. Twenty stations were active in Pacific Area TCC during October, a few of them filling in only temporarily for a regular station unable to meet his assignment.

The TCC roster as of Nov. 1, 1956: Eastern Area — W1EMG W1BDI W1NJM W2ZRC W3COK W3WG W8QLJ; Central Area — W9CXY W9DO WØBDR WØDQL WØKJZ WØLGG WØSCA; Pacific Area — W6ADB W6BPT W6EOT W6HC W6IPW W6REF W6RFW W6V2T W6YHM K6DYX K6GZ K6ORT W7FRU W7GMC W7UJL W7WJF WØKQD.

National Calling and Emergency Freqs: 3550, 3875, 7100, 7250, 14,050, 14,225, 21,050, 21,400, 28,100, 29,640, 50,550, 145,350 kc.

DXCC NOTES

Announcement is hereby made of the following addition to the ARRL Countries List. The addition will be the Åland Islands. These islands are Finnish territory located in the South Gulf of Bothnia between Sweden and Finland.

DXCC credit will be given starting March 1, 1957 for creditable confirmations dated on or after November 15, 1945. This is to permit foreign amateurs to start receiving credits at the same time as those in the U. S. A. Confirmations received prior to March 1, 1957 for this country will be returned without credit.

In future ARRL International DX Competitions, those making contact with amateur stations located in the Åland Islands may claim credit for a separate country in accordance with DXCC Rules.

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It appears that an increasing number of applicants requesting DXCC credits on the basis of DX Contest logs have not read DXCC Rules 2a, 2b, and 2c.

When requesting DXCC credits on the basis of DX Contest logs *DO NOT* request credits for countries that you have a confirmation from. *DO NOT* request credits for stations that did not submit a log for the contest. *YOU* check to see if a log was submitted. The DX Contest results are published in September or October issues of *QST*. *DO* include the call, date and time of the QSO when requesting DX Contest credit.

If abuse of the Contest credits privilege continues it will be necessary either to take limiting action or to discontinue such credit entirely.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH....269
W8HGW...268
W6AM....268
W6ENV...266
W6MX....264
W6SYG...263
W9NDA...262
W3GHD...262
W8NBK...262
PY2CK...261
W3BES...260
W5ASG...260
W6DZZ...260
W6VFR...259
W6TT....259
W8BRA...259
G2PL....259
W2AGW...259
W6MEK...259
ZL2GX...259
W3JTC...258
W7AMX...258

Radiotelephone

PY2CK...255
W1FH....247
VQ4ERR..246
ZS6BW...244
W8HGW...237
W8GZ....235
W9RRI...234
W3JNN...233
CN8MM...231
W1NWO...231
W6AM....231
W9NDA...230

From October 15, to November 15, 1956 DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

NEW MEMBERS

W6PHY...212
W9GIL...179
PY7VG...143
W5RIO...141
HB9QU...136
I1BNU...127
W3ILA...120
ON4KT...117
W4HKJ...116
W2DEW...111
W3KBC...110
G4TM....110
W2RUJ...109
W8IZQ...108
W7MGT...107
W6WJM...106
W2NUO...105
W7UDG...105
W9ZTD...105
W9FJY...104
DL3TJ...104
OE3RE...104
SM5ARR..104
VS1GX...104
W4VBR...103
W4YK....103
W7PSO...103
W9WYB...103
W9Y8X...103
W5DQK...102
W8JRB...102
JA4BB...102
KP4QA...102
SL3AG...102
W1CTW...101
W2OEA...101
W2FLD...101
OE5PV...101
SM5KG...101
ZS6AJQ..101
W1YYM...100
K2CF....100
W2GND...100
W4JZQ...100
W4TAJ...100
W5DXW...100
W7FRE...100
WØTXW...100
WØIJW...100
KP4ABD..100

Radiotelephone

PY4APE...140
W4SKO....113
W6TXL....112
W1HN.....110
W6LHI....110
I1BNU....109
VE3KT....109
CE3DY....108
W6ZWK...106
W7MGT...106
W4HKJ....101
CN8GT....101
VP1EK....100

ENDORSEMENTS

W2BXA....255
W1TW.....251
W6EBG....251
G4CP.....251
G6RH.....251
W5BNO....250
PAØUN....250
WØDAE....249
W2QHH....241
W1ADM....240
W8BKP....240
W6NTR....235
W7GBW....233
W5EGK....231
W6HX.....230
W3DRD....228
W6DI.....224
OE1ER....224
W1HA.....222
W5GEL....222
DL7AA....222
W3KDP....221
W8MPW....221
W3ECR....215
W2TXB....210
W5EFC....210
W8KPL....210
WØNLY....210
LA7Y.....210
W3GHS....206
W5BZT....202
W6BVM....201
W7NKW....201
W8UDR....201
G5VT.....201
W1ZW.....200
W2BRV....200
W5OLG....200
W5ABY....198
W7ADS....198
W8UDR....197
W9UXO....194
K2GFQ....193
WØANF....193
W3MFW....191
W7KTN....191
W1MB.....190
W5LGS....190
W1TYQ....189
W2BYP....185
W1JNV....181
W2IJU....181
W5DGV....181
W5NW.....181
W6YK.....181
W7RT.....180
W9EIU....180
PAØVB....180
W3VOS....175
W8GLK....173
W2ZGB....172
W9KXK....171
W2ABM....170
W3MDE....170
W5PZL....170
W7PHO....170
W8OGV....170
W4THZ....166
W7FB.....164
WØIEV....162
W8EKK....161
W1JDE....160
W3PGB....160
W5CFG....160
W6CG.....160
W7GXA....160
W6DUB....157
DL1BO....156
W2CCO....154
W9WKJ....153
DL1YA....152
W2HQL....151
W9WFS....151
W1OJR....150
W3AS.....150
W4GHP....150
K6CJQ....150
W9JUV....150
W2OGE....146
W4NBV....144
W1NHJ....143
KT1EXO...142
W1APA....140
W2CGJ....140
W2SUC....140
W3KDF....140
W3MDO....140
W3SOH....140
W6GMF....140
W7HJC....140
IIZFD....140
W5TIZ....134
W9DYG....134
CX4CZ....133
W3RBE....131
W1JMT....130
W1WAI....130
W2PCJ....130
W2SSC....130
W6NJU....130
W7WH.....130
VE3TB....130
W6NHA....127
WØLBB....125
VE7AIH...125
VE2NV....124
W5VGR....123
WØSYK....123
WØNGF....122
W2BUL....121
W7BGH....121
W8ZCK....121
W9BBU....121
W1PFA....120
W2NIY....120
W4AVY....120
K2AAA....119
W2DEC....115
W7MWR....115
G3HJJ....115
ZL1AJU...115
K2BSM....111
ZS5AM....111
W8CJ.....110
SM5VN....110

Radiotelephone

W6DI.....221
G2PL.....211
ZL1HY....211
W2AFQ....201
W3GHD....200
PY2AHS...199
G5VT.....192
W1ADM....191
W1MB.....190
G3DO.....190
KH6OR....185
W3ECR....182
ZP5CF....180
W3GHS....175
PY1AQT...173
W5GXP....172
LA5VE....170
ZL1KG....170
W1HX.....160
W5DMR....159
W1MMV....155
W4EEE....155
W3AEV....152
DL4BY....152
K2CJN....151
W1GOU....150
WØIEV....150
PY4LP....150
W3CGS....142
PA0JA....142
PY7VG....141
F8XP.....140
ON4DH....140
W5TIZ....130
F8MY.....130
LA7Y.....129
VE7A1H...123
W3BYL....120
W4NBV....120
K2AAA....119
W2BYP....110
W6LTY....110
EA3CB....110

W/VE/VO Call Area and Continental Leaders

W4TO.....247
WØYXO....250
VE1HG....164
VE2WW....189
VE3QD....210
VE4XO....118
VE5QZ....140
VE6VK....143
VE7GI.....212
VE8AW....181
VO6EP....190
Z86BW....249
4X4RE....222

Radiotelephone

W2BXA....207
W4HA.....204
W5BGP....222
W7HIA....187
WØAIW....213
VE1CR....120
VE2GQ....118
VE3KF....163
VE7ZM....171
ZL2GX....216
OD5AB....180
EA2CQ....214

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for September traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W2KEB	69	1231	864	522	2686
WØBDR	49	979	958	9	1995
W3PZW	40	711	579	132	1462
W2KFV	6	753	318	322	1399
WØSCA	11	667	652	5	1335
W7BA	17	619	577	38	1251
K2WAO	955	90	59	31	1135
W8ELW	9	559	535	30	1133
W1YBH	11	572	127	404	1114
W4PL	6	28	477	439	950
W3CUL	151	396	281	102	930
WØLCX	16	450	445	5	916
W1LDE	10	462	431	10	913
WØCPI	9	450	405	45	909
W9DO	23	429	416	36	904
W9NZZ	245	317	0	317	879
WØPZO	3	429	421	4	857
K6WAY	307	104	414	13	838
W9CXY	7	384	378	6	775
WØBLI	0	380	372	5	757
W7PGY	23	354	323	31	731
W2YRW	1	355	204	151	711
KH6QU	144	308	58	191	701
W3ZSX	145	280	213	40	678
W6GYH	556	59	41	11	667
W5DTA/5	7	298	270	25	600
W9MAK	69	272	241	15	597
WØGAR	1	283	282	1	567
WØLGG	24	275	247	5	551
W6DDE	27	250	240	11	528
W4NTR	13	251	212	39	515
K5AOV	23	243	233	5	504
Late Reports:					
W6DDE (Sept.)	10	522	522	0	1054
K5FHU (Sept.)	40	220	288	9	557

More-Than-One-Operator Stations

Call	Orig.	Recd.	Rel.	Del.	Total
W6IAB	48	1098	1332	234	2712
W1AW	14	557	9	548	1128
K6FCY	23	460	361	76	920
K5FFB	141	213	379	8	741
K7FBN	180	248	228	20	676

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

WØZWL	144	WØMH8	116	W1YYM	101
WØNIY	133	W1WSN	113	W6BIP	100
KP6AK	125	W9IDG	112	W6JWF	100
W6BHG	124	W1ZME	108	Late Report:	
KH6BQS	121	W4ZIZ	108	K9AXL (Sept.)	101

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: K7FAE, WØBJP, KP6AK.

The BPL is open to all amateurs in the United States, Canada, Cuba, and U. S. possessions who report to their SCM a message total of 500 or more, or 100 or more originations-plus-deliveries for any calendar month. All messages must be handled on amateur frequencies within 48 hours of receipt, in standard ARRL form.

SUPPLEMENT TO NET DIRECTORY

The following list will supplement and correct the listing on page 79, November *QST*. Please inform us promptly of any errors or omissions so that they can be included in the March *QST* installment. An asterisk (*) indicates correction from previous listing in November *QST*. This listing brings the record up to date as far as November 21, 1956. Registrations received later than this date will appear in the March *QST* supplement.

IMPORTANT NOTE: *QST* net listings are for *information only*. Insofar as possible, net information is listed exactly as received. Listing in *QST* or the annual ARRL cross-indexed net directory does not signify necessarily that nets listed have any official status, does not entitle them to exclusive or prior right to the frequency or frequencies on which they are registered, and is in no sense a form of "copyright." We are glad to include information on nets received, but ARRL cannot guarantee any net the exclusive right to its frequency, its name or any facet of its operation.

Name of Net	Freq.	Time	Days
After-the-Net Net	3910	1900 CST	Tue.
Alberta Phone Net	3765	1930 MST	Mon., Wed., Fri.
Albuquerque VHF Net	146,802	1930 MST	Tue.
All Service Net (ASN)	7250	1400 EST	Sun.
Amateur Radio Caravan Club of New Mexico, Albuquerque Chapter	29,600	1930 MST	Wed.
Amateur Radio Club of Southwest La. Net	3850	1400 CST	Sun.
American Red Cross Amateur Communications Service (Fla.)	29,600	1930 EST	3rd Mon.
American Legion Net	3975	1900 PST	Daily
Amesbury Mass. CD Net	29,626.8	1900 EST	Wed.
The Anoka County (Minn.) Radio Club Emerg. Net (ACN)	29,450	2000 CST	Thu.
Antietam Radio Association Inc. Net	3827 29,530	1900 EST	1/3 Tue.
Antilles Amateur Weather Net*	3815	0700 AST 1730 AST	Daily
AREC Net (Calif.)	3900	1030 PST	Sun.
Arkansas Emergency Phone Net	3885	0600 CST	Mon.
Arlington RACES Net (Mass.)	53,400	2100 EST	Tue.
Atlanta Ten Meter Phone Net	29,600	2200 EST	Sun.
Barnyard Net	3924	0700 EST	Mon.-Sat.
Bedford AREC Net (Mass.)	29,120	2000 EST	Mon.
Bedford CD Net (RACES) (Mass.)	29,500	1900 EST	Mon.
Berks County Civil Defense Radio Net (Pa.)	145,400	2000 EST	Mon.
Blossomland Net (Mich.)	1810	1430 EST	Sun.
The Blue Ridge Net	3900	0830 EST	Tue.
Braintree Civil Defense Net (Mass.)	28,560 146,700	2100 EST 2045 EST	Mon. Mon.
Brown County Emergency Net (Wis.)	3950	1330 CST	Sun.
Calgary Radio Emergency Net (Alta.)	3740	1930 MST	Tue.
Calumet Area Emergency Net (Ill.)*	1805	1900 CST	Mon., Fri.
Caravan Club of Texas, Inc.	3995	1300 CST	Sun.
CARS Net (Catalpa Amateur Radio Society) (Mich.)	3970	0930 EST	Sun.
Cedar Valley Civil Defense Net (Iowa)	50,400	2000 CST	Wed.
Centex Emergency Net (CENTEXEN) (Tex.)	3870	0900 CST	Sun.
Central Gulf Coast Hurricane Net*	3935	1815 CST	Daily
Central Illinois Net (CIN)	1815	0830 CST	Sun.
Channel Cities Net (Cal.)	145,800	0645 PST	Mon.-Fri.
Charlotte CD Net (N. C.)	3825	1330 EST	Sun.
Chattanooga Amateur Radio Emergency Net (Tenn.)	29,600	2100 EST	Sun.
Christian Fellowship Net (CFN)	3865	1430 EST	Sun.
Clam Diggers Net (R. I.)	29,000	2000 EST	Daily
Clark County (Ohio) Amateur Radio Emergency Communications Net	3860 145,260	1300 EST 1900 EST	1/3 Sun. Tue.
Coast Guard Auxiliary 7th Dist. Net (CGA7)	3815	1815 EST	Fri.
Colorado Weather Net	3945	0800 EST	Mon.-Sat.
The Confederate Signal Corps Two Meter Net	145,350	2000 EST	Mon.

This mobile communications control center belongs to Ohio State Civil Defense and was on display at the Ohio State Fair last August. In addition to the usual array of telephone, teletype and commercial radio gear, it has four amateur operating positions using Collins, Johnson and General Electric gear. Power is provided by a 15- kw. Onan gasoline-driven generator. W8FYW Director of Communications for Ohio CDC, has charge.

Cross Country Net	21,390	1430 EST	Fri.
Dallas 10 Meter Net	29,465	2000 CST	Mon.
Danvers Emergency Net (Mass.)	145,350	1930 EST	1st Mon.
Davidson County Ten Meter Emergency Net (Tenn.)	29,600	1900 CST	Sun., Wed.
DB Net (Mich.)	3830	1930 EST	Fri.
Delta 75 Net	3905	0730 CST	Sun.
Dog Biscuit Net (DB)	3830	1930 EST	Fri.
Doghouse Net	3860	1800 EST	Mon.
Du Page County Civil Emergency Net (Ill.)	29,600	2000 CST	Mon.
Dutchess County CD/AREC Net (N. Y.)	145,350	2030 EST	Mon.
Early Bird Teenage Net (EBTAN)	3845	0700 CST	Mon., Wed., Fri.
Early Bird Transcontinental Net	3845	0400 CST	Daily
Early Morning Net (FRUGLE)	3711 3712	2300 PST	Mon.-Fri.
East Coast Radioteletype Net	3620	1900 EST	Wed.
East Tennessee Net*	3980	0645 EST	Mon.-Fri.
East Tennessee 2 Meter Net	145,200	1930 EST	Thu.
Eastern Mass Net (EMN)	3660	1300 EST 1900 EST	Mon.-Fri.
Eastern New York Medical Net (ENYMN)	146,500	1200 EST	Mon., Wed., Fri.
Eastern Pennsylvania Civil Defense Net	3997	0830 EST	Sun.
Eastern Pennsylvania Net	3610	1830 EST	Mon.-Fri.
Eastern States Net (ESN)	7080	1730 EST	Mon.-Sat.
Eglin AFB Hurricane Net (Fla.)	29,560	1900 CST	Mon.
The El Paso 10 Meter Emergency Net	29,640	1930 MST	Mon.
Empire Slow Speed Net	3590	1800 EST	Daily
Erie County Traffic and Emergency Net (N. Y.)	3915	1230 EST	Sun.
Fairfax Co. C.D. Net (Va.)	29,540	2000 EST	2/4 Tue.
Fall River (Mass.) Emergency Net (FREN)	29,200	1900 EST	Wed.
FARM Net	3935	1900 EST	Mon.-Fri.
Flamingo Net (Fla.)	29,044	1930 EST	Fri.
Florida Emergency Phone Net (FEPN)	7210	1815 EST	Tue.
Floridoras Net (Fla.)	7230	0900 EST	Mon.
Franklin County Emergency Net (Ohio)	145,260	1930 EST	Tue.
Friendly Forty Net	7215	0900 EST	Thu.
Gadsden Emergency Net (AENH) (Ala.)	29,560	1900 CST	Wed.
Gainesville Amateur Society Mobile Emergency Net (Fla.)*	29,520	1930 EST	1/3 Tue.
Galveston County Emergency Net (Texas)	3855	0910 CST	Sat.
Garfield Emergency Net (GEN) (Okla.)	3825	0900 CST	Sun.
General Coverage Emergency Net	3955	1400 EST	Sun.
Georgia Cracker Emergency Net	3995	0800 EST 1830 EST	Sun. Tues., Thu.
Golden Empire Emergency Net (GEEN) (Calif.)	1920	2000 PST	Mon.
Goose River Net	1980	0900 CST	Sun.
Grand Rapids Emergency Net (GREN) (Mich.)	29,610 50,418	2000 EST	Mon.
Granite State Phone Net (GSPN)*	3842	1800 EST	Mon.-Fri.
The Graveyard Network	3885	0400 EST	Daily
Great Lakes Amateur Radio Net	1880	2000 EST	Tue., Thu., Sat.
Greater Lynn C.D. Net (Mass.)	28,610	1845 EST	Tue.
Hair Pin Net	29,000	1300 EST	Tue.
Hiawatha Weather Net (Mich.)	3920	0745 EST	Mon.-Sat.
Hillbilly Slo-Speed Net (HBN) (Mo.)	3735	1830 CST	Mon.-Fri.
Hit & Bounce Net	7145	0700 EST	Daily
Howard County AREC (Ind.) Net	50,200	2000 CST	Thu.
Humdinger Phone Net	7220	1800 EST 1200 EST	Daily Sat.
Inter-County Net (Dade County, Fla.)	29,600	2000 EST	3rd Mon.
Interstate Single Side Band Net	3985	2000 EST	Daily
Iowa Net	3970	1000 CST	Mon.
Iowa 160 Meter Net	1815	1900 CST	Daily
Ironing Board Net	3915	0900 PST	Wed.
Kalamazoo Amateur Radio Club Ten Meter Net (Mich.)	29,600	2100 EST	Wed.
Kankakee Area AREC Net (Ill.)	3920	1200 CST	Daily
Kankakee Area Civil Defense Net (Ill.)	145,800	2100 CST	Mon.
Kansas CW Net (QKS)*	3610 1888	1830 CST	Mon.-Fri.
Kansas Novice Net (QKN)*	3735	1700 CST	Sun.
Kansas 75 Meter Phone Net (KPN)	3920	1230 CST 0800 CST 0630 CST	Tue., Fri. Sun. Wed.
Kay County Emergency Net (K.C.E.N.) (Okla.)	3850	0800 CST	Sat.
Kennehoochee Amateur Emergency & Traffic Net	29,460	2130 EST	Sun.
Kentucky Korn Krackers Net	3932	0700 CST	Daily
Kentucky Net (KYN)*	3600	1800 CST 0900 CST	Daily Sun.
Kentucky Novice Net (KNN)	3750	1800 CST	Sun., Wed.
Kentucky Phone Net (KPN)*	3960	1930 CST 1300 CST	Mon.-Fri. Sat., Sun.
Knox County 6-Meter Emergency Net (Tenn.)	50,600	2100 EST	Mon.
Knox Warren Emergency Net (KWN) (Ill.)	50,550	2130 CST	Mon.
Lancaster Emergency Net (LEN) (Pa.)	147,000	2200 EST	Mon.
Lark CW Nest	3750	1400 CST	Thu.
Lark Nest	29,640	2200 CST	Fri.
Linn County Emergency Net (Iowa)	3915	1300 CST	Sun.
Long Beach Civil Defense & Emergency Net (Calif.)	29,560 147,300	2015 PST 2030 PST	Mon. Mon.
Lynchburg Civil Defense Net (Va.)	29,000	2000 EST	Sun.
Malden Emergency Net (Mass.)	29,540	1930 EST	Mon.
Manitoba ARRL CW Net (MAN)	3700	1830 CST	Mon.-Fri.
Manitoba ARRL Phone Net	3760	1900 CST	Daily
Maryland-Delaware-D. C. Net	3650	1915 EST	Mon.-Sat.
McKean County Emergency Net (Pa.)	3525	0900 EST	Sun.
Mercer C. D. Net (MCDN) (N. J.)	147,000	2030 EST	Alt. Tue.
Miami Valley Civil Defense Net (Dayton, O.)	147,150	1900 EST	Wed.
Michigan Buzzard's Roost Net	3930	1730 EST	Mon.-Fri.
Michigan Emergency Net	3930	0900 EST	Sun.
Military and Civilian Affiliated Net (MACAN-15)	21,400	1200 CST	Mon.-Fri.
Military Civilian Amateur Net 7 Me. (MCAN7)	7242	1330 PST	Mon.-Fri.
Missouri Emergency Phone Net	3900	1800 CST	Mon., Wed., Fri.
Mohawk-Hudson Training Net (MHT) (N. Y.)	3716	1300 EST	Sat.
Montgomery Co., Penna. Emerg. Net	29,520	2000 EST	Thu.
Montrose County Net (MCN) (Colo.)	7198	1930 MST	Thu.
Muskeg Net	3750	1915 EST	Mon.-Fri.
Muskingum Amateur Radio Assn. (Ohio) Net	29,616	2200 EST	Fri.
Nassau Co. 10 Meter Net (N. Y.)	28,680 28,720	2000 EST	Thu.
Net Sponsored by Oregonian Amateur Radio Society (OARS)	29,200	1930 PST	Daily
N. B. Emergency Net (Mass.)	146,850	1930 EST	Mon.
New Bedford Emergency Net (Mass.)	29,400 29,610	1015 EST	Sun.
New England 75 Meter Phone Net	3870	0900 EST	Sun.
The New England Weather Net	3900	0630 EST	Mon.-Sat.
New Jersey Net (NJN)*	3695	1900 EST 0715 EST	Mon.-Sat.
New Mexico Breakfast Club	3838	0700 MST	Mon.-Sat.
New Mexico Emergency Phone Net	3838	0730 MST 1800 MST	Sun. Tue., Thu.

New Orleans Emergency Net	3825	0930 CST	Sun.
New York State CW Net (NYS)*	3615	1845 EST	Mon.-Sat.
New York State Phone Emergency and Traffic Net (N.Y.S.P.E.T.N.)	3925	1800 EST	Sat., Sun.
Newfoundland Net	3750	2230 GMT	Daily
Newton CD Net (Mass.)	53,640	0745 EST	Mon.-Fri.
		2100 EST	Sun.
	53,745		
Ninth Regional Net (9RN)*	3640	1630 CST	Daily
		1945 CST	
Nite-Owl Net, Chicago, Ill.	29,640	2230 CST	Thu.
North Texas-Oklahoma Net (NTO)*	3960	1730 CST	Daily
NJQ Net	3870	1210 CST	Mon.-Sat.
North Carolina CW Net (NCN)	3700	1900 EST	Mon.-Sat.
North Dakota CW Net	3670	1830 CST	Mon., Wed., Fri.
North Dakota 160 Meter Screwball Net	1992	1230 CST	Mon.-Sat.
North Texas CW Net (NTX)	3770	1845 CST	Mon.-Sat.
North Texas Emergency CW Net	3770	0800 CST	Sun.
North Texas Novice Set (NTNN)	7176	1900 CST	Sun., Hol.
Northern Alabama 6 Meter Net (AENO)*	50,100	1930 CST	Tue., Fri.
Northern Virginia Emergency Net (NVEN)	29,200	1230 EST	Sun.
Northfork Emergency Net	3815	1215 CST	Mon.-Sat.
Novice Hurricane Net (Fla.) (NHN)	3725	0800 EST	Sun.
Nylon Net	3820	0900 PST	Wed.
Oakland County CD Net (Mich.)	29,610	2000 EST	Wed.
Ohio Buckeye Net (BN)*	3580	1900 EST	Mon.-Sat.
Ohio Emergency Net	3860	1800 EST	Thu.
Ohio Emergency Corps Net (CW) (OEC)	3580	1900 EST	Sat.
The Oklahoma Traffic Net (2nd Session) (SSZ)	3682.5	2200 CST	Mon., Wed., Fri.
Omaha-Douglas County CD Net (Nebr.)	29,500	2100 CST	Mon.
	50,400		
Ontario Phone Net (OFN)	3765	1900 EST	Mon.-Sat.
Ontario Section Net (OSN)	3535	1900 EST	Mon.-Sat.
Orange County Amateur Radio Club Net (Calif.)	50,160	2100 PST	Tue., Thu.
O.A.R.D. Net (Oregonian Amateur Radio Society)	29,200	1930 PST	Daily
OTSCO Net (N. Y.)	29,600	0900 EST	Daily
Ottawa Six Meter Emergency Net	50,400	2130 EST	Tue.
Over Seas Traffic Net	3955	0800 EST	Daily
Pacific Teen Ager's Net (PTAN)	3815	1615 PST	Mon.-Fri.
Padre Net	3900	1230 CST	Sun.
	7260	0900 CST	Mon.-Fri.
		1230 CST	Wed.
	29,200	1230 CST	Sun.
Pennsylvania Fone Net (PFN)	3850	1800 EST	Mon.-Fri.
Pi-Net	3838	0900 EST	Tue.
Pine Tree Net (PTN) (Me.)	3596	1900 EST	Mon.-Fri.
Polecat Net	3850	1215 CST	Mon.-Sat.
Polecat Net (PCN)	3665	1130 EST	Sun.
Pony Express Net	3920	0830 MST	Sun.
Potomac-Rappahannock Valley Net (PRVN)	3935	0900 EST	1/3 Sun.
Post Road Emergency Net	29,480	1900 EST	Mon.
Potomac Valley Radio Club Net	147,600	2100 EST	Daily
Province of Quebec Net (PQN)*	3535	1900 EST	Mon.-Sat.
Puerto Rico Amateur Emergency Net	3925	2000 AST	Wed.
QRMary Round Table	28,900	2100 EST	1st Tue.
Quad City Emergency Net	29,500	2100 CST	Sun.
Quarter Century Wireless Assn. Inc. Net	3810	1100 EST	Sun.
Quincy Emergency Net (Mass.)	28,620	1915 EST	Mon.
	146,800		
Radio Club of Brooklyn Net	3810	2230 EST	Mon.
	145,250		
Ramsey County Civil Defense Net (Minn.)	29,250	1930 CST	Mon.-Fri.
Randolph CD Net (Mass.)	29,530	1900 EST	Mon.
Red Cross Amateur Mutual Aid Net (N. Y.)	3925	1200 EST	1st Sun.
Reseau D'Urgence VE2DN (Que.)	3750	1030 EST	Sun.
Rhode Island Novice Net (RINN)*	3743	1830 EST	Mon.-Sat.
Richmond RACES AREC Net (N. Y.)	29,560	2000 EST	Mon.
	147,120		
Rockford Six-Meter Emer. Net (Ill.)	50,400	2000 CST	Mon.
Rockland County (N. Y.) AREC Net	29,600	1930 EST	Wed.
Rockland County RACES Net (N. Y.)	147,210	1930 EST	Mon.
RTNET (Calif.)	147,850	2000 PST	Tue.
Sacramento Amateur C.D. Emergency Comm System	3885	2000 PST	Tue.
	147,120	1930 PST	Tue.
Saints of Seventy Five Net	3935	0500 EST	Daily
San Bernardino Area Net (Calif.)	29,200	1900 PST	Mon.
San Diego Two Meter Net	145,500	1900 PST	Tue.
Sattelite Net (Fla.)	29,500	0900 EST	Sun.
Schenectady Emergency Communications Net (N. Y.)*	3950	1100 EST	Sun.
Sector 3B Civil Defense Net (Mass.)	28,640	1930 EST	Mon.
Seventh Regional Net (RN7)	3575	1945 PST	Mon.-Sat.
		2130 PST	
7210 Delinquent Net	7210	0715 CST	Mon.-Fri.
7290 Traffic Net	7290	0900 CST	Mon.-Fri.
		1300 CST	
Sheridan Emergency Net (SEN) (Wyo.)	3825	1930 MST	Mon.
Side Band Session of Tennessee Phone Net (TSSBN)	3980	1900 EST	Mon., Wed., Fri.
Sooner Traffic Net (Okla.)	3850	1800 CST	Mon.-Sat.
The South Carolina Emergency Net	3930	1930 EST	Mon.-Fri.
		0830 EST	Sun.
		1530 EST	Sun.
South Carolina Mobile Net	3930	1400 EST	Sun.
South Dakota 160 Meter Phone Net	1915	2000 CST	Daily
South Dakota Weather Net	3870	0730 MST	Mon.-Sat.
St. Paul Mobile Net	29,520	1930 CST	Daily
State Line Radio Club Net	3695	2030 EST	Sun.
Sunrise Radio Club W2SV Net (N. Y.)	3950	1000 EST	Sun.
Tangle Net	14,240	1300 CST	Thu.
Tar Heel Emergency Net (N. C.)	3865	1900 EST	Mon.-Fri.
Teen Age Net (AENT) (Ala.)*	3905	1630 CST	Daily
		0800 CST	Sat.
Ten Meter Emergency Net (Wis.)	29,620	2000 CST	Mon.
Tenn CW Net — Volunteer Net (TN/TENN)*	3635	1900 CST	Mon.-Sat.
Tennessee 160 Meter CW Net*	1817	2000 CST	Sun.
Texas Round-up Net	3880	0930 CST	Thu.
Texas YL Round-up Net	3880	0800 CST	Thu.
	7235	1000 CST	Thu.
Third Regional Net (3RN)*	3590	1945 EST	Mon.-Fri.
		2130 EST	
Three Rivers Ham Net (Mo.)	3745	1230 CST	Sat.
Topeka (Kans.) 10 Mtr Net*	29,600	0930 CST	Sun.
		1930 CST	Thu.
Topeka (Kans.) 2 Mtr Net*	145,500	2100 CST	Mon.
Trans Continental Relay Net (TCRN)	3521	2300 GMT	Daily
	7042	0615 GMT	
		0215 GMT	
		1600 GMT	
Tropical Phone Net (TPTN)	3945	1730 EST	Daily
Tuboro Radio Club Net (N. Y.)	29,520	1900 EST	Tue.
		1130 EST	Sun.
Tulsa County Emergency Phone Net (Okla.)	3860	1330 CST	Sun.
"2200 Club" (Mass.)	29,056	2200 EST	Daily
Twin City Radio Club Net (TCRC) (Ill.)	28,560	2100 CST	Tue., Thu.
2-4-6 Net (Calif.)*	50,100	1900 PST	Mon.-Fri.
	145,080	1900 PST	Daily
TXN-Traffic Exchange Net-CW	7106	1900 CST	Daily
United States Coast Guard Auxiliary 1st Dist. Net	3511	1030 EST	Sun.

United States Coast Guard Auxiliary — 2nd Coast Guard District	3865	1900 CST	1/3 Thu.
United Trunk Lines (Central) (UTL)*	3565 3590	2030 CST 2130 CST	Daily Daily
United Trunk Lines (E-W 40) (UTL)	7125	2300 EST	Daily
United Trunk Lines (West) (UTL)*	3565	1930 PST	Daily
Upper Ohio River Emergency CW Net (URN)	3585	1930 EST 0900 EST	1st Sat. 1st Sun.
Virginia Net (VN)	3680	1900 EST	Mon.-Fri.
Virginia Slow Net (VSN)	3680	1830 EST	Mon.-Fri.
Walpole Emergency Net (Mass.)	145,500	1900 EST	Mon.
Washington Amateur Radio Traffic System (WARTS)	3970	1800 PST	Mon.-Sat.
Washington Co. Emergency Net (Okla.)	3825	1330 CST	Sun.
Washington Section Net (WSN)	3575	1900 PST	Mon.-Fri.
Weather Amateur Reporting Net (WARN) (Fla.)	3675 7105	1830 EST	Mon., Wed., Fri.
Wellesley C. D. Net (Mass.)	147,240	0900 EST	Sun.
Wellesley 10 Meter Net (Mass.)	28,920	1930 EST	Tue.
Western Nebraska Net	3685 3850	0700 MST 0700 MST	Sat. Mon.-Fri.
Westlake Net	3950	1000 EST	Sun.
Westside Amateur Radio Club Emergency Net (La.)	28,900	2000 CST	Mon.
Weymouth C. D. Net (Mass.)	28,800 51,000 147,186 147,186	1900 EST 1900 EST 1900 EST 1100 EST	Mon. Mon. Mon. Sun.
Wheat Belt Net	3825	1230 CST	Sat.
Whittier Emergency Net (Calif.)	3885 29,520 145,280	2015 PST 1900 PST 1930 PST	Thu. Thu. Thu.
Windjammer Net	3948	0800 PST	Daily
Winthrop Emergency Net (Mass.)	147,200	1830 EST	Mon.
Wisconsin Phone Net	3950	1215 CST 0930 CST	Mon.-Sat. Sun., Hol.
Wyoming Net (YO Net)	3610	1830 MST	Mon., Wed., Fri.
YLRL Net	3610 3900 3900 3900	2100 EST 0800 EST 1500 PST 0930 EST	Wed. Wed. Mon. Wed.
York Emergency Net (Pa.)	145,620	2200 EST	Mon.

RTTY NOTES

First returns on the RTTY Sweepstakes of November 2nd-4th are announced by W6AEE of the RTTY Society of Southern California. Top score thus far reported comes from VE7KX with 5550 points by virtue of 75 QSOs in 37 ARRL sections. Tallies of more than 1000 points are also claimed by W2RUI, WØBP, W2JAV, W6MTJ, W2TKO, W6AEE, W1BDI, W9GRW, WØFQW, WØWRO, W9ZBK, W6WIS, W8LEX, K2USA. Other teletypers known to have been active include *W1s* AW WEW, *W3s* CRO KYR, W5JBW, *W6s* CBF CG CQI, *K6s* OWQ PNW, *W7s* CGA CSC HJC, W9BMV, VE3GL, ZL1WB.

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The Northern California Amateur Radioteletype Society had 26 at a recent meeting and has added five new members, W6VPC reports. W7YHS at Billings keeps Montana on the map. The NCARTS gang on two meters suggests that members on that band come in on the RTTY frequency 147.96 Mc. each half hour or hour when the frequency is not in use, if they are around the shack . . . to promote more member contacts. W6FZC puts out official bulletins on 3620-kc. RTTY each Wednesday at 8 P.M. PST; W6ASJ sends bulletins similarly on 7140-kc. RTTY, 2 P.M. PST each Saturday; 14.29-Mc. transmissions follow, repeating the information.

The East Coast RT Net on 3620 kc. continues a weekly highlight in RTTY operation. . . . Wednesday nights at 7 P.M. Jack, W1BGW, the NCS, moves to a new QTH shortly. With W2JTP "it's a boy." W1NCL is a new Conn. RT Net member; W1EFF at Gray, Maine now represents that state on RTTY.

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from W1AW will be made on January 17th at 2130 EST. Identical texts will be sent simultaneously by automatic transmitters on 1885, 3555, 7080, 14,100, 21,010, 50,900 and 145,600 kc. The next qualifying run *from W6OWP only* will be transmitted on January 3rd at 2100 PST on 3590 and 7128 kc.

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

Code-practice transmissions are made from W1AW each evening at 2130 EST. Approximately 10 minutes' practice is given at each speed. References to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of *QST* text sometimes is reversed. To improve your fist, hook up your own key and buzzer and attempt to send in unison with W1AW.

Date	Subject of Practice Text from November *QST*
Jan. 2nd:	*A Low-Noise 108/144-Mc. Converter*, p. 11
Jan. 8th:	*An Audible/Visible Conelrad Alarm*, p. 21
Jan. 11th:	*Operation Earthworm*, p. 24
Jan. 15th:	*The "Little Monster" Automatic Key*, p. 25
Jan. 21st:	*A 4X4250B Linear*, p. 26
Jan. 24th:	*The "Wonder-Bar" Antenna*, p. 32
Jan. 29th:	*The Band Checker*, p. 35
Jan. 31st:	*The Balanced Twin-Lamp*, p. 38

W1AW OPERATING SCHEDULE

(*All times given are Eastern Standard Time*)

A printed local map showing how to get to W1AW from main highways or from the Hq. office will be sent to amateurs advising their intention to visit the station. Also, master schedules showing complete W1AW operation in EST, CST or PST will be sent to anyone on request.

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

Exception: W1AW will be closed from 0230 Jan. 1st to 1500 Jan. 3rd in observance of New Year's Day and from 0300 Feb. 22nd to 1500 Feb. 23rd in observance of Washington's birthday, just as it was closed from 2230 Dec. 23rd to 1500 Dec. 26th in observance of Christmas.

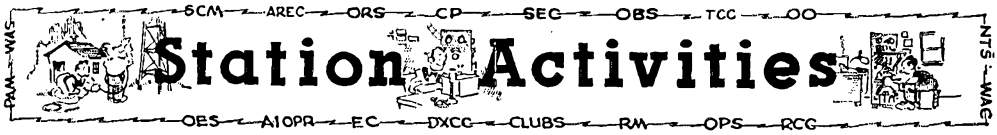
General Operation: Use the chart on page 77, Nov. 1956 *QST* for determining times during which W1AW engages in general operation on various frequencies, phone and c.w. Note that since the schedule is organized in EST, certain morning operating periods may fall on the evening of the previous days in western time zones. W1AW will participate in all official ARRL operating activities, using scheduled general operating periods for this purpose if necessary.

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

Frequencies (kc.):
C.w.: 1885, 3555, 7080, 14,100, 21,010, 50,900, 145,600
Phone: 1885, 3945, 7255, 14,280, 21,330, 50,900, 145,600.
Frequencies may vary slightly from round figures given; they are to assist in finding the W1AW signal, not for exact calibration purposes.

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

Code Proficiency Program: Practice transmissions are made on the above listed c.w. frequencies, starting at 2130 daily. Speeds are 15, 20, 25, 30 and 35 w.p.m. on Monday, Wednesday and Friday, and 5, 7½, 10 and 13 w.p.m. on Sunday, Tuesday, Thursday and Saturday. Approximately ten minutes of practice is given at each speed. *Exceptions:* On Feb. 12th W1AW will transmit a special Frequency Measuring Test and on Jan. 17th and Feb. 15th W1AW will transmit ARRL Code Proficiency Qualifying Runs instead of the regular code practice.



• 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, Clarence Snyder, W3PYF — SEC: NNT. RM: YAZ. PAM: TEJ. EPA nets: 3850 and 3610 kc. The National Jamboree of the Boy Scouts of America will be held in the Valley Forge Area during the course of the coming summer. There has been a request for cooperation from BSA for help in handling traffic in and out of the encampment. With the close-down of the c.w. net during the summer it will fall on the PFN to carry the bulk of traffic out of this area and funnel it into the various nets. Let's start now to plan for this event. If you are interested in helping, contact DHJ, who is arranging for the traffic. The IRC ARC is making plans for a new 10-meter antenna. UUA reports that he now is operating ABT from the U. of Pennsylvania, where he is a freshman. The Penn Mar Radio Club reports the following new officers: AZQ, pres.; DMI, vice-pres.; TOL, treas.; and MDD, act. mgr. This club now is operating from the quarters of former WRZE-FM, the highest spot in York County. LJ, activity mgr. of the Mike Farad Net, reports an average of 30 QTC per day with 20 to 25 stations participating. New officers of Mike Farad include LJA, pres.; LJ, vice-pres. and act. mgr. TDF is leading in the NPARC 2-meter WAS Contest. ZRQ, manager of the AN Net, is looking for NCSs to help relieve the pressure. York ARC new officers are LUD, pres.; PRG, vice-pres.; NGN, secy.; FQC, asst. secy.; EDO, treas.; COI, trustee. ALB has a new 80-ft. tower. BHC has been made director of communications for Northumberland County. YVX reports that school work is cutting into his operating time. OGD reports that the Harrisburg ARC has started a 6-meter net which meets Tue. at 2100 with DJZ as NCS. The present frequency is 50.55-Mc. WN3FYP is active in the Bethlehem Area on 2 meters. The recent Frequency Measuring Test found the following EPA stations reporting: SMC, ARK, TFN, SOC, AHZ, YHU, VDE and PT. TFN was top man with reports varying only 4 cycles on 3.5 Mc., 31 cycles on 7 Mc., and 12 cycles on 14 Mc. The Delaware Lehigh ARC under NNT, pres., has a club project of 2-meter converters. Fifteen of them are under construction. NF is chairman of the construction group. CUL continues to lead the BPLs with a total of 930 this month. Traffic: W3CUL 930, ZSX 678, BHC 237, OK 254, TEJ 168, YAZ 141, BFF 140, BNR 116, YDX 112, EMD 81, NF 66, CNO 48, FLP 48, ZRQ 46, AXA 35, OGD 30, DJL 20, CXJ 14, SMC 14, QLZ 12, PYF 11, NQB 10, EU 8, DUI 4, EMH 4, YVX 4, AMC 3, ADE 2.

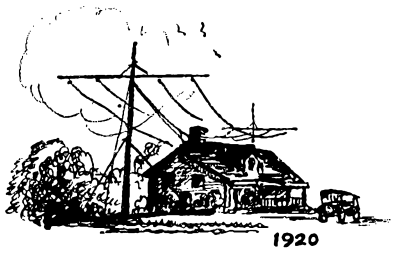
MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, John W. Gore, W3PRL — On Oct. 12th the RCARA presented WZN, who gave a talk on "Micro Waves" and on Oct. 15th the BARC listened with great interest to a very fine talk on "Transistors in Amateur Radio Circuits" by Mr. Wesley Jones, senior engr. of Westinghouse, Baltimore. MSN has acquired a new Gonset 2-meter Communicator and ULI is working on a 600-watt linear for 2 meters using a pair of 4E27s. CDG reports revival of the Carroll Co. hams on 10-meter phone. COK is trying to keep active despite the arrival of another jr. operator on Oct. 16th. PZW, who recently returned to W3-Land, got over the hump with DXCC in the last DX Contest and now is waiting for confirmations. UE reports the addition of ZGN to the MDD and 3RN provides a much-needed QNI for the Western Md. Area. The MDD now needs QNI from Delaware. ZGN took part in the recent CD Party and reports an FB job. CDQ had the time of her life at the last CD Party QSOing the old-timers. ECP advised that N3GNQ has a new Globe Chief, also that OSX maintains daily c.w. skeds with his brother in New England and further advised that RYX has a new kw. transmitter using 4-240As in the final. RYX also is experimenting with potting his assembly in plastic. However, final results of the performance have not yet been determined. N3IVU has an AT-1 on the air on 3738 kc. YBB is on the air with a new Valiant and in order to make his station more complete for the new transmitter also installed a new beam. RLR has become active again and has been roaming the bands with his KW-1. Joe also has placed an order for the new Collins Master Control Center to bring his already de luxe station up to the latest standard. UCR has moved from Aberdeen to the Washington Area. JZY, the beacon on the top of the mountain at Smithsburg, now has 104 countries confirmed out of 120 worked on phone. ZSR, having recently sold his station, now has completed his new final and has acquired an HQ-140X and again is back in business. WV reports increased activity in the MDD Net, which is normal after summer conditions have subsided. The Cracker Barrel Net, on 3806 kc. at 9 P.M. each night, still is going strong and its circle of participants has been increasing. Traffic: (Oct.) W3PZW 1462, UE 336, BUD 162, K3WBJ 140, W3UCR 67, COK 63, PQT 44, BFW 29, WV 28, ZGN 22, PQ 18, CDG 16, ECP 11, JZY 11, (Sept.) W3CVE 489, ULI 41.

SOUTHERN NEW JERSEY — SCM, Herbert C. Brooks, K2BG — SEC: YRW. PAM: ZI. New appointment: K2HPV, Penns Grove, as OBS. K2WAO/W1YRZ and W2-YRW again this month will receive BPL in recognition of their traffic-handling. VDE, asst. manager of the N. J. 75-Meter Phone Net, has issued a very fine bulletin. K2CPR worked 100 DX station in 99 days with 100 watts on 15 Mc. Jack's total is now 223. KN2THX, Pennsauken, has sent us her first traffic report. She is a regular in the Delaware Valley Traffic Net. The N. J. Phone Net held its first annual picnic at the DVRA Headquarters, ZQ. DMR, Palmyra, has a new tower to support his 20-meter beam. UA and RG, RACES Radio Officers in the section, attended a RACES meeting in Asbury Park. The Quarter Century Wireless Assn. recently held a meeting and dinner in Philadelphia. BUI has worked 141 countries. LYL is back on the air after a lay-off of nearly a year. K2HHO, Bill Deith, editor of the South Jersey Radio Assn. monthly paper *Harmonics*, is to be commended for the outstanding job of presenting the plans and the accomplishments of the club members in a very interesting manner. We solicit information from club secretaries as to their club activities, new officers, etc., that due notice might be given in this column. K2OMT has worked the 48th state for WAS. We welcome 3MUE/2, Riverside, to the section. K2CPR, GOK and LS participated in the recent Frequency Measuring Test. LS, Pleasantville, also reported 75 discrepancies as a result of his OO activities in October. Thirteen Form 1 reports were received this month. No reports were received from the Southern Counties or the Tri-City Radio Clubs. Traffic: K2WAO 1135, W2YRW 711, HDW 209, RG 182, K2JGU 124, EWR 90, KN2THX 62, W2ZI 60, K2DSL 44, W2BZJ 24, K2-HPV 3.

WESTERN NEW YORK — SCM, Charles T. Hansen, K2HUK — SEC: UTH/FRL. RMs: RUF and ZRC. PAMs: TEP and NAI. NYS c.w. meets on 3615 kc. at 1800, ESS on 3590 kc. at 1800, NYS phone on 3925 kc. at 1800, TAR on 3570 kc. at 1700, NYS c.d. on 3509.5 and 3993 kc. at 0900 Sun., TCPN 2nd Call Area on 3970 kc. at 1900, SRPN on 3980 kc. at 1000, LSN on 3970 kc. at 1600. K2SPO was elected president of the Mohawk Valley ARC. K2ITN and K2SPO are going on 2 meters with portable transceivers. The Niagara Radio Club elected DRN, pres.; UMS, vice-pres.; WOE, treas. and K2MAF, secy. QNA spent the month of October in Miami, Fla., with a 2-meter Gonset and heard nothing. The ARC of IBM is exploring IGY projects. RARA visited the research labs at Kodak. RARA also sponsored the fourth Old Timers' Nite in conjunction with AWA in November. The affair was well attended and many 40-year men were there, including 1SS, who was the guest speaker, and APF. The AWA, represented by ICE and QY, presented "The Story of DX" at a recent RAWNY meeting. GBX now has 81 countries. LXE has a little YL. BKC is rebuilding the transmitter into a commercial rack and also is building a phone patch and Conclrad device. K2HRB reports extended ground-wave conditions on 50 Mc. during October with contacts ranging about 250 miles. He has 37 states toward his 50-Mc. WAS. K2KAQ and K2KPC are on s.s.b. K2PMD now is General Class. TON, K2IDQ, K2MDS, K9AOT/2 and XYL K0CWS/2 are on 6 meters. K2KTK has been appointed OO. K2PVN built a 2-meter exciter and Long John beam. K2ITN is experimenting with moon-bounce at 3 cm. KKZ is back on the air with a two-element beam on 10 and a three-element beam on 15 meters. He's up to 49 countries. SJV is back in circulation but still has to take it easy. K2DJN is home from the hospital and she is doing fine. RUF still is on the mend and we hope to see her on the bands soon. K2CEH has a new tower in the air. PPY put up his tower once again and hung a 10-meter beam on top. How about checking

(Continued on page 80)

GROUND CONNECTIONS



BACK IN THE DAYS of 200 meter spark transmitters and Marconi type antennas a good ground connection was an absolute necessity and every serious amateur went to a lot of trouble to be sure his rig was solidly connected to earth. A favorite method used a system of underground wires, usually more extensive than the antenna itself, and one really deluxe installation we remember had an old copper bathtub buried eight feet deep in permanently moist earth. With the coming of the higher frequencies, however it became possible to operate successfully without any ground connection at all and many amateurs proceeded to forget the whole thing.

WHILE A GROUND may no longer be necessary to the operation of a radio station it is vital to the safety of the operator. Component failures can occur in even the finest equipment and unless all metal chassis and cabinets in your station are solidly connected to each other and to the same ground as the neutral leg of the AC power line you may find the entire rig at 120 volts AC above ground potential. With a good ground connection that cannot occur — the worst that can happen is a blown fuse.

THE NATIONAL ELECTRIC CODE, Section 2583, gives specifications for external grounds such as are used for lightning protection. Among other devices they recognize a ¾ inch galvanized pipe driven eight feet into the earth as satisfactory. It is completely satisfactory as lightning protection for an antenna but never believe that such a ground will protect you against the hazards of a serious AC shock. We recently measured the resistance between such an external ground rod and the cold water system inside the building and found it to be 60 ohms, far too high to blow an ordinary fuse in case of short circuit.

ANOTHER ASPECT of grounds is the suppression of TVI, BCI, etc. Manufacturers of transmitting equipment go to great lengths to shield and by-pass all circuits which could possibly generate harmonics or parasitics but this effort can all be wasted if the cabinet of the transmitter is "floating" and the spurious radiations have no place to go. Many stubborn cases of TVI have been greatly improved or cleared up completely by the installation of a really good ground connection.

IN GENERAL the best ground available to the average amateur is the cold water system in the building where he lives but it requires more than merely hooking onto the nearest pipe. Make sure that the point at which you make your connection is at the same potential as the point where the neutral of the electric power line is connected. If there is any doubt better run a wire to the same point and be certain. If you have an external lightning ground connected in any way to the station equipment be sure that it, too, is solidly connected to the other grounds. All of this may seem rather unnecessary to the vast majority who have never had any trouble, but the old saying "Better be safe than sorry" applies with special meaning to radio amateurs and it is the responsibility of each one of us to take every reasonable precaution with our own equipment.

Vy 73,

— CY READ, W9AA

Bud Hallgren Jr. W. J. Hallgren W9AC for hallicrafters

your shack's electrical system to make sure everything is as it should be? Several fellows I know have had pretty close calls lately. A few hours well spent in cleaning up that "rat's nest" of wires, and installing a master switch may save your life. All stations are encouraged to send monthly reports to the SCM. A postcard will do and any suggestions will be appreciated. K2HKP worked all continents but Antarctica on a.m. at 7225 kc. Traffic: (Oct.) K2KIR 273, IYP 229, W2ZRC 156, K2KTK 81, DSR 35, W2BKC 32, GBX 26, RQF 24, FEB 22, EMW 15, K2GQU 12, W2DEX 6, SJV 4. (Sept.) K2DSR 39, KNV 20, W2DEX 4.

WESTERN PENNSLYVANIA — SCM, R. M. Heck, W3NCD — Asst. SCM: Anthony J. Mroczka, 3UHN. SEC: GEG. RMs: NRE and NUG. PAM: AER. The WPA Traffic Net meets at 7 P.M. Mon. through Fri. on 3585 kc. The Horseshoe Radio Club, QZF, is sponsoring code classes Fri. nights. The Ivyside Radio Club, WYZ, has a DX-100 and an SX-24 with a 136-ft. center-fed Zepp on the air with WKT, YOZ and ZUH operating and sponsors code classes daily at the A.U.C. campus. YOZ scored 27,000 points in the HRC Contest and approximately 35,705 in the October CD Party. The Radio Association of Erie recently installed commemorative plaques to its Emergency Comtruk in memory of Dawson Bliley. STK, assisted by KNQ, is in charge of the RAE code and theory classes meeting Tue. in the Y.M.C.A. at 8 P.M. KKT has a new Gonset converter. BBO is awaiting a transfer to Lowery Air Force Base. NXK and QVS received QSLs from ET2US via GZO. CSM is on 6-meter phone. YWL works his son, YWM, in Pittsburgh on week ends. BPB has 25 watts mobile. MMI logged a DL with his mobile. HEA now is on the air minus the "N." The Cumberland Valley Amateur Radio Club elected QCU, pres.; ZUK, vice-pres.; DUH, secy.-treas.; and Lee Huston, in charge of activities. Norman Stover addressed the group on the Pennsylvania RACES plan. WN3ERJ reports on PNN meetings. DWO's dad is preparing incorporation for the club. DWO is on the sick list. The Bucktail Amateur Radio Club, of Emporium, through President SUL, reports a very satisfactory past season in activities and club advancement, and is drawing up plans for the coming season. Code classes have been instituted at the club station, YDW, nightly under the direction of WII. A new ham is WN3JKG, in Mercer county on 3725 kc. Traffic: W3YOZ 120, UHN 32, LOD 26, BZR 4, MIZ 4.

CENTRAL DIVISION

ILLINOIS — SCM, George T. Schreiber, W9YIX — SEC: HOA. Cook County EC: HPG. RM: AA. PAM: UQT. Section nets: ILN, 3515 kc. Mon. through Fri., at 7 P.M.; IEN, 3940 kc. BUK, for six years Route Manager of the ILN, has resigned but AA will carry on for the time being. New calls in the section: K9BTI and K9BTJ, a husband-and-wife team, HJN and KØACS, who is seeking his old call, TMI. Club elections: Mississippi Valley Amateur Radio Club — YIV, 9YJN, ØPGE and ØRZI; Chicago Radio Traffic Assn. — HPG, REC, UKY and KA; Radio Amateur Megacycle Society — DWW, KN9BWM and KN9BZI; Northwest Amateur Radio Club — LKK, NNU, YUM and EHW. LI reports getting a great kick out of the F.M.T. with a BC-221. New equipment: QDI and K9AQG sporting new Globe Kings, RME 4300s for the Greenville College Radio Club and K9AXL, new mobile gear for ØHAW, now K9EWB and RQR, while GDI fiddles with his GPR-90. The Warren County Amateur Radio Emergency Corps meets the 1st and 3rd Tue. of each month. BA writes that the Belleville group hopes to have its RACES program going by the time you read this. AA finds s.s.b. to his liking and is renewing many old acquaintances there. YFO is planning a two-element beam for 15, while QAY's housetop displays beams for 20 and 2 meters 40 feet in the air. KLD is going to radar school and soon will sign KL7 or VE8. EZA, the son of VEY and K9AXS, is the proud father of a YL born in October. The mother is ex-LBP. A new call in Southern Illinois is K9ESY, a YL who is reputed to make the best apple strudel in the section if not the division. SES enjoys 40-meter c.w. with a low-powered rig to work up his code speed. QKE, general chairman of the National Convention scheduled for Chicago Labor Day week end in 1957, announced that the SX-100 donated by Hallicrafters, was won by Elsie Wallner, who soon will be a ham. Twenty other prizes were awarded. CZB has a new DX-100. Our sympathy goes to UZE, who lost his father recently. The Peoria RACES Net is now operating on 6 meters with 17 active members. We enjoyed the news letter of the Cenois Amateur Radio Club of Decatur. New OOs are CTZ and K9CKP; a new ORS is OCB. BCQ is a new OES and plans single sideband there soon. KN9COF writes a newsy letter and sends a good DX list which we sent to BRD. VSX renewed his OPS and EC certificates. Please examine the dates on your appointments. K9AXT had rig trouble which kept him off the air, but he again has it perking. Last month we listed DWQ as a new station, but he has had the ticket since '38. Please, fellows, no jokes, we trust you! Rig trouble interrupted the code lessons sent out by UIN but he is back in business. HUX and LCG both are back on the air after moving. OKI finds that college curtails his hamming. PVK has been appointed Assistant RACES Officer for Chicago by SPB. LNQ reports his son is now KN9BZJ and his XYL is KN9COU. Make your plans now for the National Convention to be held Labor Day week end 1957. Arrange it with the boss. Traffic: (Oct.) W9DO 904, MAK 597, YYG 207, AA 178, OR 128, OYL 109, CTZ 83, IDA 74, OCB 73, BUK 51, YH 35, YIX 35, PAW 31, MHC 29, SXL 25, K9AMD 24, AXL 23, W9PHE 19, K9AXT 16, W9YYF 16, YFO 12, VEY 11, BA 8, KLD/9 8, EDH 6, NIU 3, PVD 3, KA 1. (Sept.) W9OKI 133, K9AXL 119.

INDIANA — SCM, Seth Lew Baker, W9NTA — Asst. SCM: George H. Graue, 9BKJ. SEC: QYQ. RMs: DGA and TQC. PAMs: CMT, KOY, SWD and UXK. SWD will be back in harness as IFN manager Jan. 1st. BKJ has been filling in at this job during November and December. At the IRCC meeting held in Indianapolis Oct. 14th, the following officers were elected: WTY, chairman; IHO, vice-chairman; EIV, secy.; RE, treas.; CMT, ZIB, QYQ and NTA, directors. There are now 35 clubs in the IRCC. The Seymour ARC and Gary ARC were admitted to membership. *The Bison* will be continued and MVZ was appointed business mgr. The committee on license plates asks that you contact your local State Senators and Representatives in the interest of having our special plate fee reduced. New ECs: KEP, Vandenburgh Co., to replace WUH, who has resigned after doing an outstanding job in organizing and conducting AREC drills; ZRP, Clinton Co., and Adah, RTH, Jackson Co. I believe Adah is the first YL to hold such an appointment in Indiana. New OPSs: APO, DZC, JVF, VPJ and WHL. New OO: FSG. TQC reports IFN evening traffic as 264, morning 158, total 422 and QIN as 288. TT gives RFN as 56. CAEN had 67, as reported by EHZ. KOY reports the Interstate S.S.B. Net as 124, with 31 states checking in. The IFN will be ten years old in February. Those making BPL were NZZ and DGA. CTF has a 90-MW transister rig on 80-meter c.w. with a 2NI70 in the final. ZSB won a Valiant at Cincinnati. VZF was tops in the State in the Frequency Measuring Test with an average of .3 parts per million off. EHY has moved to Hammond. New calls: KN9EUQ and KN9BZU. K9AEK is Tech. Class. CAEN has started a c.w. session on Sat. at 1900 on 1805 kc. EHZ is now mgr. for CAEN. PUY put up a new Tri-Bander beam. MBM has a new 20-meter beam. DDK has a drive unit on his beam and KOE has a 20-meter beam on a crank-up tower. EPT has 37 confirmed states on 6 meters with 8 watts and a four-element beam. New officers of the TARS are OG, pres.; MKZ, vice-pres.; OVB, secy.; RBV, treas.; DGA, WUH, YZO and FJI, directors. K9AYH dropped the "N." Inquiries regarding MARS should be addressed to KTX, who is State Director. Best wishes for a Happy New Year full of DX and good contacts. Traffic: W9NZZ 879, JOZ 449, ZYK 400, TQC 310, TT 263, EHZ 232, BHR 169, DGA 139, AB 136, SVL 130, JYO 116, EQO 103, NTA 71, SVZ 56, BKJ 48, VNV 43, WUH 38, TG 36, TFS 35, LSG 33, DOK 32, VPJ 23, QYQ 18, WHL 17, CC 16, SWD 16, PQZ 15, DKR 14, HUF 14, IMU 14, BDP 11, UXK 11, BUQ 9, RTH 9, CMT 8, CTF 8, IGZ 8, LGD 8, WTY 8, AMW 7, QXL 6, WBA 6, DZC 5, FJI 5, QR 4, URQ 4, K9ALJ 2, W9EJW 2, ZSW 2, K9AYH 1, W9WAU 1, YVS 1.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — SEC: OVO. PAMs: AJU and NRP. RM: KQB. Nets: WIN, 3535 kc., 7:15 P.M. daily; BEN, 3950 kc., 6 P.M. daily; WPN, 1215 Mon.-Sat., 0930, Sun. Wisconsin mobile and c.d. frequency: 29,620 kc. ILR is enjoying 14-Mc. phone with a new DX-100. YRO is chasing DX. S.E.T. traffic helped CXY to another whopping BPL total. In addition to WIN mgr. duties, KQB also enjoys the NCS spot on CAN. K9AEQ is interested in an ORS appointment. FZC is DXing with a 2-band loaded beam. SAA has a Globe King 500-A and 10- and 15-meter ground plane antennas in the new equipment department. LPU is now in California but expects to return in the spring. U. of W. studies keep RTP busy. MCK is planning higher power. K9ASH is on with 30 watts to a 6146. MIN is active with his DX-100 and HQ-129. SQM is using a 15-meter doublet to work DX on 21 Mc. OVO added a Viking Ranger to his shack. FDX was elected chairman of the W9 DXCC Club. TCJ again is transmitting Official Bulletins on RTTY, not to mention a RTTY QSO with ZL1WB on 14 Mc. RTTY stations active in Wisconsin are TCJ, QIX, CYL, DJE and SKF. GFL has been working HJS near Waupun on 144 Mc. WIN NCS schedule: Mon. DKH, Tue. KZZ, Wed. KJJ, Thurs. LGR, Fri. IBF, Sat. ERW, Sun. KQB. K9AQT is building a VFO. LIJ and KLL both added 3-kc. mechanical filters (Collins) to their receivers. VYR is busy hatching more Novice operators. BIH is working on his rig — trying to make 40 watts do the work of 800! YQH is EC and editor of the *QRM'r*, a bulletin of the Oshkosh Club. NRP, BEN mgr., and KQB, WIN mgr., talked over liaison between c.w. and phone nets and other mutual problems while attending the Ground Hog affair at Watertown. DOH is attending Augsburg College in Minneapolis. Traffic: (Oct.) W9CXY 775, KQB 213, KJJ 157, LGR 47, K9AEQ 43, W9FZC 40, SAA 34, MIN 32, AZN 12, LPU 7, YZA 6, RQM 5, RTP 4, K9ASH 3, W9MCK 3, SQM 3, OVO 2. (Sept.) W9YZA 5.

DAKOTA DIVISION

NORTH DAKOTA — SCM, Elmer J. Gabel, WØKTZ — The C.W. Net held 11 sessions with 65 check-ins han-

(*Continued on page 90*)

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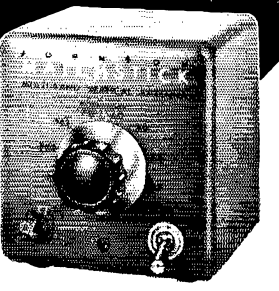

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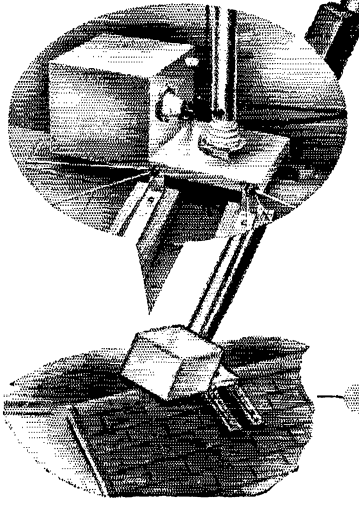

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SPECIFICATIONS—Vertical mast is 35′ in length—made of 2" diameter, hard-temper aluminum tubing—mast sections separated by steatite insulators. Six nylon guy ropes furnished—will not affect radiation pattern. Fused isolation transformer.

Complete "Match-Stick" assembly includes: Vertical mast, base, tuning network and relays; control box for remote operation; and six nylon guy ropes. Detailed installation and operating instructions also included.

(NOTE: Due to individual station requirements, the "Match-Stick" assembly is furnished less transmission line, 6 conductor control cable and ground radial wire).

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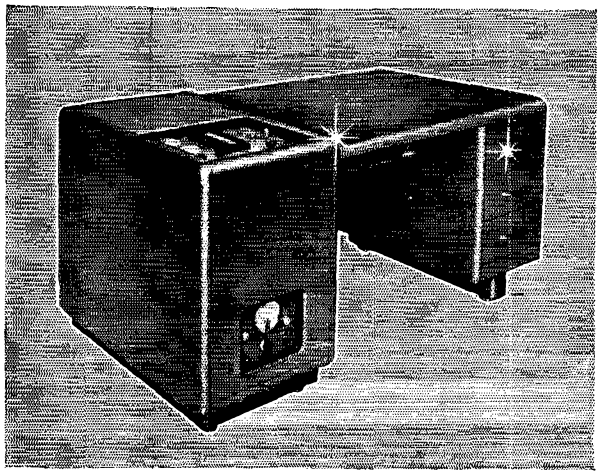

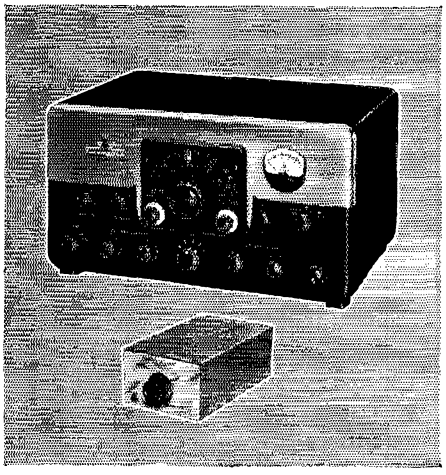

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Cat. No. 240-1000 .....Amateur Net **$1,595.00**

Cat. No. 251-101-1 — Matching accessory desk top, back and three drawer pedestal. FOB Cory, Pa..... **$123.50**

VIKING "PACEMAKER"—More than just a single sideband exciter . . . a completely self-contained transmitter as well. 90 watts CW and SSB (P.E.P.) . . . . 35 watts AM. Extremely stable, temperature compensated built-in VFO. "Fool-proof" voice controlled operation . . . effectively TVI suppressed . . . instant bandswitching 80, 40, 20, 15, and 10 meters . . . Pi-network output matches antenna loads from 50 to 600 ohms. More than enough power to drive the Viking "Kilowatt" or grounded-grid amplifiers. (Requires use of Cat. No. 250-34 Power Divider when used with Viking "Kilowatt"). With tubes and crystals, less key and microphone. Wired and tested.

Cat. No. 240-301-2.....Amateur Net **$495.00**

POWER DIVIDER—Provides up to 35 Watts continuous dissipation. Designed to provide the proper output loading of the "Pacemaker" SSB Transmitter when used to drive the Viking Kilowatt Amplifier.

Cat. No. 250-34.....Amateur Net **$24.95**

"Almost impossible conditions overcome by rugged performance of Viking "Pacemaker" and "Kilowatt"
... Paul Blum, W2KCR

"Syracuse, N. Y. Radio Amateurs boost Navy morale with 8,487 statute mile daily contact!" . . . reports Paul Blum, W2KCR.

"Naval officials have high praise for the devoted efforts of RAGS, the Radio Amateurs of Greater Syracuse, in their daily contact with Naval Seabees at Little America and McMurdo Sound. Entitled to their share of praise, too, are the Viking "Pacemaker" and "Kilowatt" transmitters we're using 12—Midnite to 5:30 A. M., 7 days a week," reports Blum.

"When the U. S. Navy transported 166 Seabees to "winter-in" and construct bases in the Antarctic, officers felt they could have a personnel morale problem. These men would be battling snow and ice in total darkness for at least four months, in temperatures of 75° below zero, without mail, and without communications through official channels, except for dire emergencies. Realizing this, Commander Charles A. Snay, U. S. N. took along 4 completely equipped amateur stations for his men. The Radio Amateurs of Greater Syracuse then accepted the responsibility of setting up and maintaining daily contact with these members of OPERATION DEEPFREEZE. The American Red Cross in turn agreed to use its nationwide wire service to deliver messages from Syracuse to any part of the U. S. and replies back again to RAGS operators."

THE STARTLING RESULTS—Since May 1, 1956, when the first message went to KC4USA at Little America, more than 2,000 messages have been handled both ways. The constant battle with the worst possible atmospheric conditions and long hours of operation put a terrific test on the ability of the Viking "Pacemaker" and "Kilowatt" at Blum's station. Here is what Blum reports: "This equipment has been putting a signal into both Little America and McMurdo Sound with proven stability. Ease of operation, even under the worst atmospheric conditions possible has won the admiration of all RAGS operators using W2KCR for OPERATION DEEPFREEZE."

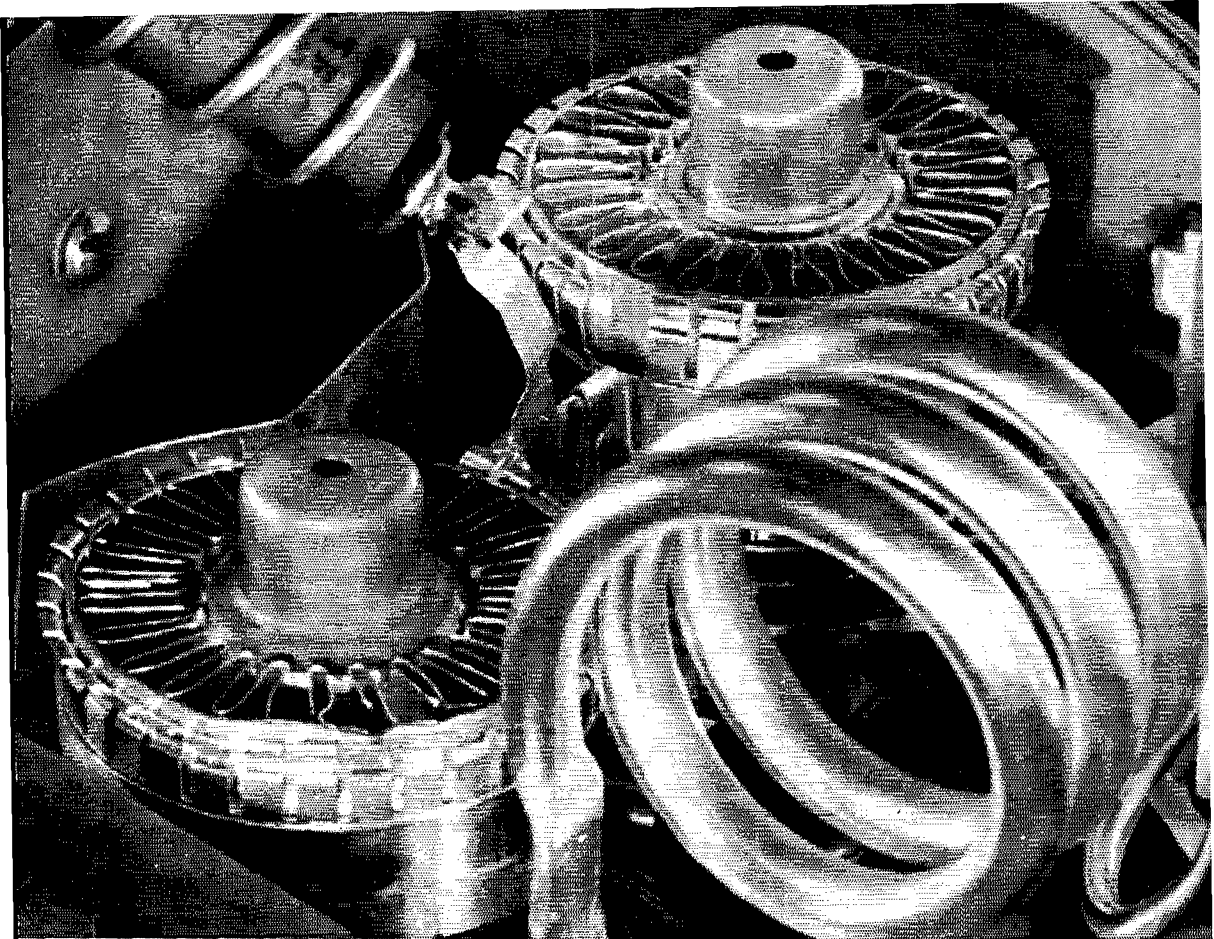
See your distributor

Johnson Amateur Equipment is sold only through Authorized Johnson Distributors—most offer convenient time payment plans. For complete information see your distributor.

E. F. Johnson Company

2801 SECOND AVENUE SOUTHWEST • WASECA, MINNESOTA

Capacitors • Inductors • Knobs • Dials • Sockets • Insulators • Plugs • Jacks • Pilot Lights



Compressed Steam for SSB

"No steam wasted to blow the whistle" is one way to describe the transmitting advantages of single sideband.

"Compressed steam for SSB" is equally descriptive of the concentrated power of Eldico's new, table-top linear amplifier... the SSB-1000.

Employing tight design and quality components, the SSB-1000 easily handles a peak envelope power input of 1000 watts with an efficiency rating of 62.5%. And it does this out of a 10¾" x 17" x 15" cabinet that also houses the power supply.

The heart of this new linear amplifier... two Eimac 4X250B power tetrodes. A logical choice, these tubes provide the performance demanded by Eldico, handle an input of 500 watts each, and stand only 2-19/32" high!

For the power that builds up "compressed steam", look to Eimac.

For further information, contact Amateur Service Bureau

EITEL-McCULLOUGH, INC.
SAN BRUNO · CALIFORNIA
The World's Largest Manufacturer of Transmitting Tubes

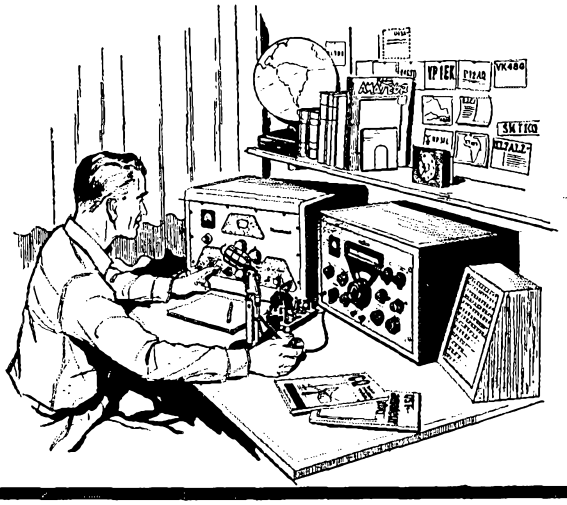
Eimac

EIMAC 4X250B TYPICAL OPERATION
Class AB₁
R-F Linear Amplifier
(Frequencies to 175 Mc. per tube)

D-C Plate Voltage	1000	1500	2000v	Max-Sig D-C Screen Current	25	20	15ma
D-C Screen Voltage	350	350	350v	Peak R-F Grid Voltage	50	50	50v
D-C Grid Voltage (Approx.)*	−50	−50	−50v	Driving Power	0	0	0w
Zero-Sig D-C Plate Current	100	100	100ma	Max-Sig Plate Dissipation	125	150	175w
Max-Sig D-C Plate Current	250	250	250ma	Max-Sig Power Output	125	225	325w

*Adjust grid voltage to obtain specified zero-signal plate current.

HEATHKITS®



The world's fine ham equipment in kit form . . . designed especially to meet your requirements!

Heath amateur radio gear is designed *by* hams—*for* hams, to insure maximum "on the air" enjoyment. Good design and top-quality components guarantee reliability. Heathkits are easy to build and are easy on your budget! You save by dealing direct, and you may use the Heath Time Payment Plan on orders totaling $90.00 or more. Write for complete details.

HEATHKIT

DX-100

TRANSMITTER KIT

PHONE AND CW

- *Phone or CW—160 through 10 meters.*
- *100 watts RF on phone—120 watts CW —parallel 6146 final.*
- *Built-in VFO—pi network output circuit.*
- *Easy to build—TVI suppressed*

MODEL DX-100

$189.50

$18.95 dwn., $15.92 mo.

Shpg. Wt. 107 Lbs.

Shipped motor freight unless otherwise specified. $50.00 deposit required on c.o.d. orders.

The Heathkit DX-100 phone-CW transmitter offers features far beyond those normally received at this price level. It has a built-in VFO, built-in modulator, and built-in power supplies. It is TVI suppressed, and uses pi network interstage coupling and output coupling. Matches antenna impedances from approximately 50 to 600 ohms. Provides a clean strong signal on either phone or CW, with RF output in excess of 100 watts on phone, and 120 watts on CW. Completely bandswitching from 160 through 10 meters. A pair of 1625 tubes are used in push-pull for the modulator, and the final consists of a pair of 6146 tubes in parallel. VFO dial and meter face are illuminated. High-quality components throughout! The DX-100 is very easy to build, even for a beginner, and is a proven, trouble-free rig that will insure many hours of enjoyment in your ham shack.

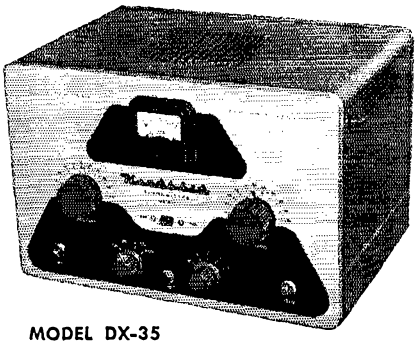
HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

HEATHKIT DX-35
TRANSMITTER KIT

PHONE AND CW

This transmitter features a 6146 final amplifier to provide 65 watt plate power input on CW, with controlled-carrier modulation peaks up to 50 watts on phone. Modulater and power supplies are built in, and the rig covers 80, 40, 20, 15, 11 and 10 meters with a single band-change switch. Pi network output coupling provides for matching various antenna impedances. Employs 12BY7 oscillator, 12BY7 buffer and 6146 final. Speech amplifier is a 12AX7, and a 12AU7 is employed as modulater. Panel control provides switch selection of three different crystals, reached through access door at rear. Panel meter indicates final grid current or final plate current. A perfect low-power transmitter both for the novice or the more experienced amateur. A remarkable power package for the price. The price includes tubes, and all other parts necessary for construction. Comprehensive instruction manual insures successful assembly.



MODEL DX-35

$56.95

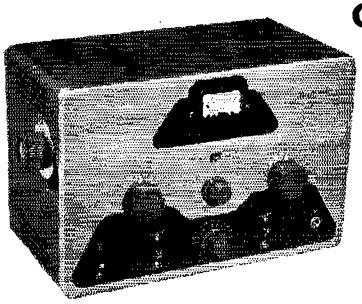
Shpg. Wt. 24 Lbs.

$5.70 dwn., $4.78 mo.

- *Phone or CW—80 through 10 meters.*
- *65 watts CW—50 watts peak on phone—6146 final amplifier.*
- *Pi network output to match various antenna impedances.*
- *Tremendous dollar value—easy to build.*

BRAND NEW

HEATHKIT DX-20
CW TRANSMITTER KIT



MODEL DX-20

$35.95

$3.60 dwn., $3.02 mo.

Shpg. Wt. 18 Lbs.

- *Designed exclusively for CW work.*
- *50 watts plate power input—80 through 10 meters.*
- *Pi network output circuit to match various antenna impedances.*
- *Attractive and functional styling—easy to build.*

Here is a straight-CW transmitter that is one of the most efficient rigs available today. It is ideal for the novice, and even for the advanced-class CW operator. This 50 watt transmitter employs a 6DQ6A final amplifier, a 6CL6 oscillator, a 5U4GB rectifier and features one-knob bandswitching to cover 80, 40, 20, 15, 11 and 10 meters. It is designed for crystal excitation, but may be excited by an external VFO. A pi network output circuit is employed to match antenna impedances between 50 and 1000 ohms. Employs top-quality parts throughout, including "potted" transformers, etc. If you appreciate a good signal on the CW bands, this is the transmitter for you!

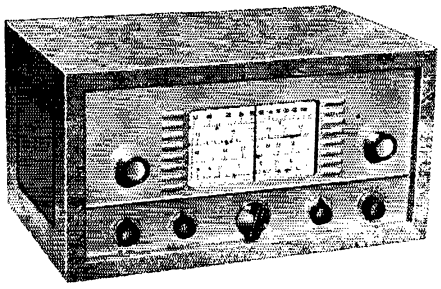
HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

HEATHKIT

COMMUNICATIONS-TYPE, ALL BAND

RECEIVER KIT



This receiver covers 550 kc to 30 mc in four bands, and is ideal for the short wave listener or beginning amateur. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer-type power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—headphone jack—and AGC. Has built-in BFO for CW reception. Shpg. Wt. 12 Lbs.

MODEL AR-3

$29.95

incl. excise tax (less cabinet)

$3.00 dwn., $2.52 mo.

CABINET: Fabric covered cabinet with aluminum panel as shown. Part 91-15A. Shipping Wt. 5 Lbs. $.50 dwn., $.42 mo. $4.95

Ⓐ HEATHKIT VFO KIT MODEL VF-1

Covers 160, 80, 40, 20, 15, 11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 VDC at 15 to 20 ma, and 6.3 VAC at 0.45A. Incorporates regulator tube for stability and illuminated frequency dial. Shpg. wt. 7 lbs. $1.95 dwn., $1.64 mo. **$19.50**

Ⓑ HEATHKIT GRID DIP METER KIT MODEL GD-1B

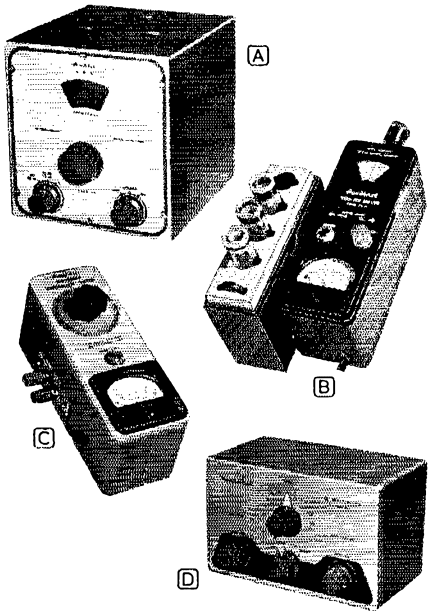
Continuous coverage from 2 mc to 250 mc with prewound coils. 500 ua panel meter for indication. Use to locate parasitics, for neutralizing, determining resonant frequencies, etc. Will double as absorption-type wavemeter. Shpg. wt. 4 lbs. $2.00 dwn., $1.68 mo. **$19.95**

Ⓒ HEATHKIT ANTENNA IMPEDANCE METER KIT MODEL AM-1

The AM-1 covers 0 to 600 ohms for RF tests. Functions up to 150 mc. Used in conjunction with a signal source, will determine antenna resistance and resonance, match transmission lines for minimum SWR, determine input impedance, etc. Shpg. wt. 2 lbs. $1.45 dwn., $1.22 mo. **$14.50**

Ⓓ HEATHKIT "Q" MULTIPLIER KIT MODEL QF-1

Functions with any receiver having IF frequency between 450 and 460 kc that is not AC DC type. Operates from receiver power supply, requiring only 6.3 volts AC at 300 ma (or 12.6 vac at 150 ma), and 150 to 250 vdc at 2 ma. Simple to connect with cable and plugs supplied. Provides extra selectivity for separating signals, or will reject one signal to eliminate heterodyne. Effective Q of approximately 4000. Shpg. wt. 3 lbs. $1.00 dwn., $.84 mo. **$9.95**



HOW TO ORDER...

It's simple—just identify the kit you desire by its model number and send your order to the address listed below. Or, if you would rather budget your purchase, send for details of the Heath Time Payment Plan for orders totaling $90.00 or more.

HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

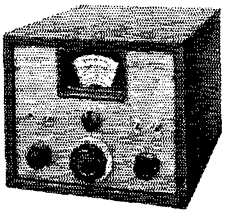
WHODUNNIT?? TBSSBSCRM . . . . . OR WHAT DID WHAT TO WHOM?

This dissertation concerns "The big single sideband suppressed carrier receiving mystery", or "what happens when I flip this switch or turn this dial", and particularly refers to what we fondly call the Single Sideband Adapter, Model GSB-1.

Oh boy, what a nice bunch of names, exalted carrier, first mixer, BFO, steep skirts, adjacent channel interference, suppressed carrier, passband tuning, amplitude modulation, single sideband, double sideband, etc., etc.

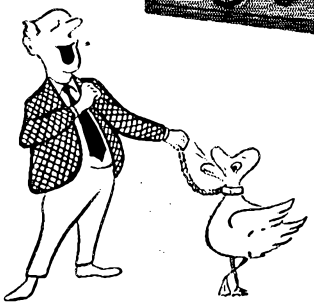
The GSB-1 has five switches on the front panel, a phone jack, a volume control and a knob that turns a dial, the latter being calibrated upper-side band plus or minus 3 KC, and lower sideband, same way, and logging.

So let's take 'em by the numbers, reading left to right:



GSB-1
SINGLE SIDEBAND ADAPTER

1. **Phone Jack. (You plug your phones in here if you want to).**
2. **Noise Limiter, On/Off. (This turns a noise limiter on or off and cuts out impulse noise. It clips both the positive and negative peaks).**
3. **Sideband Upper/Lower. (Actually changes frequency of the variable oscillator from 438 to 472 KC or vice versa).**
4. **A.V.C. On/Off. (We want to help the receiver out so we provide A.V.C.—See specs. for operation).**
5. **A.V.C. Fast/Slow. (Means just what it says. The A.V.C. attacks fast or slow depending on how you throw the switch).**
6. **Volume Control. (Aw, g'wan, you're kidding!).**
7. **Dial Knob. (Tunes an oscillator over the range 438 KC plus or minus 3 KC or 472 KC same way, depending on where you throw the upper or lower sideband switch).**
8. **A.M./S.S.B. (Switches amplitude modulation (ancient modulation if you like) to S.S.B. (quack, quack, if you like). In A.M., BFO is off and an A.M. detector is used. In S.S.B., a carrier is generated at 17 KC and an SSB (I.E. Product) detector is used.**



Now let's forget all about this new fangled radio except that two frequencies in a mixer produce a different frequency.

We tap into the I.F. of a receiver at 455 KC. Actually, depending on the bandwidth, (I.E. Passband), of the receiver, if it is six KC wide, we get essentially all frequencies from 452 to 458 KC.

This band of frequencies comes into an amplifier (A.V.C. may or may not be used). Nothing much happens to it except amplification and the fact that the A.V.C. tries to hold it constant.

Then it goes into a mixer, oops! trouble—

We want to change its frequency, because we have a sharp filter coming up—sharp on the skirts we mean, nice flat top 2.5 KC wide and then sharp attenuation either side. To make it simple, let's say we're receiving one frequency only—455 KC.

Now this filter goes from 17.4 to 19.9 KC, and we want to change our freqeuncy to fit into this filter, and we can do it two ways. We can beat it against a signal 455 KC plus 17.4 to 19.9 KC, or 455 KC minus 17.4 to 19.9 KC. And this is what the dial shows! Depending on how you throw the upper/lower switch, you vary an oscillator centered at either 438 KC or at 472 KC.

Let's take AM phone first. It has a carrier and two sidebands. The carrier is at 455 KC (if it is centered in the passband) and both sidebands have the same intelligence. One set extends from 452 to 455 and the other from 455 to 458. If you beat this carrier with a frequency of 455 KC plus 18.65 or minus the same amount, you will put the carrier smack in the middle of the filter. It now sounds pretty awful! Why? Because the filter is only 2.5 KC wide. You got the carrier in fine, but only 1250 cycles of the intelligence on either side. No highs!

Now, we said that both sidebands contain the same intelligence, so why duplicate? Let's beat the 455 KC carrier with 455 KC plus or minus 17.4 KC. Sounds better, doesn't it? Why? Because you're now receiving all frequencies from the carrier at 17.4 KC to 19.9 KC or 2500 cycles. Many more more highs, huh? Sounds pretty good?—and you know what you did? You received either the upper or lower sideband plus carrier. Now, comes a devious thought. Suppose you had an interfering carrier at 456 KC in the I.F. of the receiver. This guy would produce a 1000 cycle beat note with your carrier, and is right in the middle of the upper sideband. This ordinarily would knock out your AM signal! But if you use only the lower sideband, (Carrier 455 KC plus sidebands 455 to 452 KC) you're going to drop the interfering signal outside the filter! Presto! Band pass tuning,—one of the advantages of the GSB-1.

Exalted carrier? Whaddyameanl What good is it? Well, to exalt is to raise—right? It is characteristic of an A.M. signal that the carrier can fade with regard to its sidebands. So why use a fading carrier? The receiver needs a carrier for detection purposes, so we'll provide a nice steady one. Nice and powerful and stable too! But to provide it, we have to switch to SSB because this turns an oscillator on—fixed at 17 KC. Why 17 KC? Well, we're not really exalting your old carrier. This oscillator is your new carrier, exalted (raised in amplitude), many times to prevent overmodulation when the signal fades. But why choose 17 KC? Because the filter goes from 17.4 to 19.9 KC and, we want our new carrier where it will be useful for both suppressed carrier and exalted carrier. If we were receiving broadcast exalted carrier, we would put the new carrier at 17.4 KC—smack on top of the old one to reproduce the frequencies from 0 to 400 cycles. These frequencies are much attenuated in suppressed carrier transmission because no filter is infinitely thin and you want to get rid of the carrier. This way best intelligence can be made from the output of the filter. Either sideband will fall into the filter slot, and you can switch sidebands without retuning your receiver! In other words, you double your advantage. You receive one sideband with exalted carrier which lessens fading, and if you are interfered with, you switch sidebands. Real neat advantage for the GSB-1, hey?

By now, TBSSBSCRM should be getting clearer to you. Single Sideband? Sure, you only need one! Suppressed carrier? We can provide a nice steady carrier at the receiver so why transmit one? Upper or lower sideband? Of course!

So why provide a dial? Well, we don't know why it wasn't done before. It's pretty logical. It gives you real ease of tuning. You don't continually have to re-tune your receiver. You don't even have to tune it on the nose because the dial gives you a plus or minus 3 KC swing. Just a good "S" meter reading and the GBS dial pops the station in immediately. It would be real nice if all stations came up exactly on frenquency, but they don't. You're dealing in cycles per second now. Tuning any receiver in a 100 cycle region is tough, and believe you us, it's a real pleasure to have a handle on this SSB thing.

We'll bet you knew the answer all the time!

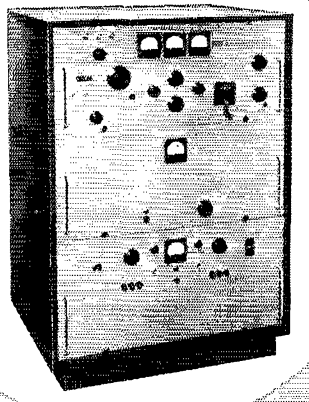
The TECHNICAL MATERIEL CORPORATION

communications transmitter . . .

This is a DARN GOOD transmitter, but generally accepted to be too expensive for most Hams. It is available for CW, FSK, A-2, AM or SSB with the SBE-1 exciter. Conservatively rated for 1000 watts output CW or FS and 750 watts phone in the 2-32 mc range. Complete details are in . . .

BULLETIN Q174

GPT-750

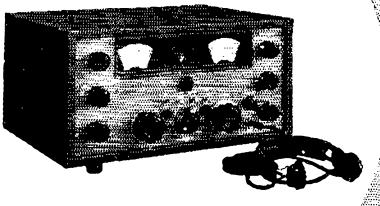


communications receiver . . .

This is the receiver they are talking about all over the industry. It has caused more excitement in a shorter time than anything to come along in quite a time. The specs you all know — they are in . . .

BULLETIN Q179

GPR-90

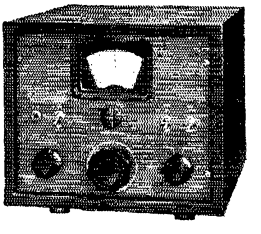


single sideband adapter . . .

You wanted SSB — here it is, an electrically band-spread, filter type slicer for accurate and simple tuning of SSB signals. Details are in . . .

BULLETIN Q194

GSB-1



We're working on RF matching transformers, wide band antennas, new SSB transmitter and a lot of other stuff — want a job?

The TECHNICAL MATERIEL CORPORATION

TMC Canada, Ltd.
OTTAWA, ONTARIO

MAMARONECK
NEW YORK

(*Continued from page 80*)

dling 9 messages. The 75-Meter Phone Net held 26 sessions with 622 check-ins handling 76 messages. KØCGH is in California visiting relatives and working mobile on 10 and 15 meters. KØCND is looking for a speaker for his SX-62. KØATK has a new B&W rig and is now on s.s.b. I attended the last meeting of the Min-Dak Radio Club at Wahpeton Science School. Amateurs holding office are SPA, pres.; and WQX secy. Thirty-two interested students were in attendance. The code class committee has wired a 15-place code table. There should be a bunch of new hams before spring. Traffic: KØCNC 78, ADI 15, CND 15, WØMQA 15, UBG 13, BFM 12, HVA 11, KØAWG 10, WØJBM 9, KLP 8, KTZ 8, PHC 6. KØHLT 4, WØGJJ 2.

SOUTH DAKOTA — SCM, Les Price, WØFLP — Asst. SCM: Gerald F. Lee, ØYKY. SCM assistants: HOH, FKE, APL, GQH, NEO, TI, MZJ and GDE. SEC: YOB. PAM: ULV. RM: SMV. The South Dakota 75-Meter Phone Net reports 31 sessions with NCS GDE 13, UVL 14, SCT 3, NEO 1; QNI 960, high 47, low 15, average 31; traffic 108, high 31, low 0, average 5; informals 160, high 47, low 0, average 5. The SDCW Net, NCS SMV, had 13 sessions, with QNI 118, high 12, low 6, average 9; QTC 39, high 7, low 1, average 3. The SFARC has another "Novice Factory" with 11 in the class. RRN is the teacher of code and theory for the Novice and code for the General Class. IGG teaches General Class theory. The SFARC and the Worthington, Minn., Club conducted a successful practice plane-spotting exercise. KNØEWH passed the General Class exam in Sioux Falls, Sept. 12th and received the General Class license Oct. 29th. New calls in Sioux Falls: KNØHQZ, KNØIRA and KØHRR, formerly K4GEU (on s.s.b.). PHR relayed reports in a test with Worthington, Minn., from GOC in Worthington, Oct. 14th, beating the phone calls at times. PAT (UAJ) left to join Larry, Oct. 20th. The address is 1409 Fourth St. That monitor at Pierre will be opened by the tone of 426.6 cycles. NNX now has a Viking kilowatt, a Ranger for a driver and a kilowatt Matchbox. K5EEV, the son of one of my Saddle Club friends, visited SCT Oct. 14th. 3CLD, an old school chum, visited GDE during October. In her column, Grace says that KØCDO, the XYL of QEK, worked K4LIB, Arthur Godfrey, the first evening after receiving her license. Traffic: WØZWL 349, SCT 232, ARF 77, DVB 39, FLP 21, RRN 21, BQS 12, SMV 12.

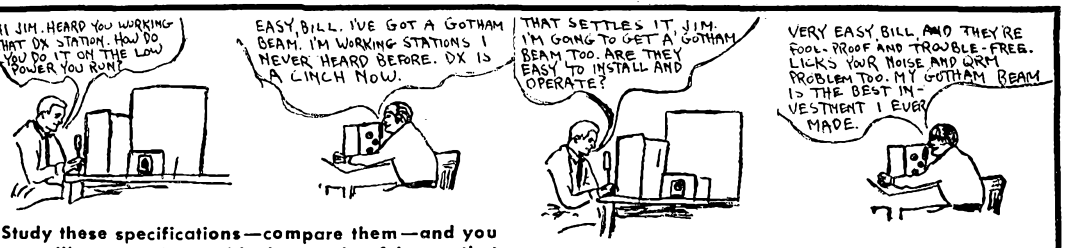
MINNESOTA — SCM, Charles M. Bove, WØMXC — Asst. SCM: Vince Smythe, ØGGQ. SEC: GTX. RMs: RLQ, DQL and KLG. PAMs: JIE, LUX and UCV. The Sparks Radio Club of Rush City invites all those interested in ham radio to come to its radio club meetings. These meetings are held on the 1st and 3rd Tue. of every month at 7:30 P.M. in the Rush City Hall. For further information phone John O'Brien, president, EL 8-4676, or Jim Lamser, secretary, EL 8-4749. K6EA is back in Bemidji after a summer in California and is operating portable Ø. OJG, VEP and HUU spent the first week end of the pheasant season hunting and working 10-meter mobile at CVD's and TCK's QTH. HRY has a monthly sked with VE8MA, the weather station at Eureka Sound, which is 100 miles from the North Pole. Milt now has worked 87 countries. TCF is back on the air after 8 months inactivity while building a new home. Bill put up doublets for 75, 40, 20 and 10 meters and soon will be in business again. WMA has his new beam tower erected and his beams mounted. TQQ has returned to Minneapolis and at this writing will be in St. Louis. EYW's XYL now has a license. Her call is KØAOH. QDZ has a new DX-100 on the air. IYP now is operating s.s.b. from Nashwauk on 75 meters. ITQ has gone to Texas for a long vacation. Hope you all had a very wonderful Christmas and Emma and I wish you a Very Happy and Prosperous New Year. Traffic: WØKJZ 374, DQL 202, UNG 162, KLG 119, ZEL 71, DNM 64, BUO 54, ALW 49, K6EA 34, WØRLQ 34, WMA 34, LST 30, IRJ 26, BUD 25, VBD 23, WDW 23, FCP 20, TQQ 18, OJG 17, KXW 14, ADI 13, QVR 13, UMX 11, EMZ 10, TCK 9, QYP 6, MXC 4, CVD 3, QDZ 3.

DELTA DIVISION

ARKANSAS — SCM, Owen G. Mahaffey, W5FMF — YHC reports a 15-meter set-up across town is ready for any emergency. KN5GCF is ready to try his General Class exam. KN5GOT blew a plate transformer and was off the air for a while. KRO reports on the Delta Net of late. We are sorry to lose K5DKT who is moving to WØ-Land. We have several radio clubs over the State and it would be appreciated if they would send news for this column. ZZY has been elected as your new SCM and reports should be sent to him at P. O. Box 207, Osceola. Traffic: W5KRO 12, K5DKT 10.

LOUISIANA — SCM, Thomas J. Morgavi, W5FMO — The hamfest held in October by the Greater New Orleans ARC was a huge success. The highlight of the affair was the hidden transmitter hunt conducted by HIA and KSI. Disguised as fishermen they used a handy-talkie with the antenna extended using it as a fishing pole. The hunters passed them many times before they caught on. K5ANN won first place and TVW was second. New officers of the GNOARC are ZNI, pres.; GFZ, vice-pres.; PP, corr. secy.;

(*Continued on page 92*)



Study these specifications—compare them—and you too will agree, along with thousands of hams, that GOTHAM beams are best!

TYPE OF BEAM. All Gotham beams are of the full half-wave plumber's delight type; i.e., all metal and grounded at the center. No wood, tuning stubs, baluns, coils, or any other devices are used.

MORE DX CONTACTS

GAIN. Gotham beams give the maximum gain obtainable. Our 2-element beams give a power gain of four (equivalent to 6 db.); our 3-element beams give a power gain of seven (8.1 db.); and our 4-element beams give a power gain of nine (9.6 db.)

THE DESIGN IS PROVEN

FRONT-TO-BACK RATIO. We guarantee a minimum F/B Ratio of 19 db. for any of our 2-element beams; 29 db. for any of our 3-element beams; 35 db. for 4-element beams.

THOUSANDS IN DAILY USE

MATCHING. Matching of the transmission line to the beam is extremely simple and quick. Everything is furnished and the matching is automatic. No electronic equipment or measuring devices are required.

ALCOA QUALITY ALUMINUM

ASSEMBLY AND INSTALLATION. No special tools are required for assembly and installation. Entire job can be done by one man in less than an hour. Full instructions are included with each beam.

CONSISTENT PERFORMANCE

MAST. Any Gotham beam can be mounted on a simple pipe mast. Diameter of the pipe should be between ¾" and 1⅝".

QUICK INSURED DELIVERY

STANDING WAVE RATIO. A very low SWR of approximately 1.5 to 1 will result from following the instruction sheet, depending on the height above ground and the surrounding area. If an SWR indicator is available, Gotham beams can be quickly and easily adjusted to 1.1.

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STANDARD AND DELUXE BEAMS. Standard beams in the 6, 10 and 15 meter bands use ⅝" and ¾" tubing elements; the deluxe models for these bands use ⅞" and 1". In 20 meter beams, the standard has a single boom, while the deluxe uses twin booms.

AND THE PRICE IS RIGHT!

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Send check or money order to GOTHAM – we ship immediately by Railway Express, charges collect.

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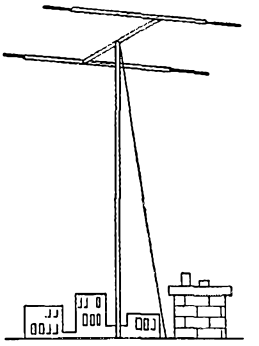
ANY electronic distributor can order a Gotham antenna for you. Here are some of the leading distributors who sell Gotham beams: Atronic Corp., Alltronics, Amateur Radio Supply, Lew Bonn Co., Burghardt Radio, Capitol, Curle, Crabtree's, Dixie, Duffy, Evans, Electronic Distributors, Emrich, W. H. Edwards, Fargo, Ft. Wayne Electronics, Graham Electronics, Henry of Missouri and Calif., Harris, Johannesen, Kinkade, Mytronic, Melrose Sales, Nidisco, Offenbach & Reimus, Purchase, Rome Electronics, Radio Electric Service, Radio Equipment Co., Radio Parts Co., Radio Supply Co., E. A. Ross, Specialty Distributing, Swan Distributing, Srepco Inc., Selectronic Supplies, Thurow Distributors, Tel-rad, Thrifty TV Supply, Universal, World Radio.



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Enclosed find check or money-order for:

2 METER BEAMS			
☐ Deluxe 6-Element	$9.95	☐ 12-El	$16.95
6 METER BEAMS			
☐ Std. 3-El Gamma match	12.95	☐ T match	14.95
☐ Deluxe 3-El Gamma match	21.95	☐ T match	24.95
☐ Std. 4-El Gamma match	16.95	☐ T match	19.95
☐ Deluxe 4-El Gamma match	25.95	☐ T match	28.95
10 METER BEAMS			
☐ Std. 2-El Gamma match	11.95	☐ T match	14.95
☐ Deluxe 2-El Gamma match	18.95	☐ T match	21.95
☐ Std. 3-El Gamma match	16.95	☐ T match	18.95
☐ Deluxe 3-El Gamma match	22.95	☐ T match	25.95
☐ Std. 4-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 4-El Gamma match	27.95	☐ T match	30.95
15 METER BEAMS			
☐ Std. 2-El Gamma match	19.95	☐ T match	22.95
☐ Deluxe 2-El Gamma match	29.95	☐ T match	32.95
☐ Std. 3-El Gamma match	26.95	☐ T match	29.95
☐ Deluxe 3-El Gamma match	36.95	☐ T match	39.95
20 METER BEAMS			
☐ Std. 2-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 2-El Gamma match	31.95	☐ T match	34.95
☐ Std. 3-El Gamma match	34.95	☐ T match	37.95
☐ Deluxe 3-El Gamma match	46.95	☐ T match	49.95

(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

NEW! RUGGEDIZED HI-GAIN 6, 10, 15 METER BEAMS

Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.

☐ Beam #R6 (6 Meters, 4-El).....$38.95
☐ Beam #R10 (10 Meters, 4-El)..... 40.95
☐ Beam #R15 (15 Meters, 3-El)..... 49.95

Name.....

Address.....

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

MXQ, rec. secy.; DZV, treas. SKU, now in New Orleans, is ex-6IGO, ex-7JZQ, a member of the Wouff Hong, Old-Timers and Ragchewers Clubs. APH, JBW, ZCO and SWQ are top teletype stations in the State. SWQ is operating portable from Baton Rouge. K5DMA operates 40-meter c.w. KSI reports working LA1BE in Leningrad. He is an active mobile in the local emergency net. SRM is working on a 144-Mc. rig and is anxious to arouse some 2-meter activity. IHI and SRM are charter members of the Nucklehed Net, which meets Sun. at 0830 CST on 3840 kc. SKW is EC for Lake Charles and vicinity. MXQ and BSR have renewed their OPS appointments. Northwestern State College has reactivated its radio club with GNN as president. Recent eyeball QSOs with your SCM were POB, IHI, SRM, CEW, KME, DGB, DVQ and AXU. K5CHC, with JGV, converted a Globe Scout to 6 meters and now is building a four-element beam. HZA is building a 6-meter rig with a 2E24 final, about 30 watts, and a folded dipole antenna. JGV is working on a pair of 826s grounded grid. He recently was appointed as OES. Please mail reports on time and check the expiration date of your ARRL appointment. Traffic: W5NDV 131, IHI 70.

MISSISSIPPI — SCM, Julian G. Blakely, W5WZY — From the activity observed the SS is anybody's Section Award. K5HYO has commissioned a new Globe King and has been appointed Official Bulletin Station for North Mississippi. TAK, Jackson Radio Club president, also is NCS for the Magnolia Net, 3870 kc., Sun. K5CEF is operating 6 meters. K5BKK is operating /4 Virginia. DLA is doing fine after a recent operation. SHX is back on 75 meters. NNZ is back on the air after years of inactivity. JBS has the best 75-meter mobile signal heard at this station. DWY and BSE are looking for new calls on 2 meters. They are on every night and report conditions fine up there. A Happy New Year to each and every one of you. Traffic: W5JHS 60, IGW 50, RIM 6

TENNESSEE — SCM, Harry C. Simpson, W4SCF — Asst. SCM: Richard A. Crowell, 4WQW. SEC: RRV. PAM: PFP. RM: IV. Congratulations to EWC on his 80-meter Frequency Measuring Test results. With an umpire accuracy of .4 parts per million, Gene's error was .6 *parts per million* (2 cycles high on two readings)! The Memphis ARC, Inc., has purchased a truck, in which 2-, 6- and 10-meter gear will be installed, as well as the club Viking plus a Hammarlund receiver. The truck will be used as a net control center for all local nets in the event of an emergency. During the S.E.T., the Memphis Red Cross contacted its Macon, Ga., Hq. in this manner: Red Cross Representative talked into the microphone of EM/4, the control station, via 10 meters to AFB, who phone-patched him to HCU, who patched into 75 meters, thence directly to Macon! K4GFL, using his new 50-ft. tower, is getting fine reports from all over. UIO sends a nice report from ETPN. Welcome to 3DGM/4, an Eastern Pennsylvania ORS, now at Oak Ridge awaiting his W4 call. TDZ reports that CFJ spoke on antennas and ZD brought ARRL's "Thirty Years of Amateur Radio" to the October Frye ARC meeting. The Knoxville and Oak Ridge Clubs are holding a joint meeting, with Delta Director Canfield as guest speaker. UVU reports he is finally on s.s.b., with a phasing-type exciter into 811As; he also has built a portable a.m.-c.w. rig for emergency use. The Memphis s.s.b. group now holds monthly meetings, strangely enough, at a *restaurant*. WQT worked all continents on 10 meters in just *one* weekend! Traffic: W4PL 950, OGG 432, K4DIZ 330, W4PQP 147, VJ 75, IV 63, TZD 61, SCF 44, PFP 43, UVL 36, WQT 27, VNE 23, UWA 21, IGW 6, UIO 4, DMU 2, K4GFL 2, W4SGI 1, TYW 1, UVU 1, WGJ 1, WQW 1.

GREAT LAKES DIVISION

KENTUCKY — SCM, Albert M. Barnes, W4KKW — SEC: JSH. PAMs: VYV and SUD. RMs: ADB and ZDA. KZF has 94 countries on phone and is after DXCC phone. DAF reports 50-Mc. skip operating the band to La. He also set up a flying spot scanner at the GCARA Hamfest on 420 Mc. TGV is interested in nets. HJI is QRL on 24-hour duty for the phone company. JAG is running 400 watts on phone plus 75 watts on 50 Mc. Listen for him on 6 meters. GEZ is an active OO. JUI, an OO who can check to one cycle on the 14-Mc. band, now is building s.s.b. SUD reports KPN now meets Mon. through Fri. at 1930 CST Sat. and Sun. at 1300 CST. JCN has a new NC-300 to play with. SZB is putting r.f. in the antenna now. HOJ had a new Q Multiplier ready for the SS. HOE, ex-9CFP is active on KYN, WIN and MARS. MWX says NUQ, CSN and HKT are active on 6 meters looking for contacts. RYM is back on the air at a new home. VJX, reports an increase in KPN and a change in net time. KKG has DXCC on 15 meters. CDA, our bulletin editor, wants news for the bulletin around the first of each month. Send it in, fellows! 5GOH/4, a new station at Ft. Campbell, is very active on all nets. AIS has moved his BC-610 and NC-100 into a new building which will be the Kentucky civil defense headquarters station in Louisville. HSI says the Early Bird Net is running too late for him since the time change. RPF enjoyed the Lexington Hamfest; so did I, Horace. DVR is a new OO. NGZ enrolled in the AREC. Traffic: W4KKW 180, QCD 160, ZDB 130, RPF 103, HSI 89, K4AIS 83, W5GOH/4 56, W4NIZ 49, K4DZM 37, KQU 36, W4CDA 31, JSH 31, KKG 28, VJV 27, ZDA 27, MWR 26, K4BVB 25, W4MWX 24, K4HOE 20, W4HOJ 16, SZB 12, JCN 8, SUD 8, SZD 8, K4CHK 6, W4JUI 5, K4DLI 4.

MICHIGAN — SCM, Thomas G. Mitchell, W8RAE — Asst. SCM (c.w.) Joe Beljan, W8SCW; Asst. SCM (phone) Bob Cooper, 8AQA. SEC: CJH. One new appointment was issued this month to LIM, who is now a member of the OES team. He reports much activity on v.h.f. in the U.P. ELW came through with a whopping big BPL score again this month. Headquarters relayed reports of excellent F.M.T. results achieved by AYY and HPR in the Sept. 13-14 F.M.T. transmissions. They certainly are well qualified for OO appointments. With heavy traffic moving, the Michigan section again was on top in the Eighth Regional Net for October. PUV/7 sends 73 to the Michigan gang and hopes to work some of the old gang on 7 or 14 Mc. EGI is renovating his 1937 vintage TZ-40 rig to a 150-watt grounded-grid linear. On Nov. 10th a meeting was held for all Area Radio Officers at the Michigan Civil Defense Headquarters. This meeting was of great importance to the RACES organization and of vital interest to all section members. A report of the proceedings will be made in this column next month. Please be reminded that we are not allowed to report MARS traffic that was not handled on amateur frequencies. Of course it is welcomed where it has been moved on our own frequencies. Most of us are aware of this ruling, but several recent inquiries indicate that some question exists. Our friend Cosmo, HSG, is working on another legislative matter in our behalf. This time he is working on cooperation with LKM, who is on the Attorney General's staff, to amend the statute covering the matter of radio equipment installed in vehicles. This proposed amendment would clearly cover any equipment licensed by the FCC. This action was requested as the result of an embarrassing situation in which one of our brothers found himself involved recently. Thanks to HSG and LKM. Traffic: (Oct.) W8ELW 1133, 1LP 173, ZLK 126, RVZ 108, YAN 90, RTN 70, ZKZ 52, NUL 50, FX 41, FWQ 38, SCW 34, QIX 32, IKX 31, GKT 24, RAE 21, IV 15, DSE 12, PHM 10, AUD 7, OGY 6, EGI 5, HKT 5, HSG 5, UCN 3. (Sept.) W8GNK 12.

OHIO — SCM, Wilson E. Weckel, W8AL — Asst. SCMs: J. C. Erickson, 8DAE, and E. F. Bonnet, 8OVG. SEC: UPB. RMs: DAE and FYO. PAMs: HPP and HUX. MVJ is on 20 meters now. SWZ and IKM have new Viking Valiants. YGW and SWL have new NC-300s. DSH presented BUK with a baby girl. YGP is in the hospital. WGV has a new Ranger. GM has a new 75A-4 and a B&W 5100B. YBO, CQZ and YGW have gone mobile. The East Palestine RC bought a tract of land with a club house on it, and sports a 65-ft. tower and 10-meter beam for the club station, K8CZZ. This city also sports a happy ham family. HRV the old man, K8GHL his XYL and DHW their son. HGB and HGC are another man-and-wife combination. A car backed into GAB's V-37 antenna and destroyed it. New appointments are PIJ as EC and WXA as ORS. LAM worked WAS on 40-meter phone in 5 months. FRB's XYL gave him a GPR-90 as a Christmas present for '56, '57 and '58. GBJ and YHU each have a new three-element 10-meter beam. KYY, NNH and DIM are working DX. From ENQ we learned that YAC and ENQ have new W3DZZ beams and JNU has a Globe King. The Ohio Council of Amateur Radio Clubs' next meeting will be held at Columbus in Central YMCA at 10 A.M. on Feb. 23rd and it is suggested that any Ohio club not already a member send a delegate to this meeting with suggestions for the betterment of amateur radio and also to see how the Council operates. VDD is Toledo's ham of the month. DQR is back on 2 meters. DN spent a couple of weeks in Florida. ALP spent two weeks in California. We are sorry that RZN lost her father. COC is very ill; he has been licensed since 1907. VDD is running mobile on his bike. The Fulton County ARC held an auction. SXU killed a deer with a bow and arrow in Michigan. STX is running more power on 6 meters. The Toledo RC held its yearly family get-together. 9VBV/8 is attending Miami U. and gets in the Buckeye Net. New officers of the Springfield ARC are OG, pres.; QCU, vice-pres.; JNU, secy.; OKB, treas.; and JRG, editor. SNU and BMC have new 14-Mc. beams and SWZ and OKB have 21-Mc. beams. The Geauga County ARC has a trailer ready for c.d. or disaster communications. MGC installed a crank-up and tilt-over tower. TCT is working on a 50-ft. tower. The Seneca County RC has two new hams, KN8DBW and BIL. GSB's XYL presented him with a jr. operator. MXO installed a new trap antenna. Our W8-QSL Manager literally has thousands of QSLs that have not been claimed, so if you have ever worked DX PLEASE send him a stamped addressed envelope or he will have to destroy them. FGX has a 40-meter two-element beam. JJW completed his 14-Mc. beam on an aermotor tower. BOJ has a new tower with a stacked three-element 21-Mc. over five-element 14-Mc. beam. BRA has a new two-element beam for 21 and 28 Mc. GJG vacationed in Texas. LPD has 28 states on 2 meters. IFC has a new DX-100. The Ohio Valley Radio Assn. won the Ohio Council cup for the Sweepstakes Contest in 1955. UPB, our SEC, has requested that each County EC check the date on his certificate and send it to him immediately for renewal if neces-

(Continued on page 94)

Audio Fidelity compares with HI-FI

Receiver operates good on higher frequencies. Q Multiplier great!

This is a very well built receiver. It performs nicely on all bands.

Very hot--good audio--attractive--traded 10 yr old HQ-129-X and glad I did!

Am very pleased with appearance and quality of reception...the BEST!

The "S" Meter readings really mean something.

Your ads didn't do this rcvr justice... It's everything you said and more!

Stability on CW remarkable--

It is a worthy descendant of the Comet PRO!

It exceeds the performance of my $300 rcvr. I'm amazed!

Boy, what a beauty. I've seen nothing at this price that even begins to compare.

Very well pleased with performance of this receiver.

This receiver is the best I have seen in the price range.

VERDICT: TERRIFIC!

This is just a sampling of the comments we have received from HQ-100 owners . . . the final jury in judging a communications receiver.

No other communications receiver has ever received such an enthusiastic welcome.

Words can't do the HQ-100 justice. You've got to see it, try it, and hear for yourself the most amazing communications buy ever offered . . .

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Clock $10 Extra

Send for HQ-100 bulletin Q-157

Or better still, see an HQ-100 at your nearest dealer . . .

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sary. He needs an EC in the following counties: Auglaize, Brown, Carroll, Champaign, Coshocton, Defiance, Erie, Fairfield, Gallia, Hardin, Henry, Holmes, Madison, Medina, Mercer, Monroe, Morrow, Preble, Putnam, Union, Van Wert, Vinton, Wayne and Williams. Boys and girls, get in there and help Carty. PLEASE. If we should have disaster here in Ohio don't let it be said we didn't have emergency communication. Traffic: (Oct.) W8VTP 334, UPH 302, OLJ 146, HXB 114, SZU 100, DAE 66, AL 62, IIR 56, RO 39, VYU 37, ARO 32, ZAU 26, W9VBV/8 13, W8JHH 12, HZJ 10, CVZ 8, WAB 8, WXA 8, MXO 7, BEW 6, HUX 5, MGC 5, EEQ 2. (Sept.) W8WTO 35, MXO 5, K8BYP 3, WXA 2.

HUDSON DIVISION

EASTERN NEW YORK — SCM, George W. Tracy, W2EFU — SEC: KGC. RM: BXP. PAMs: GDD, IJG and NOC. Section Nets: NYS on 3615 kc. at 1900 hours, NYSPTEN on 3925 kc. at 1800 hours, SRPN on 3980 kc. at 1100 hours, IPN on 3970 kc. at 1600 hours. Putnam County stations receiving ARRL Public Service Awards included FCA, HIQ, PQZ, RGP, K2DBE and EHI. WHX reports three VE2s in one evening on 144 Mc. New appointments: K2LKI and HNW as OPS; W2QOM as EC. Endorsements: UF as EC and K2GNO as OES. The New York State RACES nets handled election returns routed to N.Y.C. New officers of the Putnam Co. Radio Assn. include K2EKE, pres.; HIQ, vice-pres.; FCA, secy.; K2DDN, treas. BSH is using a new GPR-90 with a DB-23 preselector. E.N.Y. stations reporting on the Sept. F.M.T. included CFU, DIN, DGW, EWO, K2EHI and PIC. Hudson Division Director OBU was guest of the Schenectady Club in November. FBS has worked 172 countries postwar with 145 confirmed. DC spent his October vacation in Mexico. K2RUU is going RTTY. WQL is putting up an all-band vertical and LXW a trap antenna. The Capitol District 6-meter enthusiasts had 61 attending a dinner on Nov. 3rd. VLH, of ARRL, spoke to the IBM and Schenectady Clubs on the IGY program. K2KTX is busy with a 7-over-7 beam for 144 Mc. Your SCM would welcome a reporter for Westchester County activity. Let's hear from you boys. Novices are invited to join the Mohawk Hudson Training Net (MHT) each Sat. on 3716 kc. at 1300 hours. Learn how to handle traffic. GSB, the Union College Club, is building a new kw. rig. APF attended the Rochester Antique Wireless meeting and dinner. Traffic: (Oct.) W2BXP 359, PHX 125, NOC 123, EFU 121, K2HPQ 82, GCH 60, W2ATA 39, K2EHI 37, LKI 24, W2GTC 12, K2HJX 10, W2BSH 8, K2EDH 4, W2TYC 4, K2EIU 2. (Sept.) W2BXP 322.

NEW YORK CITY AND LONG ISLAND — SCM, Harry J. Dannals, W2TUK — SEC: ADO. PAM: OBW. RM: WFL. Section Nets: NLI, 3630 kc, nightly at 1930 EST and Sat. at 1915 EST. NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EST. Forty-two stations reported traffic this month for an all-time high in the section. OBW reports that 120 different stations reported into NYC-LIPN, handling 292 messages in 27 sessions. On one evening 43 stations checked in, but none from Brooklyn! According to WFL, NLI averaged 13 stations per session and handled 280 messages — and still none reporting from Brooklyn! How about it, fellows and gals in Kings County? Join either of our section's fine traffic nets and lend a helping hand. K2GKQ now has 75 watts on 10 meters with a ground-plane antenna. K2DEM made YLCC. KN2RCX added a ten-element beam on 144 Mc. 1SDO/2 has been appointed trustee at AEE. As if the signal wasn't strong enough from the Columbia U. station, AIP is designing new antennas. A new two-element 15-meter beam has been added to K2JZR's DX-35. K2CMV made WAS and is awaiting a 4X4 card for WAC. EC now is completely equipped for his NYSCDARS work in a newly-acquired Communicator and 2-kw. auxiliary power unit. K2PHK dropped the "N." K2EQH has completed his 220-Mc. converter. The Rockville Centre C.D. mobiles again cooperated with the police on Halloween patrol. K2QZS is adding an 813 amplifier to his AT-1. We regret to report that GNI/K2SYX has joined Silent Keys. PZE has a new 75A-4. AOD reports that 420-Mc. activity is increasing with 7 new stations worked during October. BQM received 3 QSLs from 3 operators at KC4USA for his phone patch assistance. IN is recovering from a month's hospitalization. K2KND has worked 46 states and 42 countries and is using a DX-100 and HQ-140X combination. K2KRH reports that the newly-formed Garden City HSRC has applied for a station license. A new KWS-1 and 75A-4 are working fine for K2TNA. K2UOY now has 37 states and 4 countries to his credit in six weeks on the air and plans to add a 28-Mc. beam to increase these totals. A contact with 9S4AX upped K2OPJ's total countries to 60. EBZ expects to be on the air now that the d.c. mains have been switched to a.c. in his section of Manhattan. K2ICU is attending R.P.I. and operates the club station, SZ, when his crowded college schedule permits. KN2UNO joins his Mom and Dad, K2s JYZ and JYM. K2KRJ/5 writes from Texas and sends his regards to the NYC-LI gang. K2OPT soon will receive electronics training in the Navy and hopes to work his NYC-LI friends from the Great Lakes' school. Ex-OLU is now signing 6OLU. DRD has been busy working DX on 10, 15, 20 and 40 meters. YSL put up a new 20-meter ground plane. K2LUM has joined the traffic gang with his NC-88 and Ranger. New assignments in the Nassau 6-meter Emergency Net on 50.25 Mc. Tue. and Thurs. at 1930 EST are as follows: NCS, K2PWH; Alt. NCS, K2KRR, act. mgr., K2MBY, asst. act. mgr., K2GZY. New stations on the net are K2s HDQ, IPZ, KYV and UJT. KNA is installing a mobile rig in his new station wagon. OBW has been appointed Asst. Radio Officer, Suffolk County RACES. K2KSP completed a new Viking VFO. TEZ is putting the finishing touches on his 813 rig. A new DX-100 is on the air at K2KTU. K2KMW moved to Farmingdale. Remember, the Conelrad regulations go into effect Jan. 2, 1957! Happy New Year and my sincere best wishes for your enjoyment of our hobby in '57. Traffic: (Oct.) W2KEB 2686, KFV 1399, WFL 338, K2AMP 302, DEM 117, W2GXC 78, K2PHF 75, GHS 70, W2TUK 64, AEE 44, GP 43, K2KXZ 38, W2LDQ 34, LPJ 31, K2RJO 28, LUM 27, W2OME 26, K2CRK 25, W2HAC 25, OBW 22, UGF 20, K2ECY 18, W2OBU 18, K2JZR 17, W2YBT 17, IVS 16, K2KSP 14, QQH 14, CMV 13, W2PF 11, EC 10, DUS 8, K2EQH 6, OZY 6, W2ELK 4, K2QZS 4, W2DCI 3, K2GLP 2, W2JGV 2, K2PAY 2, W2PZE 2, W2DID 1. (Sept.) W2BO 86, K2DVT 42, W2PDU 17, LGK 15, K2OPJ 15, W2DRD 5.

NORTHERN NEW JERSEY — SCM, Lloyd H. Manamon, W2VQR — SEC: IIN. PAM: CCS. RMs: MLW, CGG and NKD. RXL is a new ORS. VDE is a new OPS. K2SKK is kept busy traveling between his home QTH and place of business. To ease the long hours of travel, a new mobile rig is being installed in the car. 6YVJ a new member of the Northern New Jersey section, wishes to get in touch with members of the class of '41 of the Resident Radio School, Gallups Island, Boston, Mass. All radio amateurs who were members of the A-1 or R-7 group at Gallups Island are invited to contact 6YVJ/2, 11 Roosevelt St., Nutley, N. J. VDE has done an excellent job in editing and publishing the New Jersey 75-Meter Phone Net bulletin. The net meets Mon.-Sat. 1800-1900, 3900 kc., and Sun. at 0900. New members are invited to call in at any time. NJN held a very fine get-together in New Brunswick on Nov. 3rd. Twenty-two of the gang were there, and BRC was elected net manager for the coming year, taking over from MLW. In passing, the SCM would like to congratulate MLW for the outstanding job he has done as net mgr. of NJN for the past year. Frank put new life into the organization and spent much of his time in promoting new ideas for the net. New net members on NJN are RXL, K2MFF, MSX and OOA. K2RAJ is a new General Class licensee in Middlesex. 7IDN is a temporary resident of the section. GVU has just received his third DXCC to add to his 10 WAC and 3 WAS certificates. K2GFX has a powerful little 8-watter on the air from his room at college. K2JOM is working 10 and 15 meters. ZMH has moved to a new QTH in Lincoln Park. COT has received his WAS certificate. KFR reports the Penn-Jersey Radio Club has a walkie-talkie construction program going for future emergency use. K2MFF has worked 26 new countries with his new rig. K2EQD is a new DXCC member. K2BEV is hard at work in the RACES program. K2GE is good on the hi-fi deal, but bad in the DX department. K2DSW has worked his 113th country. K2MTL plays a mean Hammond organ. K2KFE has converted to s.s.b. Our thanks to K2BEV for keeping us informed on RBRA happenings. The October report on NJN activity is as follows: Evening sessions 27, attendance 374, traffic 260. New officers of the Avenel Radio Club are K2IPN, pres.; KN2SOH, vice-pres.; FSL, secy. Hudson County RACES RO, K2DUZ, did a fine job in supplying emergency communications at the scene of the plane crash in North Bergen. Joe had radio units on the scene in just 15 minutes after the Mayor of North Bergen declared a state of civil defense emergency. A total of 65 hours of operation was chalked up by this fine group of amateurs and volunteer c.d. communications people under the direction of Hudson County Comm. Dir. KDA and RO DUZ. TTM rolled up a total of 105 contacts on 6 meters in October. The regular meeting of the Central N. J. V.H.F. Society was held in New Brunswick on Oct. 25th. The speaker was QCY, who related his adventures during the recent v.h.f. expedition to Utah and West Virginia. K2DHE and IPR have been hard at work at the County RACES Control getting the new equipment all set up. NIE and IPR have been practicing their navigation skills on the treacherous waters of Barnegat Bay. LIR and KZW are on the sick list. Traffic: W2MLW 207, K2BHQ 175, EQP 135, W2VDE 128, BRC 50, K2BWQ 27, W2OXL 20, K2MFF 14, W2RXL 14, DRV 12, KFR 12, SKK 5, NIY 3, GVU 2, K2RAJ 1.

MIDWEST DIVISION

IOWA — SCM, Russell B. Marquis, WØBDR — The Cedar Rapids Club assisted the Police Department again this year with mobile units and a fixed station at Police Headquarters with the Halloween patrol. The club also is planning an auxiliary fixed station in its c.d. organization. A new Novice in Burlington is KNØHMN, new Tech. Class is KØCIF and new General Class is AFN. A new Tech. Class licensee in New London is CRG. In Cedar

(*Continued on page 96*)

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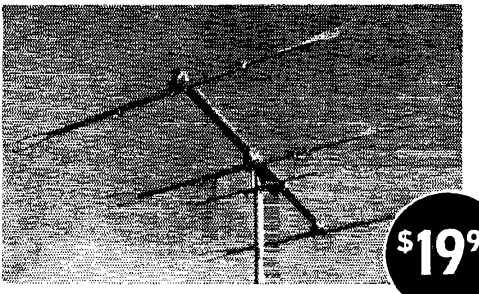
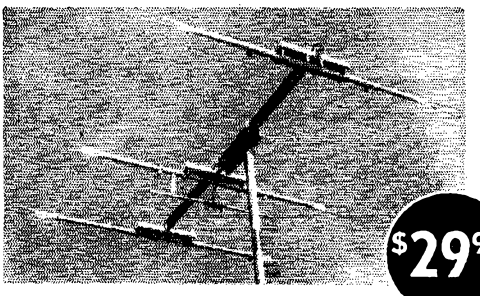
10M 3 ELEMENT



$19.95

Weighing only 18 lbs., this Spanner is small enough to be rotated by any TV rotator. Elements adjustable for maximum gain over entire ten meter band . . . Factory pre-tuned, pre-adjusted and pre-matched. Easy to assemble in short order. No further adjustments necessary.

15M 3 ELEMENT



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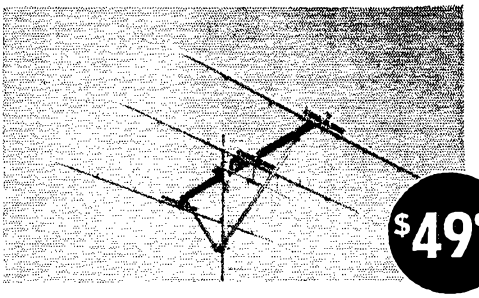
Still small enough to be rotated with the heavy duty TV rotators, this ruggedly-built antenna is also adjustable over the entire fifteen meter band. T or Gamma match for any line balanced or coaxial 52 to 450 ohms. Extremely simple to put up and into operation.

Pay $5.00 down
$5.00 per mo. (min.)

20M 3 ELEMENT



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This heavy duty, full-sized twenty meter array is really built to take it. The elements are adjustable over the entire twenty meter band and they are telescoped three times to minimize element sag. Combination T or Gamma match for any line balanced or coax 52 to 450 ohms.

Pay $5.00 down
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AMATEUR BAND	MODEL NUMBER	DESCRIPTION	AV. GAIN IN DB OVER DIPOLE	AV. F/B RATIO IN DB	HORIZONTAL BEAM WIDTH	BOOM LENGTH	BOOM DIAMETER	ELEMENT DIAMETER	ELEMENT WALL	ELEMENT ALLOY	MAX. MAST DIAMETER	LONGEST ELEMENT	APPROX. NET WT
10 M	103	3 Elem.	8.5	24	59°	104"	1½"	⅞"&¾"	049 and .035	6061ST6 Ant. 41	1½"	17' 10"	19#
15 M	153	3 Elem.	8.5	24	59°	142"	1½"	⅞"&¾"	.049 and .035	6061ST6 Ant 41	1½"	23' 10"	30#
20 M	203	3 Elem.	8.5	24	59°	212"	1½"	1, ⅞, ¾"	.058 .049 .035	6061ST6 Ant 41	1½"	35' 9"	48#

Here are low cost beams of excellent construction, offering superior performance. Each incorporates the specially designed "carpet beater" ends of aluminum wire to reduce fatigue and increase broad band characteristics, new Boom/Mast Clamp, and carefully designed dipole, T or Gamma match for any line balanced or coax 52-450 ohms.

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Rapids, DLK and DMI have dropped the "N." DDA, from Sight Saving School in Vinton, as well as DZX and ATA, have joined TLCN. GQ has a beam on 20 meters. SCA is running a new homebrew kw. rig. New appointments: UIZ, EEG, ZQC, DFC, TVE, KØBEC, AQX, EGO and BRE as ECs, AHZ as OPS and BQJ as ORS. The Davenport Club is finishing a new club house to replace the one which was burned out. The Iowa Des Moines Net has moved to 7130 kc. New members of the net are LGG, ZPM and ZAQ. GXQ has an NC-300 and is rearranging his station. MG is planning an EC net. Rosy has increased the EC coverage by 30 per cent since he took office as SEC. The Davenport, Cedar Rapids, Waterloo and Des Moines Clubs and KØBEC took part in the S.E.T. VWF and BTX have new Valiants. Traffic: WØBDR 1995, SCA 1335, LCX 916, PZO 857, LGG 551, BJP 345, KVJ 220, CZ 217, BLH 113, SQE 111, UTD 70, GXQ 57, QVA 47, NGS 34, BTX 33, YI 30, LJW 23, MG 21, SLC 19, KØBEC 18, DZX 18, WØZPM 18, VWF 17, UTX 12, KØAAH 11, WØPTL 10, BQJ 8, GQ 7, KØBRE 6, DVW 6, EXN/Ø 6, WØFDM 6, FMZ 6, ZZF 6, WØHNE 5, EEG 4, W6WLY/Ø 2, KØCLS 2, WØUJC 2.

KANSAS — SCM, Earl N. Johnston, WØICV — SEC: PAH. PAM: FNS. RM: QGG. The Jayhawk Amateur Radio Society of Kansas City and the Se-Kan Radio Club held well-attended hamfests in October. The Wheat Belt Radio Club is now an ARRL affiliated club with 21 licensed members. The Johnson County Radio Amateur Club's new officers are GLN, pres.; LQV, vice-pres.; NRO, secy.; GUP, treas.; WYK, act. dir. KØDRR, tech. dir.; and WMH, pub. dir. Incidentally, the club meets the 2nd and 4th Fri. of the month at the Red Cross Bldg., Mission, Kansas. The Hi-Plains Amateur Radio Club is sponsoring a DX contest among its members running from Sept. 17, 1956, to Apr. 30, 1957. The Kaw Valley Radio Club of Topeka was host to the Lawrence Amateur Radio Club and the Manhattan Amateur Radio Club Nov. 16th. The Air Capitol Amateur Radio Association of Wichita has started a 2-meter construction project and has twenty rigs under way. APG is chairman of the project. The v.h.f. gang of KVRC, Topeka, has started an f.m. net on 147.96 Mc. using obsolete police units. SSB has 250 watts into a five-element Yagi and keeps daily skeds with KØBTZ in Omaha. OOs ZUX of Scott City, YVM of Chanute, TRG of Topeka, and KØBTQ made very high scores in the September Frequency Measuring Test with YVM and TRG qualifying for Class I Official Observer posts. We need more Official Observers, fellows. How about you? Traffic: (Oct.) WØBLI 757, NIY 309, FNS 231, QGG 142, TOL 130, YVM 119, SAF 93, ABJ 68, ONF 40, IHN 38, FDJ 34, QQQ 34, MXG 32, ICV 24, WWR 24, KØAHW 12, EWS 12, BXF 7, WØLOW 7, QGB 7, YZM 7, DEL 5, LIX 5, LQX 4, KØBIX 3, WØRXM 3, TNA 3, KØAOQ 2, WØUAT 2, KØCCM 1. (Sept.) WØMXG 111, OAQ 25.

MISSOURI — SCM, James W. Hoover WØGEP — Simulated Emergency Test reports show that two separate tests were held in the St. Louis Area under the direction of EC MNW, and Asst. EC NUE. The Missouri Emergency Net, 3900 kc., and the Missouri Net, 3580 kc., were active during the Test. MEN had 30 stations reported with coverage in 26 cities of the State. An emergency test was held in Springfield under the direction of EC HUI. PME is NCS on CAN, Wed. and TEN, Thurs. MHS has received an ORS appointment. KIK notes that the CD Parties present a good opportunity to get those QSLs needed for WAS. GBJ is off the air temporarily for rebuilding. OUD has a new antenna which is reported to be working much better. The Southwest Missouri Amateur Radio Club, Inc., Springfield, has 69 members. The Mo. Valley Amateur Radio Club, which was recently formed, has elected the following officers: KNF, pres.; MMZ and KNØCCT, vice-pres.; and KØBVB, secy.-treas. The club station is located at the Slater Airport. The Bandhoppers Radio Club held its annual dinner which now holds a permanent spot on the club activity calendar by the insistence of the XYLs. JHY works part time for EPS in the TV repair business while attending college. KØACK has completed an emergency portable/mobile transmitter. VTF has a new 10-meter beam in operation. SAK has entered Central College and among other pursuits is on the staff of the school newspaper. Traffic: (Oct.) WØCPI 909, GAR 567, PME 311, MHS 225, KIK 152, GBJ 151, OUD 95, VPQ 79, OMM 68, HUI 67, KØDEX 36, WØJHY 32, EEE 31, IIR 25, WYJ 25, GEP 23, EBE 18, CKQ 17, YKC 11, KØACK 6, WØBUL 3, VTF 1. (Sept.) WØGBJ 375, PME 210, BUL 3, OVV 2. (Aug.) WØVTF 2.

NEBRASKA — SCM, Floyd B. Campbell, WØCBH — SEC: JDJ. NCS PAM: MAO. FLF has moved to Colorado and KXK is at Scott Electronics in his place. New members on the phone net are DIK and KØBRS. There being no nominations for NCS for the 75-meter Emergency Phone Net NCS, MAO was proclaimed NCS for the coming year. The Southeast Amateur Radio Club has a net on 3950 kc. which meets every Sunday at 0830 CST with WKP as NCS. The 75-meter phone nets report the following: Morning net — QNIs 587, average 19; QTC 80, average 2.6; time in minutes 643, average 27.4. Noon net — QNIs 603, average 19.5; QTC 63, average 2; time in minutes 754, average 24. NSS Net — QNIs 228, average 7.4; QTC 35, average 1.1; time in minutes 1391, average 44.9. The Western Nebraska Net reported QNIs 372, average 13.17; QTC 36. DDT reports 210 contacts, 50 sections, 53,750 points in 18 hours in the recent CD Party. CDG has a new SX-99 and is using a Heathkit VFO with a Globe Scout. KØAKR has a new Windom now. Topping the hard-luckers of a tornado that went through the North Platte Area: NET, who lost a 65-foot tower with a 10-meter beam and TV antenna on the top side, and LDO who lost his automobile and lots of good farm equipment while helping a neighbor. The North Platte Club was out in full mobile force for the patroling of streets during Halloween. Traffic: (Oct.) WØZJF 189, DDT 164, MAO 86, ZWG 79, EGQ 61, UJK 58, SPK 46, ZOU 44, KØDGW 35, WØFTQ 32, WØNIK 32, FBD 32, VGH 30, W7UUW 26, KØCDG 23, WØPQP 21, KØBDF 19, WØEQN 14, ZWF 14, PDJ 12, BTG 8, ERM 8, BOQ 7, LFJ 6, KØBYK 4, WØLEF 4, QAR 3, KØAKR 1, WØAQQ 1, DDP 1, ELQ 1, KØGVE 1. (Sept.) KØDGW 22, WØZWG 21, ZWF 3. (Aug.) KØDGW 15. (July) KØDGW 3.

NEW ENGLAND DIVISION

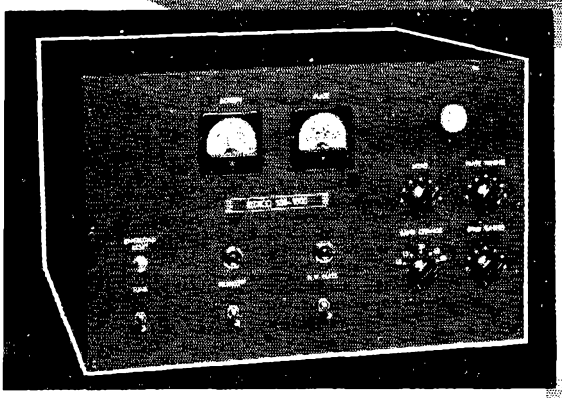
CONNECTICUT — SCM, Milton E. Chaffee, W1EFW — SEC: EOR. RM: KYQ. PAM: YBH. Traffic Nets: MCN — Mon.-Fri. at 0645 on 3640 kc.; CN — Mon.-Sat. at 1845 on 3640 kc.; CPN — Mon.-Sat. at 1800 and Sun. at 1000 on 3880 kc. All good operators can handle traffic. Those who can be regular belong to nets. How about you? You never know when traffic-handling experience will be needed. Even occasional work in a net develops ability and these nets deserve your support! CN report from KYQ: 27 sessions, 337 messages with KYQ (25), EVH (23) and AW (22) most regular. CPN report from YBH: 31 sessions, 420 messages and EKJ, TVU (31), DHP, EVH YBH (30), RPX, VIY and VQH (28) tops in QNI. MCN met 21 times with 80 messages handled, and QNI honors go to RGB, IBE (19), RFJ (18), EFW and K2EQP (17). V.h.f. operators will be interested in a new "50 Mc. and Up Society" which lists QVF, pres.; FOM, vice-pres.; HXD, secy.; and FOR, treas. The Connecticut gang was well represented at the Providence Convention. FDJ has a new NC-183D. One of the best bulletins received by the SCM comes from the Waterbury ARC. Congrats to 1LV. The club heard AIY give a u.h.f. talk Nov. 9th. WHL reports "Operation Goblin" on Oct. 31st gave the Hamden Club plenty of mobile practice. RAN/DL4II/DL4ZQ reports interesting activity plus phone traffic at AE1ZQ (MARS). OO reports were received from GIX, BVB and AMY. An OES report from FVV cites 6-meter openings. CGH asks for Area 2 operators. Interested amateurs, write CGH. New appointments: QVF as OES, KUO as ORS, TVU and FHP as ECs, FYF as OPS. Endorsements: RWD as EC, BDI as ORS and OES. Note how the S.E.T. swelled Connecticut traffic totals. BDI holds a TCC West Coast sked on Thurs. Despite household duties, YYM made BPL and applied for DXCC in October. BPL (No. 5) is getting to be a habit with YBH. APA nailed ITITAI on 40-meter c.w. and his DXCC score is up to 140. RDF is the new RO at Trumbull with VIY as his deputy. VIY also is Trumbull ECA president. In the 9th Annual Connecticut QSO Party, sponsored by Connecticut Wireless Assn. on October 6th and 7th, FEA earned top honors with 69 contacts in 40 town areas and a total of 2760 points. Other high scorers: ASO 1836, FYF 1218, NJM 1107, GVK 1080, AW 1080, BDI, BIH, HUM, and TX also tallied over 500 points. Traffic: W1AW 1128, YBH 1114, EFW 301, KYQ 251, YYM 201, BDI 123, TYQ 120, DHP 86, LV 63, VIY 59, EOR 54, APA 43, CUH 37, ULY 34, EKJ 32, RRE 30, RPX 28, GVK 21, YNC 21, FYF 19, AVS 18, EBW 15, FHP 12, WN1MDB 12, W1RJF 10, HYF 8, NFG 2.

MAINE — SCM, Allan D. Duntley, W1BPI/VYA — Asst. SCM: Oliver R. Hamlin, 1WRZ. SEC: TVB. PAM: FNT. RM: EFR. OOs. WRZ, CBU and TVB. The Barn Yard Net meets Mon. through Sat. at 0800-0930 on 3960 kc.; the Sea Gull Net Mon. through Sat. at 1700-1800 on 3940 kc.; the Pine Tree Net Mon. through Sat. at 1900 on 3596 kc.; the Horse Traders Net Sun. from 1700 to 1800 on 3940 kc. TWR is displaying with great pride his WAC certificate. PTL is booming these days with a new Valiant. FHG, "the poor man's friend," has increased power. ISK also is doing better with a new antenna. If you miss some of the old reliables, look up on 10 meters. UZR is looking for a new "receiver." Did LHA or FNT shoot the deer up on "Garbage Hill"? ZM needs a garbage disposal unit. WTG is publishing a booklet, "How Not to Run a Net." Send us a copy, Charlie, we need it. Congrats to K1ADY, Mary, at Brewer Lake, for getting on the air. There are too many novices to list separately this month, but congratulations to all of them. WSV is looking for a mobile rig. Let's keep plugging for the call letter number plates. If we don't win this year, it is two years to wait, so how about doing your part! ZME is now back in school at Northeastern. NXX and TVB are all settled in their new "home" at 530 Forest Ave. EZR has room now for his antenna and will be back on soon. We don't hear VVT from "Tropical Mud Lake" this winter. Why? Traffic: W1LKP 229, ZME 129, BCD 64, YYW 60, CEV 57, WTG 30, FNT 20, BX 11, FZK 10, UDD 10, BDP 9, HZZ 6.

EASTERN MASSACHUSETTS — SCM, Frank L.

(Continued on page 98)

one name stands out **ELDICO**



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- **COMPACT DESIGN**—Table Top receiver-type cabinet complete with built-in heavy duty power supply. Size: 10¾" x 17" x 15".
- **PI-NETWORK OUTPUT**—Single knob bandswitch and high-efficiency silver-plated Pi-network output circuit. Matches wide range of antenna-impedances.
- **QUIET OPERATION**—Potted and Vacuum-impregnated chokes and transformers, shock-mounted relays, low-velocity high-volume blower for extremely quiet operation.
- **FOOL-PROOF OPERATION AND SAFETY**—Interlocked hinge-cover, tune-operate switch and overload relay for tube and circuit protection, independently metered screen and cathode-circuits.
- **HIGH HARMONIC ATTENUATION**—High-Q plate and grid circuits and Pi-network output circuit provide maximum harmonic-attenuation.
- **ATTRACTIVE STYLING**—Black wrinkle finish table top cabinet that matches other modern communication equipment in size and appearance.
- **POWER RATING**
  DC Input CW—1000 Watts
  AM— 700 Watts
  Peak Envelope Power Input SSB-1000 Watts
  Peak Envelope Power Output SSB-625 Watts
- **FREQUENCY RANGE**

5 Bands:			
	80m	3,500 to	4,000 Kc
	40m	7,000 to	7,300 Kc
	20m	14,000 to	14,350 Kc
	15m	21,000 to	21,450 Kc
	11/10m	26,000 to	30,000 Kc

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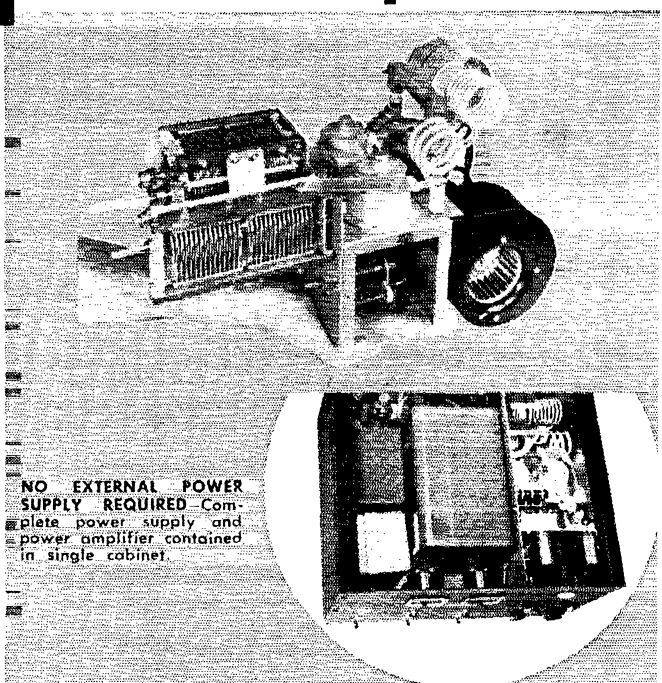

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Baker, jr., W1ALP — New appointments: ZFS as OPS, DWH as OO. Appointments endorsed: HUP Dover, RQZ Abington, WFQ Alt. Radio Officer Sector 1-B, QQL Lynn, OTK Somerville, AVY New Bedford, ATP Holliston, PST Brookline as ECs; RQZ, ALP, UIR and NF as OBSs; HPU, AVY and MX as OPSs; BOA, AVY, MX and BDU as ORSs; UE as RM for the 80-meter c.w. band. Heard on 2 meters: JTU, NBA, LDT, DA and JPJ. Heard on 75 meters: QJB, SON, ALB, FRR, OQ, KOM and DYC. WN is on 75-meters s.s.b. AUP is on 80-meter c.w. KN1ACO is new in Quincy. Eastern Mass. was well represented at the New England Division Convention held at Providence, R. I. The following took part in ARRL's Sept. F.M.T: BGW, AYG, WK, WPG, JOT, GDJ and THO. The Braintree, Weymouth, and Arlington c.d. groups were out on duty on Halloween helping the police. The North Shore Radio Assn. of Lynn elected ZQL, pres.; DDI, vice-pres.; EKL, secy.; OGK treas.; CUW, JLN, SHV and ADD, directors; HOO, ham-tamer; EBQ, publicity dept. RACES approval has been received. DWH has a 32V-3 and an HRO and a three-element beam on 15 and 20 meters. DDH has an NC-183D and a Viking Ranger on 40-meter c.w. and 15 meters. PH says he has been on the air for 51 years and thinks it would be interesting to have an H.C.W.A. He is on 80-, 40- and 20-meter c.w. and would like to hear from others on this idea. WSN made BPL for the third time and is attending Brandeis U. SSU moved to Acton. The Braintree Radio Club held a Ladies Night, with WNT planning the program. The South Shore Club holds code and theory classes. Visitors are welcome. The T-9 Club held a meeting at MVQ's QTH. NLD is on 80-meter c.w. ZR is back in Boston for the winter. The TCPN is looking for stations in Boston to take traffic on 3970 kc. daily at 1700. MUM had a bad accident. AZU and WGN are on 10 meters. ZHC is mobile on 75 meters handling traffic on several nets. HBW passed her General Class exam at Providence. AHE has his 48-element beam up for 2 meters. HUP says he will be on the air more this winter. LJH got married and bought a house in Kingston and is on 2 meters. HWE has a WANE certificate. HNK has his General Class license. NVV is a new Novice in Randolph. QWB has a DX-35 and is helping YYZ in the c.d. UIR has a Viking 2100-watt 6-meter transmitter and an RME 4300 receiver. K2AWA/1 is working in Lynn. NTK, of No. Easton, will be on when he gets out of the Air Force. YZE, president of the Harvard Wireless Club, AF, reports that its 20-meter beam is up again. UGA, KØBIB and K9ABP put it up. KØBIB has started many phone patch calls for the students and 5CGU edits a paper, *Local QRM*. QLT/MM is out on the *Albatross 3* on a ground wave propagation test. NUP is working at WCC in Chatham. NCSs for the Eastern Mass. Net on 3660 kc. at 1900 are KLQ Mon., EMG Tues., ATX Wed., AUQ Thurs. and EPE Fri. ETH has a DX-35 and a VFO and is getting an NC-98 on all bands. CLF has the mobile rig in the new Cadillac. EMG is very busy at work. IUU needs four states and one continent for WAS and WAC. EMG sent his ORS certificate in for endorsement. IBE is doing some hi fi work. SW hopes to be on the air again soon. DQF has her General Class ticket. DJ is in the hospital. Winthrop's last drill had 16 stations and a personnel of 22 on. YXJ/YPT says that they had more than 45 different hams visit them this summer while they were in West Dennis. UKO has a home-made tuned-trap all-band antenna. QJS is ex-4SRA in Hingham. He is the son of AKN, who is on 2 meters. THO, our 6-meter PAM sends his appointment in for endorsement. Active on 6 meters: DMB, EBH, EZP, GMT, JBE, NEZ, NRT, RX, SNZ, UMK, USH, VDE, VRK, ZTA, K1AAA and K1AEK. DNO has a three-element beam and rotator. LKD moved to Stoneham. K2LXI/1 has moved back home. K2ACC/M is in Lynn. The Greater Boston Amateur Radio Society (formerly Radio Amateur Open House) meets at the Cambridge YMCA. Ex-1HER is getting interested again. Traffic: (Oct.) W1EMG 391, EPE 250, WSN 172, IBE 157, GNX 74, AVY 68, AUQ 67, EAE 41, CLF 24, QLT 23, UKO 23, TY 22, WU 18, UE 14, BY 12, AKN 6, ATX 6, CZW 6, KBS 6, ZFS 6, CAM 4, ETH 4, KLQ 4, ALP 1, IUU 1. (Sept.) W1QLT 12, AOG 11, KBS 8. (Aug.) W1KBS 9.

WESTERN MASSACHUSETTS — SCM, Osborne R. McKeraghan, W1HRV — SEC: RRX. RM: BVR. PAM: QWJ. The WMCW Net meets on 3560 kc. Mon. through Sat. at 1900 EST. Fitchburg was represented every night in October on the WM Net by DZV, DGL or KGJ. How about more net participation from the Pittsfield and Worcester Areas? New appointments: ORS to DZV, DGL and KGJ; OPS to DLS and LDE; OES to STR. Endorsements to the following: EC to BKG and GUI; OO to BKG; and ORS to EOB. AGM and HRV tried 15 meters for the first time. Western Massachusetts had very good representation at the Providence Convention. HAZ is now located in Ohio. CGJ and CRK are roommates at the U. of Mass. WCG is at college in Ohio. *Random Scatter*, the monthly publication of the Berkshire County Amateur Radio Assn., is a swell paper. New officers of the Hampden County Radio Assn. are HRV, pres.; WLE, vice-pres.; VNE, treas.; STR, clerk. Good luck to the newly-formed Pioneer Valley Amateur Radio Club in Holyoke with 28 members at the organizational meeting, and LIW, pres.; EZD, secy.-treas. The Worcester Polytechnic Institute Radio Club, YK, elected VAH, pres.; WMH, vice-pres.; FIX, secy.; ZQB, chief op. The club has a Viking Ranger and home-built power amplifier and is holding code classes for about 20 new freshmen members. Easthampton has two new General Class licensees, MPG and NDY, brothers, and a new Novice, KN1ADR. WN1IZI, of Pelham, is now General Class. The Gordons, UKR and KUL, are proud owners of a new NC-183D. LDE has made BPL two months in a row. Old contest hands, EOB and JYH, piled up some FB scores in the CD Party. Your SCM has been elected to another term. SPF and the Greater Worcester Phone Net did a bang-up job in the recent S.E.T. C.D. Sector 4E Headquarters in Berkshire held open house in November. Ten-meter mobile activity is booming in the Springfield Area between 0730 and 0800 daily. LRE, GQP, NLE and HRV work each other while driving to their jobs. Traffic: WILDE 913, DLS 163, DYO 126, BVR 121, TAY 70, DVW 46, DZV 30, KGJ 27, DGL 22, HRV 15, DWA 12, EOB 6, AGM 3.

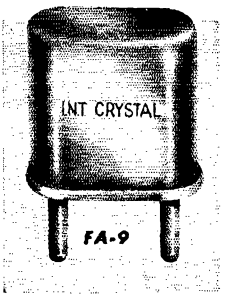
NEW HAMPSHIRE — SCM, John A. Knapp, W1AIJ — SEC: BXU. RMs: CRW and COC. PAM: CDX, JB and jr. operator, EZC, have moved to Allenstown, a short distance from their previous Pembroke QTH. AIJ has moved the station to the home QTH in Concord. ZFP has achieved WAS on low power. Our former SCM, HS, and his XYL, WN1KND, have pulled stakes and moved to the Sunny South. The Concord Brasspounders held Ladies Night Dec. 8th. A very FB time was enjoyed by all. Our SEC, BXU, reports 90 per cent of RACES gear is now on hand and program operations should be well under way by Jan. 1st. CDX, our PAM, advises that the Granite State Phone Net needs Laconia and Nashua regulars. This net meets Mon. through Fri. at 1800 and on Sun. at 0900, on 3842 kc. The NHEN meets Sun. at 1300 on 3850 kc. The New Hampshire C.W. Net meets Mon. through Fri. at 1900 on 3685 kc. A hearty welcome to Novices MYL, MTX and MUF. The NHEN has the C.D. Operations Officer on hand at net control, or available via v.h.f., to answer queries relating to RACES and AREC. A Prosperous New Year to all. Traffic: W1QGU 81, ASZ/ARR 68, CDX 53, COC 48, CRW 46, FUA 24, FZ 15.

RHODE ISLAND — SCM, Mrs. June R. Burkett, W1VXC — SEC: TQW. RM: BTV. New appointments: CCN and YRC as Class I OOs: WED, DHX, HLY and VSZ as OBSs. OBS schedules are posted at clubs and also are available from each OBS. Appointments endorsed: OR, TGD, YKQ, UTA, and BBN as ORSs: UEF, JFF, PAZ, LU and BBN as ECs: WAC as OPS. Section Net certificates recently were issued to YKQ, BTV, BBN, BXN, CMH, HLY, OR, TGD, UTA, YVW, YRY, ZXA, IMY and WFZ. The RIN meets on 3540 kc. at 1900 Mon. to Fri. YKQ, RIN Manager, reports that UTA had a perfect attendance again in October. The RIIN meets on 29,260 kc. at 1930 Mon. to Fri. The Blackstone Valley Radio Club responded promptly when activated by AUT Oct. 6th during a general alarm fire in Woonsocket. FJZ, YPX's son, now operating DL4NK, is looking for Rhode Island contacts. The PRA deserves great praise for sponsoring such a fine New England Convention Oct. 21st. YNE has mobile on the air. DHX reports 42 stations listed as Polecats. Thanks for all the reports, requests for appointments, etc. Keep up the good work! Traffic: (Oct.) W1UTA 104, YKQ 83, VXC 78, BTV 44, CMH 41, QR 30, TGD 21, ZXA 20, CCN 8, ZDS 6, GFH 4, HLY 3. (Sept.) W1UTA 150, QR 67, VXC 62, BTV 59.

VERMONT — SCM, Mrs. Ann L. Chandler, W1OAK — SEC: SIO. RM: BNV. PAM: SEO. Traffic nets: VTN, Mon.-Sat. at 6:30 P.M. on 3520 kc.; VTPN, Sun. at 9 A.M. on 3860 kc.; GMN, Mon.-Sat. at 12 Noon on 3860 kc. SEO has asked WOA and ZYZ to take over net control for him on VTPN until his rig is returned from the factory. GMN may move into evening operation because of heavy interference during noon hours. IT is back on the air after a siege of grippe, and now is suffering from second-harmonic trouble on phone. The newly-appointed Alternate District RO in District No. 6 is WOA. The Middlebury Mike and Key club held a very enjoyable annual chicken pie supper on Oct. 27th and was honored to have Phil Rand, DBM, as guest. Code and theory classes started for the BARC at the U.S. Naval Reserve Training Center on Oct. 22nd. The club members and friends enjoyed a de luxe amateur TV demonstration by W2GJR/VE2 and VE2AKT in Quebec. As a part of the Simulated Emergency Test the BARC held a hidden transmitter hunt on Oct. 14th. In the recent Frequency Measuring Test NDL's average error in parts per million was 17.5 with three measurements submitted. If interested in any of the ARRL's tests and contests, contact your SCM for information. It is urged that reports of official appointments be sent in before the 5th of each month. VTP is attending the New England School of Theology. WN1ETV has dropped the "N." VSA is now working for G.E. in Burlington. UET writes from Florida that her health is much improved. VZE is on 10 meters with a new Telrex beam. From South Lancaster, Mass., TAN sends his best regards to all the Vermont gang and is pleased to have USL living just three blocks away. UGW operated in the CD C.W. Party from K2OMT, 377/58 for 110,200 points. Dick's new ones are UR2KAA and 4X4IV with 78 worked and 60 confirmed. In September UGW operated in the W/VE Test from K2OMT, having 116 QSOs in all VE

(*Continued on page 100*)

International CRYSTALS - ONE DAY PROCESSING



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Spot Frequencies 1500 KC to 90 MC

.01% TOLERANCE—Wire mounted, plated crystals for use by amateurs and experimenters, where tolerances of .01% are permissable and wide range temperatures are not encountered.

PRICES FA-9* (Pin Diameter .093)* FA-5 (Pin Diameter .050)

Pin Spacing .486 (*FA-9 fits same socket as FT-243)

.01% TOLERANCE

FREQUENCY RANGE	PRICE
Fundamental Crystal	
1,500— 1,799 KC	$4.50
1,800— 1,999 KC	$4.00
2,000— 9,999 KC	$3.00
10,000—15,000 KC	$4.00
Overtone Crystals (For 3rd Overtone Operation)	
15 MC—29.99 MC	$3.00
30 MC—54 MC	$4.00
(For 5th Overtone Operation)	
55 MC—75 MC	$4.50
76 MC—90 MC	$6.50

Holders: Metal, hermetically sealed, available in .093 diameter pins (FA-9) or .050 diameter pins (FA-5).

Frequency Range: 1500 KC to 90 MC

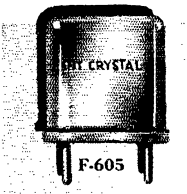
Calibration Tolerance: ±.01% of nominal at 30° C.

Temperature Range: −40° C to +70° C.

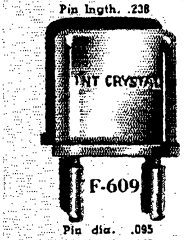
Tolerance over temperature range from frequency at 30° C: ±.01%.

Circuit: Designed to operate into a load capacitance of 32 mmf on the fundamental between 1500 KC and 15 MC. Designed to operate at anti-resonance on 3rd overtone modes into a grid circuit without additional capacitance load. 5th overtone crystals are designed to operate at series resonance. (Write for recommended circuits).

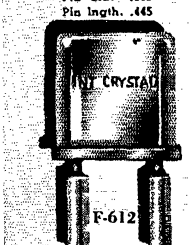
Crystals are guaranteed only when operated under the conditions specified or in circuits recommended by International Crystal.



Pin dia. .050
Pin lngth. .238



Pin dia. .095
Pin lngth. .445



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Pin spacing on each of above is .486

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Wire mounted, plated crystals, for use in commercial equipment where close tolerances must be observed. All units are calibrated for the specific load presented by equipment.

Holders: Metal, heremetically sealed. **Pin spacing .486**

Calibration Tolerance: ±.0025% of nominal at 30° C.

Tolerance over Temp. Range: ±.005% from −55° to +90° C. ±.002% from −30° C to +60° C.

Circuit: As specified by customer. Crystals are available for all major two-way equipments. In most cases the necessary correlation data is on file.

Drive level: Maximum—10 milliwatts for fundamental, 5 milliwatts for overtone.

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sections. OAK shot her first buck the third day of the deer season. Having been elected SCM, I will do my best to get out a full report. All amateurs in this section can help by sending news. Traffic: (Oct.) W1OAK 90, AVP 45, VZE 43, BNV 31, ELJ 20, KJG 11, ZNM 9, IT 5, UGW 1. (Sept.) W1UGW 2.

NORTHWESTERN DIVISION

IDAHO — SCM, Rev. Francis A. Peterson, W7RKI — Bouquets to IWU on his FB job as SCM. Note the address of the new SCM on page 6. Reports are needed from all clubs and hams on activities, especially in Northern Idaho. I hope to meet you and bring ARRL helps for your group. Write me for the *Hambone* newspaper. Congratulations to OQT on his marriage. AOE is building a filter s.s.b. rig. PKA is rebuilding the 500-watter. RHN got a new Mosley beam to work Alaska. The Gem State Club in Boise elected new officers. VQC is prepared with emergency power. AWT is experimenting with ultramodulation. ACD received 100 QSLs for DXCC and left for Arizona for the winter. OZJ moved to Boise. RSP got a lottery ticket instead of a QSL from Malta. VOM is using "cathode mutilation" now. The FARM Net is on 3935 kc. at 1900 now; the C.D. Net on 3997 kc. Tue. at 1930. Traffic: W7RKI 17.

MONTANA — SCM, Vernon L. Phillips, W7NPV/WXI — SEC: KUH. The Montana Phone Net meets Mon., Wed. and Fri. at 1730 on 3910 kc.; the Montana Breakfast Club meets each morning at 0630 on 3910 kc.; the YL get-together is at 0800 each Wed. on 3900 kc. Thanks to all who participated in the Annual Simulated Emergency Test. The good turnout and efficient operating made this year's test a big success. The Yellowstone Radio Club is the latest group in the State to become incorporated. The Hellgate Radio Club again is sponsoring radio classes in conjunction with the Missoula City Recreation Dept. WFV has a new YL harmonic. YPN visited the Hellgate Radio Club while undergoing hospital treatment in Missoula. ZEK moved to Billings and is working for the railroad. WIB, SAK, QHO, ZAZ, OGT, QPK and OIQ are attending Montana State College in Bozeman. Recent appointments: INM as EC and SMY as EC. Traffic: W7FIS 62, NCS 60, YHS 31, INM 30, LBK 21, SMY 19, TNJ 12, NPV 10, SFK 8, TTC 8, QYA 6, CT 4, ZEK 3, RDM 1.

OREGON — SCM, Edward F. Conyngham, W7ESJ — The second BPL medallion to be received in Oregon went to QKU, who says, "It sure is pretty." KU has her 1000 points in BRAT for a Grand Masters certificate. YUY is checking into OSN, WSN and RN7 regularly. VIL has a light traffic load so got the 2-meter receiver finished and now is planning a transmitter. LT received his first PAØ and G DX cards. OMO is regularly on OSN and RN7. PRA has cut down activity on the recommendation of doctors. The OARS Net, 29.2 Mc., has YYP as manager, with QWE handling the paper work, and had a total QNI 424, total QTC 6 and contacts 63; DX check-ins were KA2FQ and KH6HVX. JCJ and ZDQ, acting as NCSs, were tops with check-ins. The OSN, meeting on 3585 kc. each week day, had a QNI of 156 and QTC 47 with NCSs OMO, ZBO and PRA. Liaisons to RN7 are OMO, SMR, UJL, WJF and ZBO. The OCN, meeting on 3585 kc. on week ends, had OE, OMO, KAB, YUY, BZD, BDU, WHE and 6BGU using it. RGS, in Portland, has been working a nightly schedule with VOG and 1NX in Seattle. WHE received a 20-w.p.m. and ESJ received a 30-w.p.m. Hq. 6th Army Code Proficiency certificate They are beautiful. Traffic: W7QKU 59, PRA 38, OMO 32, LT 21, HDN 19, YUY 15, GUR 10, VIL 9.

WASHINGTON — SCM, Victor S. Gish, W7FIX — Tacoma AREC Nets: C.w. 7175 kc. at 1930 PST, phone 51 Mc. 1830 PST each Tue., name Evergreen Emergency Net. Tacoma Radio Club news: WOS lost his gear in a fire. Halloween dance costume prizes were won by AZI, SKR and PDB and her OM. IG and his XYL returned from a six month tour of Norway and Germany. The Quarter Century Wireless Association Net meets on 3950 kc. at 1600 PST each Sun. The Valley Amateur Radio Club's (Puyallup) officers are OIV, pres.; MPH, vice-pres.; VLC, secy.; JJK, treas.; ZUE and ZUF, sgt. at arms. MCU is active on u.h.f. and v.h.f. PUA received the high claimed score in the multiop class in the Sept. V.H.F. Party. OIH is recuperating after a trip to the hospital. The Puyallup Club will hold code and theory classes in Puyallup High School. AIB is the new manager of WSN, which meets on 3575 kc. at 1900 PST Mon.-Fri. USO is associate mgr., JEY is recorder. OD is vacationing in W6-Land. AMC is retired and is printing QSLs. NWK is building a new QTH at Lake Lucerne. The North Seattle Radio Club held a Halloween dance. K7FEA is operating on 10, 15 and 20 meters. WAH has a good traffic total despite school. UVY, with the help of KJN, is trying to get an amplifier on MARS. OE still is using a mobile whip for the home station antenna. BXH is going to radio school and guarding 3550 kc. when home. UJA has a new jr. operator. YBV moved from Clarkston to Seattle. VCF still is QRL teaching radio. FZB got his OTC certificate. ER is getting started in traffic work. AVM reports participation in the RACES and AREC drill was disappointing — c.d. expects 2-meter rigs soon. CWN is working Russia and other DX — as usual his many projects are at a standstill. BDK is putting up 2- and 6-meter antennas. PXA is busy on the WARTS and Inland Empire Nets and working 10 meters. JWE will have a kw. on the air soon, the kw. in one cabinet and the power supply in another. King County RACES is going ahead very well with drills each Thurs. at 1930 PST on 2, 6 and 10 meters. EJN, VI and FIX participated in the Sept. F.M.T. Traffic: (Oct.) W7BA 1251, PGY 731, K7FBN 676, FEA 307, W7WAH 257, UVY 223, OE 149, APS 91, UNI 69, TH 59, AMC 49, BXH 47, EHH 38, USO 37, AHV 25, AIB 18, JEY 18, WQD 11, HDT 10, VCF 10, ER 9, LVB 6, EVW 3, FZB 3. (Sept.) W7TH 62, ER 8.

PACIFIC DIVISION

HAWAII — SCM, Samuel H. Lewbel, KH6AED — Word comes via the *Mike & Key Club News* (KA2NY) that KH6BLA is now KA2LA and has been elected club treasurer. This same club claims to be the first "KA" to have worked over 35 zones. The club also announces the new "Worked all Yokosuka" certificate. All you have to do is work all of the following KA2s: AA, AD, MP, RM, RR and ZK. KH6BNY reports he is active on 40-meter c.w. and is building a 6146 rig for 50 Mc. Traffic: KH6QU 701, BQS 225, KP6AK 125.

SANTA CLARA VALLEY — SCM, G. Donald Eberlein, W6YHM — In this, my first activities report as your new SCM, I would like to pay particular tribute to my predecessor, WGO. I'm sure you all join me in this public expression of our gratitude for all he has done as SCM and otherwise here in the Valley. I feel especially gratified that Paul has agreed to work closely with me during the next two years, as have BPT, Asst. SCM, and NVO, SEC. Give us your support and we'll guarantee you a well-organized active ARRL field organization. Perhaps the most important thing you can do initially is to assist us in strengthening our AREC by signing up so that we have an accurate inventory of our potential emergency communication facilities and abilities. A card will bring you the information. Do it now, before you forget! K6HGY needs 12 counties for his WACC. KN6UHC is a new Novice in Palo Alto. LDO has received his WAS certificate after 22 years. K6DYX reports 84 contacts in four hours and 25 minutes during the CD Party. K6GID is putting a new keying circuit in the rig. K6QCI is working to clean the rig of TVI. FKJ remodeled the shack, installing an air conditioner and wall-to-wall carpets. JAW is sporting a new DX-55 receiver. AOD is moving to New York. PHN has 57 confirmed on 15-meter phone. IYY is off the air pending the arrival of a new SX-100 receiver. IDP traded the Austin Healy for a Volkswagen. K6HYX has a new RME-4300 and is putting up a new 10-meter beam. K6CXT is converting the garage into a new ham shack. Traffic: W6BPT 333, K6DYX 310, GID 230, W6HC 148, YHM 109, YBV 104, K6QCI 15, W6LDO 1.

EAST BAY — SCM, Roger L. Wixson, W6FDJ — First of all I wish all a Happy New Year. I want to thank those who sent in bits of news and information for the SCM's report. Please send in your news on or before the 7th of each month. SXK has been transferred to the *Hawaiian Refiner*, which makes runs from Los Angeles to the Islands. We regret the passing of FAQ, of Walnut Creek, who was one of the more active s.s.b. stations. Around the clubs in the East Bay section: The East Bay Radio Club held its Annual Dinner at Spengers in Berkeley. The speaker for the evening was Dr. Louis Alvaraz, from the U. of California, who spoke on his recent trip to the U.S.S.R. as an exchange Nuclear Scientist. The SARO held its regular meeting on Oct. 29th at the Prime Rib Kart, Belmont. Following the dinner EFT arranged a tour of the Globe Wireless plants at Belmont and Sharp Park. The station at Belmont is the receiving station where all point-to-point (f.s.k.) and marine receiving is done. After leaving there they went to Sharp Park where the transmitting station is located. The Mt. Diablo Club held its meeting Oct. 19th at the Contra Costa Jr. College. The featured speaker was RVC. The topic of his talk was "Where Does TVI Come From?" A note of appreciation was received by the Diablo Club for the work they did during the Walnut Festival. The participants were LGW, SAV, ACQ, OHR and IMV. They provided communications for the parade which enabled the judges and other officials to keep in touch with the various vantage points. This was done on 2 meters. A letter from the SEC states that things are shaping up and there is more and more 6-meter activity in the emergency program. A new net up Napa way is the Silverado Six Shooters, which operates on 51.450 Mc. using crystal-controlled rigs of small and compact design. Having completed the pilot models they are setting up to build ten more units. YSD has come up with an 18-inch roof-top antenna which works like a bomb on 6 meters. Another vote of thanks goes to C. T. (Bud) Hammons for the great job he did in the recent Annual Simulated Emergency Drill. Bud reports that VSV, NBS and EDN participated in the test. The drill was held with the cooperation of Col. J. A. Dorst, Chairman, Disaster Committee, Berkeley ARC and Harmon Noyes, Survey Sub-committeeman. ZZF reports 14 AREC members and 1 supporting member. Local net frequencies used are 28.620 Mc. and 3995 kc. Three drills

(*Continued on page 102*)

MALLORY HAM BULLETIN

MALLORY 6 and 12 Volt Battery Chargers Keep Mobile Units on the Go

Those of us who have tried mobile operation are fully aware of the very difficult problem of how to keep the car battery charged adequately for starting purposes, and still provide plenty of juice for a reasonable amount of time on the air.

Recently, one of our good amateur friends, who is a red-hot mobile fan, told us of a method he used for keeping his battery at top performance and still add no extra equipment to his automobile. His system sounded so practical, that we'd like to pass it along.

Here is what he did. First, he visited his Mallory distributor and bought a small, inexpensive Mallory 6-volt Battery Charger, the 6SAC6 (or 12SAC5 for 12-volt systems) together with a special automobile Cigarette Lighter Plug (Mallory R675) to be used for inserting the Charger output into the electrical circuit of his car. The Lighter Plug was attached to the Battery Charger and the whole business was then mounted conveniently in his garage.

After an evening of mobile operation, he simply inserted the Plug into the cigarette lighter socket, turned on the 117 VAC line, and the next morning, presto, his battery was ready for heavy starting action.

With this very convenient arrangement, this ham was able to operate his mobile rig the year 'round, with little fear of even tough wintertime starting.

Incidentally, if your car is not equipped with a cigarette lighter, don't let that handicap you, simply ask your distributor for a Mallory Dashboard Receptacle (R652) which may be clamped to the dashboard without drilling a single hole. Used in conjunction with a Cord Assembly (R670) this arrangement will provide all the convenience afforded by the lighter plug method of installation.

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were held with 9 mobiles participating. K6WAY made BPL with traffic counts of 746 for August and 838 for October. K6GK is in there pitching with a total of 191. ASJ reports a traffic total of 14. QDW reports a total of 34 from the NCN operating on 3635 kc. Mon. through Fri. at 1900–2200. Traffic: K6WAY 838, W6QDW 34, ASJ 14.

SAN FRANCISCO — SCM, Walter A. Buckley, W6GGC — ANR and 7LPT moved into the Humboldt Co. Area and joined the radio club. K6TYK, a new amateur, also joined the group. YUH moved to Salyer. CBE still is having fine results on DX and has 125 countries. FXX, formerly of San Mateo Co., was transferred to Vernal, Colo., on a new job assignment. Lots of luck, Joe. Membership in the local ladies' radio club is growing by leaps and bounds. The ladies have received quite a few requests for the official "Swoop Installation Certificates" to be used at ham affairs. JWF, custodian of the local Red Cross communication amateur station, CXO, is in St. Luke's Hospital recovering from recent surgery. Hurry and get back, Frank, the gang miss you. Prior to his trip to the hospital he manned the station in the Oct. c.d. drill with many of the gang helping him. PHS is the San Francisco Radio Club's newly-elected president, with ERS as vice-president; K6HIW as secretary and Harry Witzke remaining as treasurer. K6OAZ and K6BCM, of the Eimac Radio Tube Co., gave a lecture on ceramic receiving and transmitting tubes and their usage at the October San Francisco Radio Club meeting. They brought along one of their newest tubes, the 4C300A, for a prize. K6HYW, the newly-appointed Asst. EC for the San Francisco section, has organized a new 6-meter net (exclusively mobile) for regional civil defense representation in Bay Area. Another c.d. net has been formed in the area with approximately 30–40 check-ins each Tue. night. The fellows from East Bay, Marin and down the Peninsula are all active in this net. The 6-meter gang met in San Francisco for the regular monthly luncheon with 60 to 70 attending. K6CHU was the hidden control station for the transmitter hunt held in October. The 29ers Club held its hunt on 10 meters with lots of prizes for the winners. BIP will be in Los Angeles for two months on assignment for his company. The Marin Amateur Radio Club now holds its meetings at the American National Red Cross Headquarters in San Raphael and is very active for the Red Cross. Airforce MARS had its annual invasion at the Fresno Motel with many of the local boys attending from this section. A wonderful time was had. The October meeting of the Central California Radio Council was held at W6CTH's QTH. Traffic: (Oct.) W6JWF 300, BIP 250, GHI 20, GCV 8, PCN 5. (Sept.) W6PHT 8.

SACRAMENTO VALLEY — SCM, Harold L. Lucero, W6JDN — The Radio Amateur Mobile Society, Inc., of Sacramento lists nine Certificates of Achievement. They are really something to crow about. Drop K6CFF a line for information. Ex-AIS, formerly of Sacramento, now is 7ZOC of Bisbee, Ariz., and would like to QSO the old gang on 40-meter c.w. after 10 P.M. MST. I hope to hear you, Dick. IOY is replacing HQF as EC for the Sacramento Area. The October Champion Auto Races in Sacramento were handled on 2 meters. Five complete stations were furnished, one at the north end, one at the south end, one in the pit and one on the roof. The fifth was not used. C.d. nets are working out very well. The 2-meter Net at 7:30 P.M. Tue. has an average check-in of about 30 stations. The 75-meter Net at 8:00 P.M. Tue. has from 30 to 40 check-ins. CKV has flea power and the rig does very well. HNL ran into a door, so he says. JRY deserted the ranks of bachelorhood. Congratulations. MWR is back and doing fine except there was no luck with the '06 and no buck. Hi. QJD has a new mobile rig. K6GSK checks into the net with low power. Good work, Muriel. K6RLR keeps busy as mother, secretary, housewife, student and occasionally as a ham. K6BYS is very active in c.d. Fellows, how is each piece of your emergency gear? Let's have it in top shape and be ahead of any emergency that can come upon us. Let's bring up the traffic counts, fellows. Traffic: K6IYC 21.

SAN JOAQUIN VALLEY — SCM, Ralph Saroyan, W6JPU — Happy New Year everyone! VPV is chasing lots of DX on 20 meters. GQZ is recuperating from an operation. K6HWS has a pair of 304TLs in the final on s.s.b. LRS is on 10 meters exclusively. MYP participated in the last DX Contest. WHO is working 20-meter phone. K6QOK is on 75- and 40-meter phone with 15 watts. K6HWT is attending Cal. Poly. OVR is going to steer clear of all police repeater stations when operating 2 meters. K6GOX and 7QDJ are working scatter reflections on 6 meters. JCB is chasing bugs on "K" carriers. PPO is using a pair of 75TLs in the final on s.s.b. JUK is back on 75 meters with a 32V-2. QFR has a new Johnson Desk Kilowatt with an SX-100 receiver. K6GTI is on s.s.b. with a 20A. UBK moved to a new QTH with 5 acres for antennas. GFV has an all-band antenna. AHO resigned from Fresno State College to take a position with General Dynamics in Pomona. K6KYW has meter troubles with his transmitter. The Seventh Annual Marsfest was held in Fresno with 45 members present Nov. 3rd. KMN had to move his hamshack out to the garage — the family is getting too big. THO was a recent visitor in Fresno. K6OTO is experimenting with amateur TV with great success. The Turlock Amateur Radio Club is going strong. CUA is having mobile problems. Keep the reports coming in, fellows. No reports, no news. See you at the Fresno Radio Club meeting, 2nd Fri., Power Bldg. Traffic: W6ADB 160, GCS 2.

ROANOKE DIVISION

NORTH CAROLINA — SCM, B. Riley Fowler, W4RRH — SEC: ZG. PAM: DRC. Continuing from last month, the Emergency Coordinators are as follows: District 17, W. R. Miles, EZH, Route 5, Dunn, N. C., Johnson, Harnett and Sampson Counties; District 18, W. J. Yarborough, VTP, Route 4, Fayetteville, N. C., Cumberland, Hoke and Scotland Counties; District 19, B. L. Hinnant, RJ, Whiteville, N. C., Bladen, Columbus and Robeson Counties; District 20, E. C. Dobson, VWM, 2215 Plaza Drive, Wilming on, N. C., New Hanover and Brunswick Counties; District 21, Benford Rhodes, RKW, 126 Elizabeth St., Jacksonville, N. C., Duplin, Onslow and Pender Counties; District 22, D. B. Trueblood, ESB, 911 N. Rudolph, Goldsboro, N. C., Greene, Lenoir and Wayne Counties; District 23, Burnice Warren, TLA, Englewood, Rocky Mount, N. C., Edgecombe, Nash and Wilson Counties; District 24, Boyd S. Miner, 9QNI/4, Route 2, Roanoke Rapids, N. C., Halifax, Northampton and Warren Counties; District 25, Bobby E. Sherrill, WCG, Box 263, Williamston, N. C., Bertie Gates, Hertford and Martin Counties; District 26, Sam Brodsky, JZQ, Box 602, Elizabeth City, N. C., Camden, Chowan, Currituck, Pasquotank and Perquimans Counties; District 27, No EC, Bare, Hyde, Tyrrell and Washington Counties; District 28, Jim Hackney, K4AJR, 405 North Market St., Washington, N. C., Beufort, Pamlico and Pitt; District 29, Al W. Parker, BAW, 227 S. Front St., New Bern, N. C., Carteret, Craven and Jones Counties. Please communicate with these men.

SOUTH CAROLINA — SCM, Bryson L. McGraw, W4HMG — CAL and his XYL ZQS report many fine QSOs during a long trip to Maine and return with their custom Elmac. GRB will be active at Myrtle Beach for the next six months. ØNVW/ex4 reports hearing FB South Carolina signals in Minnesota. New ECs are YLT, IPJ, BNN and CAL. The Rock Hill Hamfest was attended by over 300 with fine talks by GQV, FFH, SOF and MWH. There is plenty of 2-meter activity in the Aiken Area with AIB, AYD, ABF, ISS, EQD and KYN on a 144.9- and 145.8-Mc. nightly net at 2000 hours. The Edisto Radio Club reports good progress toward c.d. and is having fine programs toward this end with many good speakers at its regular monthly meetings at Williston. Congrats to DSK and his progressive club activities. The Palmetto Club is happy over its 183-NC receiver along with a Viking, club house and shiny new antenna poles with fine signals from MN. Thanks to the quick actions of DNR, AVU, TYS and GAT an illegal kw. was quickly silenced on 3930 kc. The fixed stations and only one mobile did the trick in almost minutes. Thanks to NTO for his accurate bearing that stopped another cold unmodulated carrier. (The bearing was accurate within 3 degrees) VJI is proud of a new shack to house his kw. EGI is working tirelessly toward progress as president of the Palmetto Club of Columbia with plenty of help from all members. Congrats to NJG on his idea via the *Bulletin*. SOF, our SEC, is most active with the State Association of Rescue Teams. The Rock Hill Club's bus is being displayed at the club's hamfest with much interest being shown by all attending. DO YOUR PART BY JOINING THE AREC. Traffic: W4ZIZ 178, K2DFR 13.

VIRGINIA — SCM, John Carl Morgan, W4KX — The Shenandoah Valley ARC had mobiles at all remote polling places on Election Night to expedite reporting totals to local radio and press. The Potomac Valley RC now meets the 1st and 3rd Mon. AAD reports the Peninsula ARC is back in operation. K4EZL reports formation of a radio club at Fairfax HS. EC TNQ says the Fairfax RACES plan has been approved. OWV came down from the mountain top to become studio supervisor for WSVA-TV. K4AVW is the new WSVA-TV transmitter chief. IWW now is chief engr. at WJMA, Orange. Welcome to YL 3MSU/4, now in Arlington. K4AET plans to keep contact with his son 3DAD, now in ET2-Land. KFC reports that DL4QR is looking for a Virginia QTH and that CXA visited SP hams recently in Poland. Vic still is putting up antennas at the new Clifton QTH. TFX finally received his DXCC certificate. VFN seems to be thriving on the new procedure instituted by K4AET, who says the net now is operating with greater snap and much earlier QNFs. VN and VSN also are in a most healthy condition, but we still need volunteers to take NCS on 4RN on Mon. which are assigned to Virginia. KX may be forced to sign "/MM" if there are many more cloudbursts like the one in early November. Operating in the basement shack was an amphibious proposition. Traffic: (Oct.) W4NTR 515, IA 215, QDY 140, KX 75, K4AET 59, ASU 48, W4AAD 40, CFV 35, K4BYS 31, W4LW 26, CVO 24, BZE 19, FKP 18, K4EAQ 12, W4ZM 12, WYC 11, K4BUI 9, W4WC 8, WBC 7, K4DBC 6, JLO 6, W4OWV 6, W4KFC 5, AQA 4, K4EAS 4, W4BRF 1. (Sept.) K4AET 418.

WEST VIRGINIA — SCM, Albert H. Hix, W8PQQ — SEC: GEP. PAM: FGL. RMs: DFC, GBF and HZA. IRN has a new kw. on all bands. WHQ has a new beam and is working lots of DX. CLX has new Telrex three-element stacked beams on 10, 15 and 20 meters on a 60-ft. tower.

(*Continued on page 104*)

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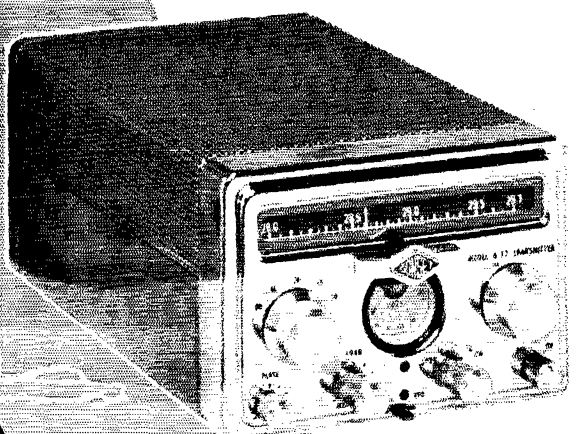

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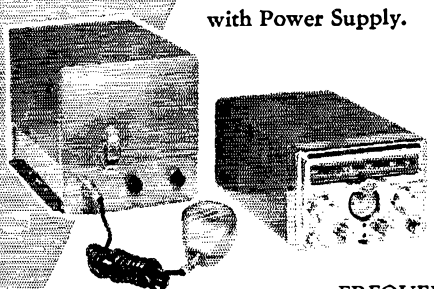

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GBF and K8CSG did a good job in the last Frequency Measurement Test. CSG has a new 10-meter beam and has worked several countries lately. IWB is on in New Jersey as portable 2 and is looking for West Virginia stations on the various bands. CHP has a new 813 final on s.s.b. and c.w. EOJ has a new kw. s.s.b. rig. PJI is a new ORS and is doing a bang-up job on WVN. New officers of the MARA are GBF, pres.; PZT, secy.; QR, secy.-treas.; and GAD, act. mgr. UYR has a new antenna and is working out well with it. Let's hope that KXD will be back in the swing of things soon after his heart operation. We wish you a speedy recovery, Alvin. SNP is on all bands with a new rig. KWL has been operating from his camp in Maryland. He also has a 10-meter mobile rig and is working lots of DX with it. Recently through his efforts a ship was saved from possible severe damage or sinking on Lake Erie. Paul originated a QRR which brought a Coast Guard ship to the rescue. KBT is doing an efficient job as OO and is near the 100 country mark for DXCC with his p.p. 4-250A transmitter and 75A-2 receiver. NYH made 10,750 points in the recent CD Party. GIU is on mobile and is putting up a new 80-meter doublet. AXU passed the Conditional Class exam. Traffic: W8PBO 73, HZA 67, PZT 58, KXD 35, BWK 16, NYH 14, SNP 14, PQQ 3.

ROCKY MOUNTAIN DIVISION

COLORADO — SCM, James B. Simpson, WØHEM — Asst. SCM: Bill Haskin, KØCEN. HEM still is on the sick list. He is improving but will be inactive for awhile. KØCEN sure appreciates all the help from everyone, especially KQD and NIT. DGP will leave the Hi Noon Net and will be missed as NCS. Anyone who would like to be NCS on the Hi Noon Net, speak up; you are sorely needed. KQD will take Mon., Wed. and Sat. sessions. The CSSN is back on the air after vacations. How about you fellows who need slow-speed practice checking in? The net meets on 3570 kc. at 1800 MST Mon. through Fri. KØBCQ is doing an FB job on the WX Net. Keep up the good work, Carolyn. IA is going s.s.b. with a 20A and a GG Linear with more soup. The LAD 6-Meter Net meets every Sat. at 2100 MST at 50.1 Mc. You 6-meter lads in the Denver Area, take note. KØCEN visited the Lamar Radio Club and met with NVX, TDG, WPY, WTN, WPX, NVY and KØDWZ. The welcome was wonderful. A finer bunch couldn't be found. Congrats to KØDWZ, Fred Betz, on winning his political campaign. We would like to have all the clubs in Colorado submit a membership list so that we can compile a club and membership roster. Send in your station activity reports with news for this column. Traffic: WØKQD 452, IA 318, KØBCQ 258, WØTVR 200, TVI 53, DGP 38, EKQ 37, AGU 25, WBB 23, HOP 13.

UTAH — SCM, James L. Dixon, W7LQE — CTI is using a BC-610, a Super-Pro and a Windom antenna and is teaching a radio class. YPC has a new SX-28A and is rebuilding to 60 watts to a pair of 807s cathode modulated. K6LDF has moved to Utah. LQE and DCX have discontinued the MARS class because of QRM from other activities. OCX is the new Utah MARS director, and LQE is the new MARS NCS on 3289 kc. Mon. nights at 6 P.M. MST. QDJ has renewed his OES appointment. PKB has a Viking I with VFO, two Windom antennas and a BC-348R receiver. He has just received his WAS and Old Timer's Club certificates. WN7DFB has an HT-17 rig and an RU-16 receiver on 80 and 40 meters. WN7DUG has 75 watts to an 807, an SX-28 receiver and a 40-meter doublet. K7FDA, the club station of Brigham Young University, is using a 32V-2 and a 75A-2 and an 80-meter doublet. VSS has 34 confirmed for WAS. Traffic: W7QWH 1.

WYOMING — Acting SCM, James A. Masterson, W7PSO — Wyoming hams were saddened by the death of Wallace J. Ritter, W7PKX, in late October. Wally, SCM of Wyoming for the past three years, was very active in League activities and will be missed by all who knew him. The Pony Express Net meets Sun. at 0830 on 3920 kc. with NVI as acting net control. The YO Net meets Mon., Wed. and Fri. at 1830 on 3610 kc., DXV and NMW net controls. The Cheyenne Club, with a new Viking II and NC-300, is incorporating. The Casper Club, sporting a new Millen Grid Dipper and RF Bridge, is sponsoring theory classes by VFV. LKQ, QNS/7, ACG/7, BHH, VTB, BXS, UFB, AMU, VNJ, and local and state officials participated in a simulated blizzard isolating parts of Wyoming during the recent ARRL emergency test. Wyoming hams should be thinking about the license plate bill for the coming biennial session of the State Legislature. S.s.b. signals heard around the State now include YKR, ZOS, KPZ, NVX and KFV. New novices WN7EIS, ERP and ERQ, all age 12, are working under the supervision of HYW. TZH is now ØHZZ. IDO issued Wyoming YL QSOs in the YLRL Contest.

SOUTHEASTERN DIVISION

ALABAMA — SCM, Joe A. Shannon, W4MI — SEC: W4TKL. RM: KIX. PAM: K4AOZ. October was a good month with traffic totals well above previous months, participation in various activities showing a marked increase and club projects on the upswing. AENB reports the highest traffic total of any October in five years! The annual picnic at Chewacla Park was well attended and VIY walked off with the top prize, a DX-100. The Auburn Club has new code and theory classes under way and has installed message boxes around the API campus for collection of student traffic. The Gadsden Club has its station going. The club now owns a Viking II CDC and a 183. New Gadsden Club officers are YPC, pres.; K4AJK, vice-pres.; K4CWX, secy.-treas.; KN4KQH, act. mgr. The Mobile Club turned out for "Flossy" with good representation and organization. The mobileers in Mobile now hold regular transmitter hunts and FBZ won the all-time booby prize by driving 64 miles during one hunt! DOL has a 2-meter 32-element array up 57 feet. RCK is working with the Calvert scout troop on code and theory. WHW has a new bandswitching exciter kicking an 813. K4HMQ has gone Navy. ZSQ, Jefferson County EC, has organized a local net, AENJ, which meets weekly. He has a new tri-band beam and Gonset mobile receiver. BJI has a base-loaded vertical and reports the Huntsville TVI committee is getting some business! Traffic: W4RLG 296, K4BRS 240, W4KIX 223, K4AOZ 184, W4HON 125, K4ANB 117, W4USM 102, YRO 76, ATK 61, EJZ 52, RYY 50, WHW 35, ZSQ 35, K4ACO 33, W4EWB 24, CIU 22, BJL 18, DGH 18, ZUP 17, CRY 15, GUV 15, BMM 12, K4DDC 11, W4WAZ 11, TOI 10, K4EOG 9, APF 7, W4RTQ 7, W4TKL 6, K4AAQ 5, W4SXS 4, K4CTC 2, W4HHG 2. (Sept.) W4COU 351, EJZ 32, K4GVW 6, W4SXS 1.

EASTERN FLORIDA — Acting SCM, Andrew C. Clark, W4IYT — Asst. SCM: John F. Porter, 4KGJ. SEC: IYT. RM: LAP. FE has resigned as SCM because of business undertakings. Good luck! I am happy to fill his shoes until a new SCM is elected, so let's all get in our vote. NKD, Orange County EC, reported an excellent S.E.T. YJE, Dade EC, set up S.E.T. Hq. at K4IWT in the Red Cross Bldg. with BYG, EHW, YJE, IYT and K4AHW on 7210 kc. and 29 Mc. handling over 100 messages to the Red Cross, C. D. Headquarters and ARRL Headquarters. BWR reports a slight disaster on Melbourne Beach the day after the S.E.T. CCS is back on the air. SGY has a new 50-ft.-high 3.8-Mc. doublet. UFR/WPD are enjoying s.s.b. with a B&W 5100. PZT is QRL traffic on 75/40 Mc. New ECs are SXJ for Lake and PNS Acting EC for Glades. We need Union, Baker, Bradford, Citrus, Hardee, DeSoto and Martin for 100 per cent coverage. Any takers? If so, contact IYT for details. The Key West Radio Club was reorganized Oct. 25th with ZUT, pres.; K4DSI, vice-pres.; and C. Blanc, secy.-treas. LAP, RM/FN, requests that c.w. stations be on 3675 kc. at 1830 Mon.-Fri. The Ocala gang held a picnic with 30 present. AQJ has a new QTH on Summerland Key with a 62-ft. tower going up. GGQ/IYT enjoyed visits in Lakeland, Leesburg, Ocala and Key West on SEC trips. The Flamingo Net held another fine transmitter hunt. K4ANJ has a new jr. operator. PJU and his XYL returned after a more-than-10,000-mile vacation out West. The Brevard Amateur Radio Society, organized in October, meets in the GOC tower. KN4KXX has a new NC-300 and crank-up tower. KN4KEG is on with a Bandmaster. DDW and the AREC group handled loads of traffic during the flood in Kissimmee while lines were out. The SMRC now sponsors the C.G. unit of the Inter-County Net. RNV is back on 2 meters with high power. A swell time was had by all at the Leesburg Hamfest. Traffic: W4ZIR 163, PZT 146, LMT 93, K4IWT 83, AHW 63, W4AHZ 60, IYT 47, BWR 29, DFU 25, 1WM 24, PJU 20, KGJ 15, GGQ 4.

WESTERN FLORIDA — SCM, Edward J. Collins, W4MS/RE — SEC: HIZ. EC: MFY. RMs: AXP and BVE. BGG finally made WAC. K4ADY is looking at 6-meter gear. EQR has a new receiver. JPD has a new 10-20 Mosley up and is after DX. CDE has the finest emergency power set-up in the section. JLW was real proud when his antenna tree rode out "Flossy." NRX is fighting TVI. UUF has a sure cure when they let him know he is causing TVI. PAA has a new antenna and still calls "CQ DX." YUU is a guiding light in c.d. work over Tallahassee way. CHZ and BKV are active in c.d. work also. ACB is moving the tower and beams. GMS is having the Valiant wired. ZFL is studying antenna handbooks for bigger and better DX. ZPN is helping Novices as usual. K4EHI should have his General Class license when he reads this. CCY sold out the tin business. AXP is making a trip over to W5-Land and is building transistor gear. PQW is QRL transmitter hunts. FHQ works the rig when his job permits. YES is enjoying the DX-100. HBK still knocks off the DX with a DX-35. K4ECP is going mobile 6 meters. KN4IYQ is awaiting his Technician Class license. K4IVE is working toward his General Class license. UYS has returned to Ga. Tech. K4AGM wants 6-meter walkie-talkie. PTK and TTM are very quiet in ham circles. DAO-DEF keeps the little rig hot on 75 meters. K4JDT is joining the Hurricane Net. FRQ reports excellent results with the new club in Panama City. The Mine Defense Laboratory Amateur Radio Club has TJQ as pres.; IFY vice-pres.; FRQ, secy. IDX is doing FB work. K4DKG/4 has another new beam for 10, 15 and 20 meters and reports he will be operating from W3-Land for the next three months. UCY is enjoying 10 meters and fixing up the 6-meter gear. JLW is experimenting with verticals. How about more reports, gang. Happy New Year. Traffic: K4DKG/4 81, W4JLW 7.

GEORGIA — SCM, William F. Kennedy, W4CFJ — SEC: K4AUM. PAMs: LXE and ACH. RM: PIM. GCEN

(*Continued on page 106*)

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meets on 3995 kc. at 1830 EST on Tue. and Thurs. 0800 EST on Sun.; ATLCW on 7150 kc. at 2100 EST Sun.; GSN Mon. through Fri. at 1900 EST on 3595 kc.; PIM as NC: the 75-Meter Phone Mobile Net each Sun. at 1330 EST on 3995 kc., UUH as NC; the 10-Meter Mobile Net each Sun. at 2200 EST on 29.6 Mc., VHW as NC. We are sorry to add the names and calls of two more fine amateurs to the Silent Keys, BOI and AHM. KA2MR worked YEK, her first Georgia contact during the YLRL Contest. Nita worked her on 10 meters. Marsha is the only woman ham in Japan. K4INN, while in Atlanta on business, visited quite a few hams. Geneva, his XYL, is waiting for her Novice call. LNG has just finished a new 144-Mc. exciter with a 5894 tube for a driver and plans to use 4-125s for a final. PIM has a 5-watt mobile. He is an Asst. EC. The Brunswick, Ga., Radio Club has produced two new Novices. GCU now has a 1500-watt emergency unit. DME soon will move to a new antenna farm. The Tifton Amateur Radio Club has a booth in the Tifton County Costal Plains Fair. The club has a Heath DX-35, a VFO and a Globe Trotter and an S-20R receiver. New hams in Tifton are KN4LAX and KN4LDE. New officers elected at the November meeting of the Atlanta Radio Club are FYH, pres.; ZML, vice-pres.; NWK, treas.; K4DNH, act. mgr.; LDD secy. K4JNG has moved from Chattsworth to Rome. He has ordered an E-Z Way Tower and soon will be back in business with the beam as well as mobile. IKK still is sending in wonderful experimental reports on u.h.f. and v.h.f. K4CFO hasn't much time for ham work in his senior year in high school. Happy New Year to all. Traffic: W4PIM 197, DDY 109, K4CZQ 69, BGB 64, W4PBK 31, K4AUM 24, W4ZD 21, CFJ 20, FYH 20, K4HOU 3, W4BXV 1, K4CFN 1.

WEST INDIES — SCM, William Werner, KP4DJ — SEC: HZ. ZW renewed his ORS appointment. ABN, using a TBS-50 and a three-element beam, worked PZ1AZ, LU3EX, LU4DFN and LU8AE on 50 Mc. AAB is working LUs on 50 Mc. with 100 watts but has TVI trouble. KD now has 102 countries since getting a Viking II and has added PJ2ME and ZD8SC for DXCC 219. KD worked LX1AS, OY7ML, VK9XK, VQ5GC and ST2NG on 21 Mc. since September. VP7NG is now KP4AGR, W5LWU is KP4WLU, W5HJI is KP4AHG and WP4ACS now signs KP4ACS/W4. KP4AEO and her OM KP4ZA left KP4-Land in November. KP4YX is now K6TSO. The Ramey AFB Radio Club offers a certificate for working 10 member stations. ACF is active on 15 and 75 meters with a Globe Scout from the new QTH in Villa Nevaras. FI left for Cincinnati to get a Master's Degree and also to work for G.E. there. NY is on 21 Mc. with a three-element beam and Globe King 500. KD, JE and UH were heard in the recent DX Contest. AAA/mobile is working fine on 3925 kc. KD is installing a sequential keying kit in the Viking II. MQ is back on 3925 kc. since he fixed his HRO receiver. ZC works DX on all bands including 75-meter phone. ZT is a new station active on 3925 kc. with a Viking II from Los Angeles Development near the International Airport. W6SIF/KP4 has acquired a Viking II and VFO and is active on 10 and 15 meters.

CANAL ZONE — SCM, P. A. White, KZ5WA — The Canal Zone AREC had a good workout during October with the S.E.T. and two civil defense drills. Those known to have been active are AC, AP, BK, BW, EP, FL, JJ, KA, NM, QA, MJ, RM, RV and VR. For the Pacific side c.d. drill four mobiles and three portables were used. These were ba ked up with two fixed stations. On the Atlantic side two mobiles and three portables were used and no fixed stations. We had another visit from HC8GI, who gave a very interesting talk at our last club meeting. GF finally got two of his three beams back in the air. VR and FA teamed up with KH6AGB and W4AFB to run a double simultaneous phone patch. BE tells us that TXN is contemplating a change in operating frequency because of BC QRM. New appointments: RV as SEC, BE as RM, RM as PAM and PP as EC. Traffic KZ5VR 100, RM 19, BE 11.

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, William J. Schuch, W6CMN — Asst. SCM: Albert F. Hill, jr., 6JQB. SEC: LIP. RMs: BHG, TDO and GJP. PAMs: MEP, PIB and K6BWD. K6OZJ now is on 6 meters permanently. K6SSM is leaving for the East. MEP and K6TRL QSO 150 miles over an 11,000-ft. high mountain on 144 Mc. Traffic is picking up. The SCN gang all turned in good counts. K6LVL celebrated his 16th birthday with a big traffic count. K6COP has gone c.w. traffic. INH is QRL as NCS on SCN. K6MON has a 829B 144-Mc. rig. The Pasadena Club meets the 2nd and 4th Fri. NTN is QRL the AREC and OBS skeds. K6EPY is active as NCS of the 2X4X5 Net. K6PLW is trying for WAS and has 44 QSLs now. CK is putting in a fancy kw. rig. WT is back on the air. K6EIA has a new tower. K6LMW is active as OO and is all-band. K6PXA is QRL the county C.D. Net. NJU has new beams on 10 and 15 meters and made a high score in the DX test as multi-operator. K6BTJ is QRL school. K6ELX has a new QTH. LVQ is very QRL the AREC and c.d. K6EPY has a new tower and 28-Mc. beam. KYV is back on the air after a long illness. Welcome back. GYH is working heavy traffic skeds

(Continued on page 108)

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This completely new receiver includes many deluxe features usually found only in higher priced models. It provides injection control of the beat frequency oscillator. Particularly useful for CW and SSB reception.

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Controls include: Dual-speed tuning, AF gain, BFO pitch, BFO injection, antenna trimmer, calibration adjust, band selector, RF gain on-off, function switch, 3-position receive—standby—transmit switch, 4-position crystal selectivity control, crystal phasing-rejector control, ANL. Size: 10 in. high, 16½ in. wide, 10 in. deep. Finished in attractive instrument-gray. 117 volts, 50-60 cycle AC.

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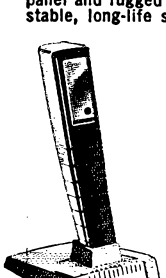

E-V 927

The E-V 927 is destined to make history in ham radio. It has high level, is modern in appearance, is easy to hold or mounts firmly in its own stand. Typical of all E-V microphones, the curve is flat for highest articulation through QRM and QRN. Peak free, all the voice power goes into the antenna. 100% modulation becomes a reality not at a peak value only. If you are thinking of a new *mike in the popular price class, be sure to thoroughly investigate the advantages of the 927.*

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on MARS and TXN. K6FCY is back with a big traffic count. K6MYK is a new repeater for the 2X4X6 Net. Long Beach has a crack C.D. Net. K6GY now is mobile. K6QQC is working lots of DX on 15 meters. UKC is on 75-meter phone. CMN and the jr. operator are QRL building a model railroad. Traffic: (Oct.) K6FCY 920, W6GYH 667, DDE 528, KN6OZJ 405, W6BHG 251, K6SSM 202, W6ORS 114, HJY 110, TDO 103, K6LVL 79, W6GJP 66, K6GUZ 64, COP 52, W6INH 42, K6MON 39, W6NTN 35, K6EPY 30, PLW 18, W6USY 17, MEP 16, K6HOV 15, W6CK 14, WT 12, CMN 11, K6EIA 11, LMW 6, BEQ 2, PXA 2. (Sept.) W6DDE 1054, ORS 100, K6GUZ 52, W6CK 14.

ARIZONA — SCM, Cameron A. Allen, W7OIF — Asst. SCM: Fred W. Wilgus, 7LJN. SEC: YWF, PAM AEN 3865; ASI. PAM Grand Canyon Net 7210: LUJ. A nice letter was received from AMN, who is now in Italy. He says to tell all the gang "Hello" and extends Season's Greetings. He has not been able to get on the air as yet. WUC rebuilt for the SS. The S.E.T. went off very well even though YWF had very little time to prepare for it. The Phoenix V.H.F. Radio Club had its station on 40 meters at Red Cross Headquarters and was in direct contact with 6CXO. The AEN, on 3865 kc., was in operation to handle traffic around the State and also was in direct contact with 6CXO. The AREC members in Tucson put on their own program for that area. EBI is a new member of the board of the Arizona Amateur Radio Club. DRI is a new EC for the Phoenix Area. New calls in the Phoenix Area are WN7FSA and WN7FRV, Bill and Virginia Strickland. Traffic: W7NFL 25, OIF 16.

SAN DIEGO — SCM, Don Stansifer, W6LRU — Appointments in force in this section are as follows: Asst. SCM: Thomas H. Wells, 6EWU. SEC: VFT. ECs: BAO, HFQ, IRI, KBT, KSI, KVB, KUU, UGM and WYA. OBSs: K6BPI, DBG, W6s JVA, LRU, MUJ, OZO, UGM and WYA. OESs: K6BTO, W6LWT and WNN. OOs: SK, BKZ, CAE, CRT, LRU, MCY, UGM, WNN, K6EC, GHM and IPV. OPS: CHV. ORSs: HU, BAM, ELQ, CRT, EOT and 4UOA/6. WNN is now the temporary chairman of the TVI committee for San Diego. A new member of the YLRL is KN6RDV. New officers of the Rohr Club are K6HLO, pres.; K6LKY, vice-pres.; and KN6OYO, secy.-treas. New officers of the San Diego Council of Amateur Radio Organizations for 1957 are KBT, chairman; LRU, vice-chairman; K6IPV, secy. and K6PFP, treas. New officers of the Helix Club are VFT, pres.; LRU, vice-pres.; and K6ICT, secy.-treas. The Aztec Club at State College now has MIT as pres. and K6PGO as vice-pres. SYC is now out of the Air Corps and on 6 meters in Santa Ana. JVA is up to 81 countries. KYG is active from Poway chasing DX. K6RWM has a new three-element 28-Mc. beam. K6PGO is building an all-band 813 final rig. K6BTO, OWV, PFP, W6HTJ and LWT are all active on 420 Mc. EOT, in Lakeside, is now an ORS. The Helix 25th anniversary meeting held in December was a huge success with over 60 members, past-members and wives attending. The new officers for '57 were installed and past activities discussed. Old Field Day pictures were shown. Sorry to report that OAJ has been confined to the hospital again. Speedy recovery, Ken. Holiday wishes, and good hunting in '57. Traffic: W6IAB 2712, EOT 445, K6DBG 68, W6LYF 44, K6LXL 41, W6KVB 10, JVA 3.

SANTA BARBARA — SCM, William B. Farwell, W6QIW — Asst. SCM: Betty Wilson, 6REF. SEC: K6CVR. ECs: ENR, San Luis Obispo; PWK, Lompoc; K6EGQ, Santa Barbara; KCD, Oxnard. W6JXT, Santa Barbara, is a Silent Key. K6LXW is a new father. KN6UGD is vacationing in New Mexico. ORW has put up two new 40-ft. poles for his antenna and is keeping weekly skeds with his father, 7SPB, in Eugene, Ore. The first meeting of the new Atascadero Amateur Radio Club was held Oct. 15th. Officers are KSW, pres.; K6GVH, secy. There are nine active members of the club. Good luck to the AARC. K6CVR is doing an FB job as SEC and has visited with the ECs of San Luis Obispo, Lompoc and Santa Barbara. San Luis has 60 mobiles available and nets operating on 3.655 and 3.820 Mc. Santa Barbara had a surprise AREC drill Oct. 15th. Chain phone calls were used and 10 mobiles were in motion within 10 minutes. Traffic: W6REF 162, QIW 150, KLR 23, FYW 6.

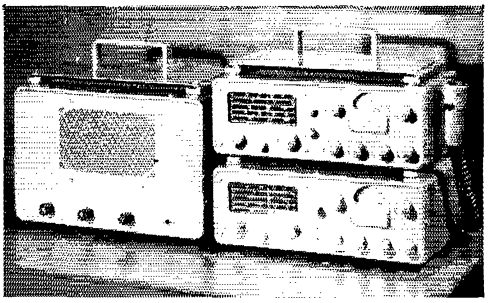
WEST GULF DIVISION

NORTHERN TEXAS — SCM, Ray A. Thacker, W5TFP — SEC: PYI. PAMS: YKT and IWQ. RM: KPB. The Dallas ARC is now the proud owner of an AF-67. ZTG is firmly indoctrinated at Texas Tech. AWT is now a tax-payer at Monahans with a new shack in the offing for next spring. KN5IBB is a new Novice at Regency. GHU reports Mineral Wells High School has a radio club. COF is underway with his schedule as OBS. SCT, SHL, GET, HRQ, KBP, FYL and BOV mobiles directed the parade at the Annual Oil Show in Odessa, with HCE and DRS at he control station. That is mighty fine publicity for the hobby. DRS is "bustin" the ether with a new Valiant. KPB and YKT reports for NTX and NTO indicate a steady increase in the flow of traffic. These two gentlemen are doing an

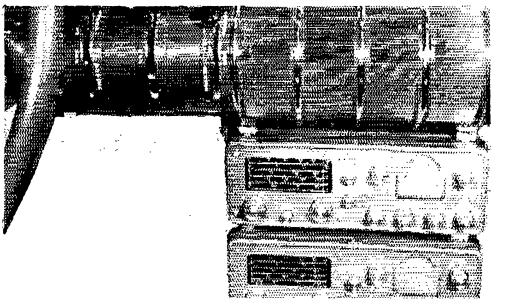
(Continued on page 110)

MATCHED, TRIPLE DUTY, HIGH PERFORMANCE HAM GEAR

FIXED

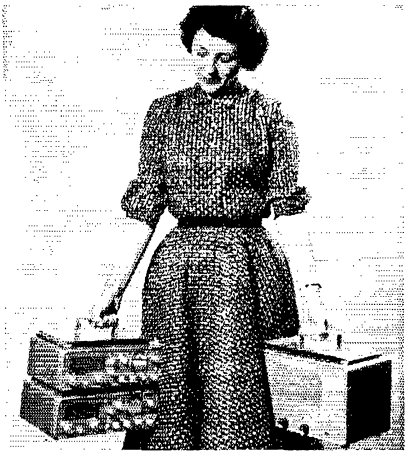


MOBILE



Have more fun with ham radio with a triple-duty rig — at home, away from home or enroute, use the same equipment. MORROW'S MBR-5 receiver and MB-560-A transmitter are always ready. With permanently mounted DC power supplies you are mobile in a jiffy. With the RTS-600 AC power supply, you are portable or fixed station.

PORTABLE



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****RTS-600**	AC power supply.
***MK-N1**	Push-to-talk mike.
****AC cables**	Interconnecting cables for AC operation.
*****DC cables**	Interconnecting cables for mobile.
*****RVP-250**	Receiver and exciter vibrator power supply.
*****TV-600**	High voltage vibrator power supply for transmitter.

* Use for fixed station, portable and mobile.
** Necessary for fixed station and portable.
*** Necessary for mobile.

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outstanding job of net management. Thanks, from all concerned! AF MARS membership continues to grow in this section. VEZ is not drilling for oil in his yard — that's the new 2-meter beam "roost." Twelve-year-old K5DQY is heard on 3995 kc. in Dallas. His Dad is PZA. The Caravan Club in Dallas is sponsoring a "Mobile DX" Contest for members. BKH still is doing a terrific job as OO. The v.h.f. gang will be missing SWV. He's bound for an overseas tour with the USAF. He's taking a 6-meter beam to the Pacific! You might listen around, fellows! Sure would appreciate hearing from more of you with information for this column. Thanks! Traffic: K5FFB 741, W5DTA/5 600, KPB 188, SMK 135, BKH 74, K5EMR 72, W5YKT 59, TFP 44, K5BKH 40, W5PCN 30, ASA 28, CF 27, AYX 22, FCX 17, FYL 9, GHU 3, COF 2.

OKLAHOMA — SCM, Ewing Canaday, W5GIQ — Asst. SCM: James R. Booker, 5ADC. SEC: LXH. PAM: MFX. RM: JXM. Oklahoma was well represented in the Simulated Emergency Tests. Clubs and county AREC groups in all sections of the State set up emergency equipment and rolled out mobiles to demonstrate their ability to cope with any situation. The Duncan Club, working with Boy Scouts and CAP, handled welfare traffic with "walkie-talkies" direct from hospital rooms. Our new Sooner Traffic Net is off to a good start with an average of sixteen stations checking in the first two weeks. Traffic averaged three messages per session. The frequency is 3850 kc. at 1800, Mon. through Sat. Business is picking up on OLZ with 238 check-ins in October and 161 messages handled. We welcome new stations on 3682.5 at 1900, Mon. through Sat. Our new c.w. training net is growing. The frequency is the same as OLZ, time 2200, Mon., Wed. and Fri. Code speed is held under 15 w.p.m. A new club has been organized at Norman with QHU, pres.; FIH, vice-pres.; JSD, secy.; YJI, act. chairman. Cecil, ex-PML, now is operating on 10 and 15 meters out of DL4-Land and making regular contacts back home in Oklahoma. If you like DX traffic we suggest MACAN on 21.4 Mc. at 1200 noon daily. Traffic: K5AOV 504, DUJ 136, W5GIQ 111, MRK 101, JXM 89, K5CAY 80, W5DRZ 61, K5HZF 46, W5FEC 44, CCK 31, MFX 30, ADC 21, K5AUX 20, CVU 19, W5PNG 18, WEI 18, YJI 9, K5CBA 8, W5MQI 8, UCT 8, GOL 6.

SOUTHERN TEXAS — Acting SCM, Roy K. Eggleston, W5QEM — OP has a new Elmac, CQI has a new PMR7 receiver and new air-conditioned station wagon to put it in, FBI has a new 20-meter beam, YES has a new daughter, TWX is in Austin attending the University of Texas. EDZ has a new Olds; DKK has a new Chevvy. AQN has a new HRO-60. KN5CHE is now K5CHE. KN5GCK is waiting for a new ticket. CIU has a new 10-meter beam. MK, from Formosa is visiting in Houston. VHR was the winner of the 1955 VK-ZL International DX Contest with 92 contacts. The Corpus Christi Amateur Radio Club participated in the S.E.T. on Oct. 14th. Those taking part were LOW, UUB, MSA, DQQ, INN, BRZ, SIL, FNT, QKF, EV, HQR, CRO, PMT, DSY, AQK, MX, SYS, HUA, IKA, YCV, GPV, RRJ, ZN, EYL, QEM, K5BOX and KN5-EWK. Representatives were present from the Red Cross, civil defense, and Coast Guard. The San Antonio Amateur Radio Club furnished communications for the sports car race from New Braunfels to San Antonio. K5GEM is the new ORS in Houston. You fellows in Houston, feed him your traffic. Traffic: K5GEM 13.

NEW MEXICO — SCM, Einar H. Morterud, W5FPB — RM: RKS. PAM: DVA. The NMIEPN meets on 3838 kc. Tue. and Thur. at 1800 MST. Sun. at 0730; the NM Breakfast Club meets on 3838 kc. daily except Sun. at 0700. It is with regret that we list UP and QR among Silent Keys. K5FHU made BPL for September and is net control of the Cactus Net on 7250 kc. The Alamogordo ARC had a van at the Otero County Fair. KWP has been running tests on the new 50-Mc. antenna. CIN was injured in an auto accident. The Totah ARC enjoyed movies at the home of SB. The Santa Fe ARC held a simulated emergency test. The Hobbs ARC held a meeting at the home of UIV and saw color movies of Field Day. FTP has worked 80 countries, and DAU 20. NQG is trying to organize a local emergency net on 2 meters. SUP moved to Midland. New officers of the Albuquerque Chapter of the ARCCNM are UWA, caravan master; LEF, asst. caravan master; GWJ, secy.; K5GFO, program director; K5DHZ, asst. program director. Traffic: (Oct.) K5FIQ 49, W5ZU 46, UAR 26, K5DAA 20, W5CIN 16, DVA 6, LEF 4, WNU 4, BIH 2, FPB 1. (Sept.) K5FHU 557, W5DVA 76.

CANADIAN DIVISION

MARITIME — SCM, D. E. Weeks, VE1WB — Asst. SCM: Aaron Solomon, 1OC. FH has accepted the SEC appointment. Leo certainly will welcome your assistance in this important post. W3LEZ/VE1 worked 450 stations in 17 countries while vacationing in P.E.I. ABZ, TA and FS are now operating s.s.b. Congrats and best wishes to ZM and his XYL on their recent marriage. OM has a new antenna on 28 Mc. Newly-elected club officers are: Dartmouth — OC, pres.; Gordon Keddy, vice-pres.; ADA, secy.; MR, treas. Yarmouth — DW, pres.; UN, vice-pres.; BN, secy.; ACE, treas. WL, DB and PQ are heeding the call of

(Continued on page 112)

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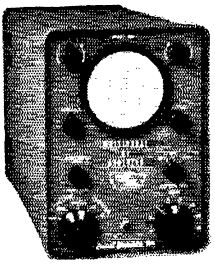

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Wired. . 129.50

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- The MM-1 provides: SPEECH ENVELOPE patterns without annoying 60 cycle double trace.
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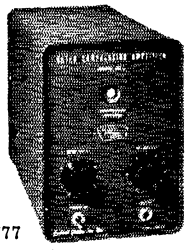
- DOUBLE TRAPEZOID OR BOW TIE patterns for analysis of LOW LEVEL LINEAR AM systems.
- RF TRAPEZOID for determining linear amplifier "LINEARITY" by sampling input and output signals.

NEW MULTIPHASE MODEL GC-1

Gated Compression Amplifier *



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Model AQ- Q Multiplier for Model A Slicer	$ 29.50	Kit	$ 22.50
Model DQ- Desk Model Q Multiplier	$ 29.50	Kit	$ 22.50
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the alarm clock to work 20-meter DX in the early morning hours. The Simulated Emergency Test found the Cape Breton Emergency Net in operation for a 24-hour period. HJ has been heard on 75-meter phone. GL and ABF are active on 20 meters. AAN is now located at Fall River and operates on 80 meters. W4ZUS/VO2 reports the formation of the Argentia Radio Club with 35 members and

THIRD ANNUAL VE1 CONTEST

January 26-27, 1957

All VE1 amateurs are invited to participate in a contest sponsored by the New Brunswick Amateur Radio Association. The highest-scoring contestant will be given an engraved cup, the New Brunswick Amateur Radio Association Trophy, and will have permanent possession of same.

Rules: 1) The contest will begin at 8:00 P.M. AST, Saturday, Jan. 26th and end at 8:00 P.M. AST Sunday, Jan. 27th. 2) Any and all amateur bands may be used. Phone-to-c.w., phone, c.w. and cross-band contacts are permitted. 3) The same station may be counted but once for credit, regardless of band worked. Mobile, portable and home stations covered by the same station license constitute the same station. 4) The general call will be CQ VE1. 5) Exchange signal report, county and province and operator's name. Local QTH is not required. 6) Logs should show band, signal reports, county, province, time and date. 7) Score one point for information received and one for information sent. Multiply total points by the number of individual counties worked in the three provinces concerned, to determine final score. 8) Decisions of the contest committee will be final. Logs must be postmarked by Feb. 9th and should be in the hands of the committee not later than Feb. 16th. Send them to W. H. Smith, VE1FC, Contest Committee Chairman, 173 Broad Street, Saint John, N. B.

K3NAK/VO2 as the club station call. Don't forget the Third Annual VE1 Contest. Let's make it the busiest yet. Traffic: (Oct.) VE1FQ 100, PX 52, AV 49, FH 32, WK 25, ME 16, DB 14, UT 13, DK 7, ADH 6, AEB 4, PF 4, BN 2, ABT 1. (Sept.) VE1OM 6.

ONTARIO — SCM, Richard W. Roberts, VE3NG — The Niagara Peninsula Radio Club had a successful weiner roast at Beamsville. DNJ is heard on 7 Mc. CAU and AGU attended the V.H.F. Roundup at Syracuse. Trans-Canada Airways has over 200 hams in its Telecommunications Dept. BUR is active on 10-meter c.w. AJR still is at the cottage, and reports the only QRM is from passing boats. KM informs me that the recent S.E.T. was one of the best that Ontario has had. GI, who is an RM on the NTS, was a visitor to Toronto for the IRE Convention. The Hamilton Radio Club will incorporate in December. The Quinte Radio Club held a successful dinner in Picton. The guest speaker was the SCM, 6GC is now 3EHI at Belleville. DLC reports for the Sault St. Marie Area. Ten-meter activity is evident from all areas. The Sky-Wide Radio Club has elected the following officers: BCR, pres.; BHJ, vice-pres.; DXS, secy.; BJB, treas.; OR activities, QE, our QSL Mgr., advises that Russian QSLs are now arriving at the Bureau. There are many QSLs for VE3 operators that could be mailed out on the receipt of a stamped self-addressed envelope. QE also reports there is a bootlegger using his call. ABP is taking residence in W6-Land. CDP is with the Spartain Air Services and is working DX as portable 8. DNE has earned his WAVE Award. RE has moved from Ottawa to Toronto. We welcome Dr. Errol Cahoon, of Bloomfield, to the ranks of hamdom. His call is ELC. BV and ADD QSO mobile every A.M. The Ontario Phone Net now operates each evening Mon. through Sat. at 1900 on 3765 kc. The Metro Radio Club has 30 walkie-talkies available for emergency work. AGL has a Valiant on all bands. NF was a visitor to Picton for the Quinte Dinner. RW and AMT are mobile in the Belleville Area. BIK has a nice signal from Peterboro. Traffic: VE3BUR 112, NG 84, AML 62, AUU 61, NO 52, DPO 50, BOY 26, AJR 17.

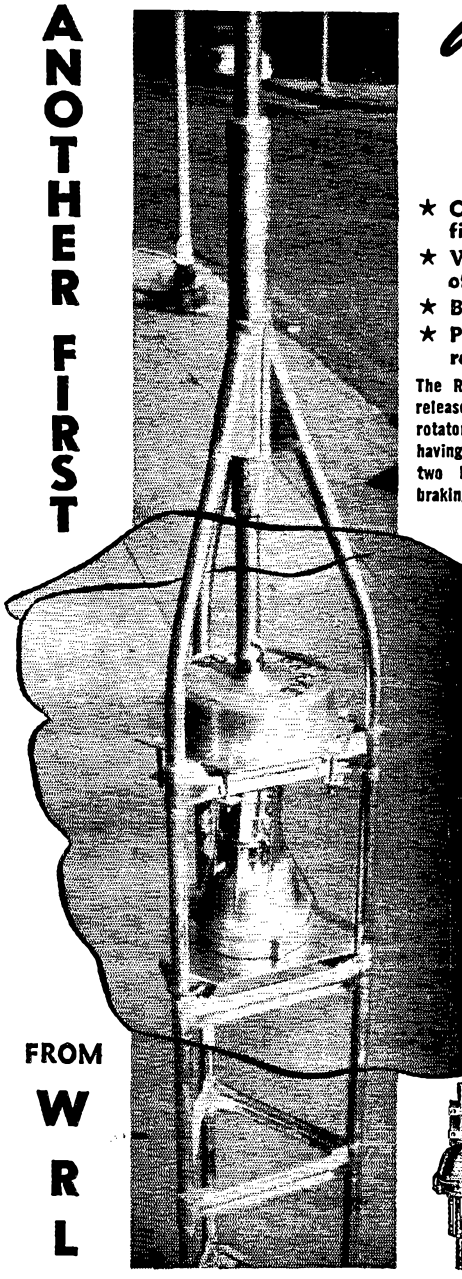
QUEBEC — SCM, Gordon A. Lynn, VE2GL — FL reports for the Muskeg Net, which is active at 1915 daily on 3750 kc. YU spent all his available time on the construction and erection of a 3-band beam and tower before good weather ran out and now is fairly active on 28 Mc. He has been working his father, G5OO, frequently. AJD reports good DX on 10 meters, and UB is heard consistently on 7:00 P.M. on the phone net. NK has a Viking Ranger on all bands with a TMC GPR receiver. ATL has an Adventurer 5OW and an SX-99, and is handling considerable traffic. Officers of the Radio Club de Quebec, Inc. are ALV, pres.; RU, vice-pres.; KI, secy.-treas.; PA, VB, ASD, AFC, AVV and AIV, directors. AAB has a TBS-50 with a Sonar receiver mobile, and a 150-watt all-band home-brew rig with a 75A-3 receiver at his home location. AIL has a

(*Continued on page 114*)

NOW...FOR THE FIRST TIME

An Efficient Brake At An Unbelievably Low Cost!

ANOTHER FIRST FROM WRL



WRL's Newly Perfected Roto Brake

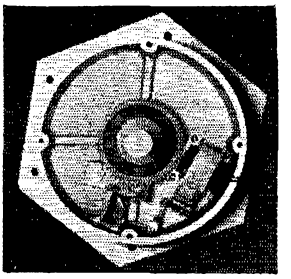
★ Converts any TV or other type rotator into the lowest-cost finest ham antenna rotating assembly available.

★ Will support 150 lbs. of antennas against 5000 inch.-lbs. of torque!

★ Brake is released automatically when rotator is energized.

★ Positive braking action prevents coasting and damage to rotator.

The RotoBrake is a spring-actuated, solenoid released braking unit, mounting between the rotator and antenna (in most cases without having to take antenna down). It performs two basic functions; — provides positive braking action and thrust and radial bearing surfaces to convert any TV or other type rotator to the finest ham antenna rotating assembly available.



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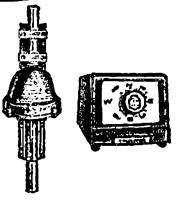
The RotoBrake acts firmly yet gently, providing positive braking action without damage to antenna or rotator, and protects rotator against damage by winds up to 100 mph., or maximum of 5000 in.-lbs. of torque, and eliminates all beam coasting. The whole principle of operation is so new, so different, we ask you to write for our new brochure, telling the entire story.



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Lettine 240 with a VFO and a Hallicrafters S40-A and works 20 and 80 meters. DR reports that PQN has now amalgamated with OSN on 3535 kc. at the same time, 7:15 P.M. Traffic: VE2DR 106, ATL 84, CP 24, EC 22, FL 11, GL 7.

ALBERTA — SCM, Sydney T. Jones, VE6MJ — PAM: OD. RM: XG. SX reports better signal reports since the installation of a Matchbox coupler. LV is having trouble with the TBS-50. The Central Alberta Radio Club at Lacombe has installed the following new officers: GM, pres.; MM, vice-pres.; PD, secy.; RP, treas.; JO publicity; ON, activities. NX still is leading the locals with DX contacts. KX is running a close second. HU has a new modulation meter. HM has returned from a most enjoyable trip to G-Land. EA has been attending a course in Eastern Canada and made a side trip to ARRL Headquarters. MJ visited the Lacombe Club in October. BL has qualified for a Section Net certificate. Nice going, Bill. Word has been received that the Calgary Club has undertaken to continue the publication of *RF*, formerly published by the gang at Lethbridge. Old subscriptions will be honored as soon as publication commences. WL says the Calgary gang did a fine job in the S.E.T. He was ably assisted by Asst. ECs WT, JK and OD. Traffic: VE6HM 150, OD 21, YE 9, MJ 6, SX 4.

BRITISH COLUMBIA — SCM, Peter M. McIntyre, VE7JT — SEC: JT. With apologies to the few who sent me reports this month they have been laid aside in order to write the following column. For many years there has been an amateur, not active as many have been on the amateur bands, but in another way just as active as the person heard on any band. The end result of a QSO is the exchange of a QSL card whether it be with a DX station or a fellow ham cross-town or cross-country. Many of these QSL cards do not go directly to the home QTH but to the QSL Manager of the district concerned. In the case of the cards coming to VE7s they go to HR, Ron Hough, at 1684 Freeman Street, Victoria. BE SURE TO ENCLOSE A SELF-ADDRESSED STAMPED ENVELOPE OF A SIZE TO ACCOMMODATE SEVERAL CARDS. EB will give a list of calls having cards at the bureau periodically on the BCAREC Net, Mon. through Sat. on 3755 kc. between 1800 and 1900 hours PST. Ron has gone quietly about his work as QSL Manager with no fanfare and probably little thanks for a time-consuming job. It would be a nice gesture on our part when we send the necessary envelope to Ron to include a note of thanks to let him know we appreciate the job he is doing. Knowing that Ron has carried on without any recognition we thought that through this column we would personally thank him and also try and help him clear some of his cards out of the files. Thanks, Ron!

SASKATCHEWAN — SCM, Harold R. Horn, VE5HR — MK was honored recently at Regina by a number of local OMs, XYLs and YLs at the home of LU, prior to his leaving for a new post with the D.O.T. Good luck, Bill. DM and ZZ are attending the University at Saskatoon. JQ and KK are new calls heard in Regina. WH has moved to Regina. Thanks to XX for this information. TL has been transferred to Montreal. 7AKD was a visitor to Saskatoon. LV has given up his VE5 call and will be VE7 from the Coast. Good luck, Shorty, and we hope your health improves with the change. The Moose Jaw gang presented him with an onyx ring. Following are officers of the Moose Jaw Club: AU, pres.; MG, vice-pres.; KG, treas.; FG, secy.; FM, OP, JJ and TK, executive committee. IL and WM are ECs. Thanks, Don, for the news. BD has a new s.s.b. rig and can be heard on the high end of 75-meter phone.

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SX62A	35.00	17.32	349.95
SX100	29.50	14.65	295.00
R46B			17.95
HT30	49.50	24.50	495.00
HT31	39.50	19.55	395.00
S94-S95	6.00	2.97	59.95
S-102	6.00	2.97	59.95
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What's Wrong?

(*Continued from page 15*)

As you familiarize yourself with the operation of the amplifier, you may notice that the broad filter characteristic isn't as smooth as Fig. 1 indicates. (If it is, it's just blind luck.) You won't notice this in operating on a ham band; it will show up when you tune slowly through a steady medium-strength signal (as from a 100-kc. calibration oscillator harmonic) with the selectivity in BROAD, the a.v.c. on, S_3 in the a.m. position, and with no antenna on the receiver front end. As you tune slowly through the signal, the S meter may rise to a maximum, fall off slightly, rise again and then fall off. The slight falling off at the center may be 5 db. or so; it has no obvious effect on signals, but it indicates that the filter isn't looking into and back to the correct terminations. When the center dip (or dips) is minimized, the terminations will be correct, so your objective is to minimize any dip. You do this by tuning to the dip and giving the 3- to 30-$\mu\mu$f. capacitor and L_1 *both* a slight adjustment to make the S meter rise slightly. Now tune across the characteristic again and see if the dip has been reduced any. By diddling around with the two adjustments you will be able to bring the "ripple" at the top of the pass band of the filter down to a low value.

The above procedure is a fine point in the filter adjustment, and it is to satisfy those of our readers who may marvel at our apparent disregard for the fine points of theory. An even more refined adjustment can be obtained by temporarily replacing the L network and the capacitive-divider input to the first i.f. stage with a 3900-ohm resistor and following the above procedure, to eliminate the effects of improper termination at the output side of the broad filter. Frankly, it doesn't make enough difference in ham work to be worth the effort, although it is an interesting experiment if you are so inclined.

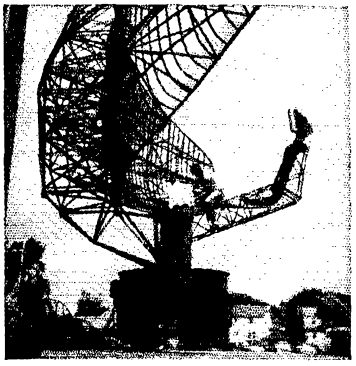
There is one important point from the ham angle. In the sharp position, you are straining the noise from the antenna and r.f. stage through a very narrow filter, so not too much noise is delivered to the first i.f. stage. The gain of the i.f. amplifier is such that you can just hear the noise in the grid circuit of the first i.f. stage when the gain control is wide open, and you have to get enough noise from the front end to mask this i.f. noise if you don't wish to degrade the over-all signal-to-noise ratio. On any band, with the front end connected to your antenna, the selectivity in the SHARP position and the b.f.o. on, you should be able to hear the noise peak up as you tune through with the antenna trimmer. If you don't, it indicates an inferior front end from a noise-figure standpoint or insufficient gain in the antenna-through-mixer chain. (This test is a worthwhile one on *any* receiver, not just one with this i.f. amplifier.)

You may be wondering what a system like this buys you. First off, you're back to an "old-

(*Continued on page 118*)

FIELD ENGINEERING

WITH A FUTURE -AT RAYTHEON



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W1SZ —C. C. Rodimon, Mgr., Field Requirements Dept.
W1GWD—O. L. Dewey, Mgr., Gov't. Service Dept.
W1EEE—E. K. Doherr, Asst. Mgr., Gov't. Service Dept.
W1CMU—G. E. Dodge, Supervisor, Field Engineering Section
W1PAW—W. R. Burrows, Supervisor, Technical Section

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fashioned" single-conversion superhet with a high-frequency i.f. No r.f. images up through 30 Mc. and no birdies. (If you can hear the 13th harmonic of the b.f.o., around 28.8 Mc., we'll send you a QSL and some extra shielding.) You have phone and code selectivity that approaches the maximum that can be used. You will have a good a.v.c. system for s.s.b., and you will find yourself using it on c.w. The stability and frequency calibration will, of course, depend upon the front-end design, and the ease of tuning will depend upon the dial mechanism and the tuning rate.

With the sharp filter in and the b.f.o. set for anything like a normal beat note, the i.f. shows an 80-db. audio-image ratio. Translated into English, this merely means that the single-signal c.w. effect is more than adequate for anything you will run into. By adequate we mean you just don't hear anything on the other side of zero beat. The sharp curve of Fig. 1 shows what you can expect tuning through a code signal; it will be in and out in 1 kc. if it is strong enough to be 60 db. above the noise, and in and out a lot sooner if it isn't that strong. On phone, the broad filter seems about optimum; it's sharp enough to squeeze in between signals without chopping off so much that there is no high-frequency audio left. Naturally, an a.m. signal will sound a little bassy if you center the carrier in the pass band, but most operators nowadays know about detuning the signal to put the carrier on one side or the other of the pass band. And, last but not least, the a.v.c. system will help to relieve your gain-control arm for active duty in your s.s.b. or c.w. round tables.

The way you use an i.f. like this will depend a lot on your personal operating habits. On c.w., you may be like the author and use the maximum selectivity practically all of the time, in which case you can also use the a.v.c. If you are the operator type that likes to know what's going on through several kc., you will use the broader filter and perhaps the limiter. But face the fact that when you go from broad to sharp you may lose the signal you're listening to, because the sharp filter is *sharp*.

The i.f. amplifier described here is not offered as the ultimate, since any savvy amateur will have lots of ideas for additional features. For example, if you have grown used to the operating features of selectable-side-band reception, you might want to add the feature to this. In that case you would have to use the method devised by Bob Ehrlich, which involves shifting the frequency of the b.f.o. and of the high-frequency oscillator by means of a switch.[8] If you built the i.f. on a separate chassis, like the one described here, the b.f.o. shunting-capacitor could be switched in by a relay. Others might like to add a Selectoject in the audio. A *Q* Multiplier in the i.f. probably wouldn't work too well, because at this high i.f. the notch would be about 5 times broader than at 455 kc. But with high-frequency

(Continued on page 120)

[8] Ehrlich, "Design Notes on a Specialized Phone Receiver," *QST*, April, 1953.

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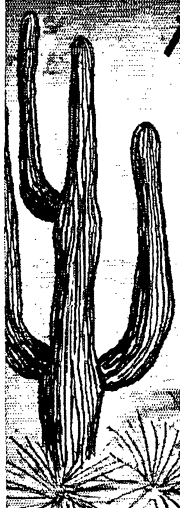

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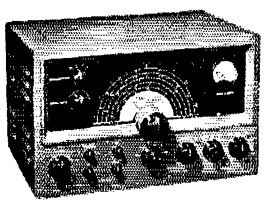

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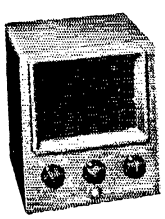

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filters that can do the same job that we used to do at 50 and 100 kc., we can see no reason for multiple conversion aside from the problem of stability at the higher frequencies. The usual approach is to use crystal-controlled oscillators and a tunable first i.f., but perhaps we can squeeze a little more stability out of self-controlled oscillators.

Mobile Single-Bander

(Continued from page 21)

The tuning should be checked with a wave meter to make sure that the oscillator output circuit is tuned to the desired frequency. Then C_1 should be adjusted for maximum grid current. The reading should be at least 3 or 4 ma.

A pair of G.E. type 1820, 28-volt, 1-amp, miniature lamps connected in series makes a good dummy load for testing the final. With S_1 thrown to the operate position, the meter switched to read 2E26 plate current, and power applied, adjust C_3 for a dip in plate current. Check the frequency with a wavemeter coupled to the output tank. Then adjust C_4 until the meter reads 50 ma. Retune C_3 for the plate-current dip. It may take a little juggling back and forth between C_3 and C_4 before an adjustment is reached where the meter reads 50 ma. at the plate-current dip. The load lamps will not light to full brilliance, but it should be possible to determine the adjustment that gives maximum output. With the amplifier fully loaded, the grid current should still remain at 3 to 4 ma.

The meter should now be turned to read modulator plate current. Without voice, the meter should read about 10 ma. When speaking into the microphone, a kick of the meter reading up to 40 or 50 ma. on peaks should indicate 100 per cent modulation. The r.f. amplifier plate current should remain essentially steady under modulation, but the lamps in the dummy load should show some increase in brilliance.

Adjustment when an antenna is substituted for the dummy load should be done in a similar manner. The antenna must, of course, be checked for resonance in advance with a g.d.o. or by other means.

When all the tests have been completed, there is nothing left but the swear and sweat of getting the thing into the car. Oh yes, there is *one* thing left — a lot of enjoyment!

The "Happy Accident"

(Continued from page 28)

Assembly

Secure the tubing for the radials and radiator. Some of the fellows used telescoping elements so that the radial length could be adjusted. However, it has been found that the dimensions we are recommending seem to be about optimum. We use ¾-inch o.d. aluminum tubing or ½-inch

(Continued on page 122)

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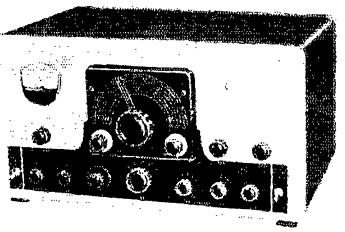
CW-SSB-AM TRANSMITTER



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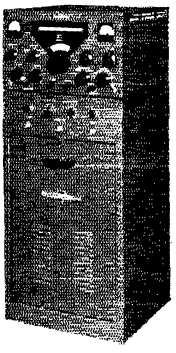

1 KW PEAK POWER

Designed for optimum kilowatt performance on AM, CW, or SSB, the KWS-1 is compact but not crowded. Frequency range 10 through 80 meters. Single conversion on 80, dual conversion on higher bands. Output tuning is continuous throughout entire range. Exciter and power amplifier housed in a single "receiver-size" cabinet which may be placed on the operating desk or mounted on top of the power supply cabinet. Permeability tuned, hermetically sealed VFO used to provide stable and accurate signal source. Select upper or lower sideband with two position control. Exciter may be operated by either push-to-talk microphone switch or by the voice-operated relay located within the audio unit. Provision made for voice-operated break-in while using loudspeaker on the receiver. CW operation features excellent wave shaping for smooth keying and the complete elimination of transients. High and low voltage power supplied by the 428-A High Voltage Supply and the 429-A Low Voltage Supply—both contained in a single cabinet Complete with tubes..... **$2,095.00**

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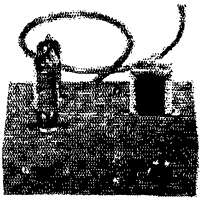

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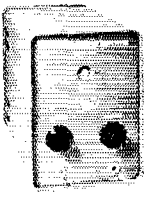

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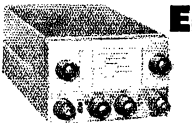
A complete audio system that really eliminates blasting. Unlike ordinary compression amplifiers, which are limited to a range of 10 to 20 db before severe distortion occurs, the patented Gated Compression Audio AVC circuit limits the increase in output to less than 3 db for increases in input level of 40 db above the Compression Gate value, adjustable by means of the Sensitivity control. A separate Output control adjusts the actual power output. The GC-1 goes between the secondary of the receiver's output transformer and the speaker voice coil, or else between the sideband slicer's volume control jack and the speaker voice coil.

GC-1, wired and tested..... **$59.50**

ELMAC



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hrc **Harvey** RADIO CO., INC.
103 W. 43rd St., New York 36, N.Y. • JUdson 2-1500
Established 1927

galvanized thin-wall electrical conduit, which is about ¾-inch o.d., cut as shown. The aluminum elements are much lighter but, of course, much more expensive. Drive wood dowels into the inner ends of the radials to prevent collapsing the tubing. Some of the fellows also plugged the outer ends with corks to prevent wind whistle, but it doesn't seem to be necessary. Locate and drill ¼-inch mounting holes 2 inches from the inner ends of the radials as shown.

Using one or two aircraft-type stainless hose clamps, attach the radiator to the bracket, inserting the plastic insulation you formed previously, as shown in the drawing. Tighten these clamps securely to prevent slippage.

A plated sheet-metal screw can be used to attach the wire from the center terminal of the coax fitting to the radiator, and again we recommend the use of a star washer.

Using ¼ × 1¼-inch round-head, plated bolts or aircraft bolts, attach the radials in position as shown. The head of the bolt goes through the large hole, and thus the bolt holds the radials tightly against the bracket.

Mount the antenna as high as possible, either on a wood or metal mast. However, if wood is used we would suggest grounding the bracket to aid in static discharge. Several of the men have used the telescoping steel masts available as surplus for about ten dollars, and in that case have used stainless-steel hose clamps to attach the antenna bracket to the mast. We have found that if the antenna is mounted above the plane of nearby power lines we avoid line noise and TVI.

Feed this antenna with RG-8/U coax, load 'er up, and we are sure you will like the "Happy Accident."

50-Mc. Transmitter

(Continued from page 43)

a 50-$\mu\mu$f. capacitor in series to tune out its reactance. Adjust it for minimum reflected power, as indicated on an s.w.r. bridge. With the load connected and grid drive on, apply 300 to 400 volts to the amplifier plate and screen terminal. Tune C_{10} for maximum indicated output. Loading can be adjusted by varying C_{11}, retuning C_{10} after each movement of C_{11}.

Recheck for neutralization at this point, working for a setting of C_8 at which minimum plate current, maximum grid current, and maximum output all occur at the same setting of the plate tuning capacitor, C_{10}. The input can be run up to about 65 watts with plate modulation and 35–40 watts output should be obtained. Higher input can be run on c.w. Plate voltage should not exceed about 400 with plate modulation, though it can be somewhat more for c.w.

Now make a final check on the trap circuits, if necessary. In case TVI is experienced, adjust the traps while someone watches the TV screen, and see whether any improvement is possible. Remember that the traps shown were designed

(Continued on page 124)

primarily to reduce Channel 2 harmonic interference. Where the trouble is with other channels, the traps can be modified to reduce the offending harmonic as required. A low-pass filter or a 4th harmonic trap will be needed if there is harmonic interference in Channels 11–13.

The amplifier as shown furnishes heater voltage and protective bias for the exciter. Hook together the 6.3-volt and ground terminals of the two units, and connect the bias output pin on the amplifier to the 6146 grid return in the exciter. Apply 115 volts a.c. to the appropriate pins on the amplifier power plug. When S_1 is closed, the exciter heaters and the bias supplies are energized. The bias voltages are about 50 and 150 negative for the driver and amplifier, respectively. Closing S_2 lights the amplifier filament and starts the fan motor.

Amplifier Testing

For the initial testing of the amplifier disconnect its fixed bias supply, by lifting the connection between R_1 and R_2, so that instability will be more evident. Connect the output of the exciter through a length of coaxial cable to J_1. Hook a 0–25- or 0–50-ma. meter to the terminals provided for measuring grid current. Turn on the exciter and adjust the driver output and amplifier input circuits for maximum grid current. Set this current between 10 and 15 ma. with the excitation control, R_1, in the exciter. With an s.w.r. bridge unit such as a Micromatch in the coax connecting the driver and amplifier, tune C_1 and C_2 in the amplifier alternately for minimum reflected power. Adjust the driver tuning for maximum forward power.

Never apply screen voltage without having the plate voltage on also, and do not operate the amplifier without load. Either will result in excessive screen dissipation, and almost certain tube failure if continued for any length of time. A usable dummy load for testing can be made by connecting two or more 100-watt lamps in parallel. A variable series capacitor, 50 $\mu\mu$f. or more, will be helpful in making the lamp load something like 50 ohms, resistive, at this frequency.

It is well to start with something less than maximum voltages in testing. If the plate voltage is under 1000 and the screen voltage about 200 to 300 volts, little harm can result if something is not quite right. With the dummy load connected, apply plate and screen voltages. Set C_8 near the middle of its range and tune C_7 for maximum output. If this occurs at or close to the end of the tuning range of C_7, adjust the spacing of the turns in the plate coil accordingly. Adjust C_8 for maximum output, retuning C_7 as required. If the grid current dropped below 10 ma. under load, increase the drive with the doubler screen potentiometer in the exciter.

Check now for stability. Briefly cut off the drive and see if the amplifier grid current drops to zero. If it doesn't, the amplifier either needs neutralization, or it has a parasitic oscillation. If no grid current shows with drive removed, note whether, when drive is applied and the amplifier

(Continued on page 126)

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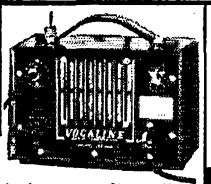

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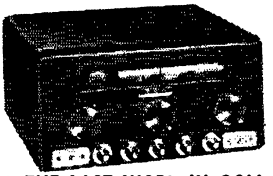

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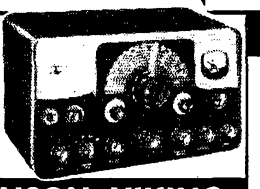

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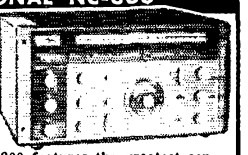

National NC-300 features the greatest sensitivity of any ham receiver at any price (3—6 db noise figure on all amateur bands). Has 10 dial scales for coverage of 160 to 1¼ meters; 3 position IF selector provides super selectivity, gives optimum band width for CW, phone, phone net or VHF; separate linear detector for single sideband; giant, easy to read "S" meter. Muting provision for CW break-in operation, and a host of other outstanding features that make the NC-300 the "dream receiver" of every ham.

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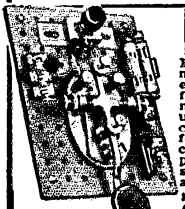

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is tuned properly, maximum output, minimum plate current and maximum grid current all occur at the same plate tuning. If they do, you're all set.

If oscillation does show up, check its frequency. If it is much higher than the operating frequency (probably over 150 Mc.) v.h.f. parasitic suppression measures are in order. If it is in the 50-Mc. region, neutralization will be required. Considerable operating experience with amplifiers of this type indicates that these troubles are most common in multiband designs, and unlikely in a layout of this sort. Neutralization of the capacity-bridge type, like that in the exciter, can be incorporated readily, and parasitic suppression is covered in detail in the *Handbook*. Neutralization may require *additional* grid-plate capacitance in some layouts. Provision was made for neutralization in the original layout but it was found to be unnecessary.

If all is well in the stability department, as it should be if the layout and parts list are followed, the plate and screen voltages may be increased in accordance with the tube manufacturer's ratings, for the type of operation you intend to use. We aren't going to go into exact operating conditions here, since they are different for the three tubes which can be used and, in any event, you should follow the manufacturer's recommendations. This is not to say that variations from the published data are unsafe or undesirable. Any of the values can be varied over quite a range just so long as the maximum rating for each tube element concerned is not exceeded. In this connection, it is highly desirable to provide continuous metering for the grid, screen, and plate currents. This, with a knowledge of the applied voltages, will help insure proper operation and make correct adjustment a simple matter.

These two units, exciter and amplifier, when used together, make up a complete, easy-to-operate, high-power 50-Mc. transmitter. Either portion can be built and used separately, as a versatile exciter in one case, and as a simple but stable and efficient amplifier in the other. The addition of a tripler-driver-amplifier for 144 Mc. (as in Nov., 1955, *QST* and recent *Handbooks*) makes possible a convenient high-power setup for both 6 and 2 meters in only two packages.

Folding Workbench

(Continued from page 84)

top. Be sure the legs are far enough apart so that the longest leg will fold in first with room to spare. Each leg is fastened to the top with three 2 × 3-inch back-flap hinges. You will notice that my 2 × 3-foot sheets of plywood are not quite as long as the legs. Yours may turn out to be exactly the same length as the legs, or you may have to cut a little off the 3-foot length. The legs are held tightly together when folded by an ordinary window lock, Fig. 3. Strip "A" is a heavy cleat that joins the two sections of the top. The spacing strip of the shorter leg serves a similar purpose at the opposite end.

(Continued on page 128)

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Competely Bandswitching, 160-10M
350 W. CW, 275 W. Fone, 300 W. SSB (P.E.P.)*

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Tried and tested, this compact, completely bandswitching (10-160M) Xmttr. has built-in power supply, popular high level modulation, Pi-Net output, full modulation of Final, and TVI-Screened cabinet. May be adapted for Mobile Operation.

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(75 WATTS FOR NOVICE USE)

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Specially designed Screen Modulator Kit with printed circuit for use with Globe Chief; also may be used with other Xmttrs. such as Heath AT-1, Johnson Adventurer, Knight 50 Watt, etc.

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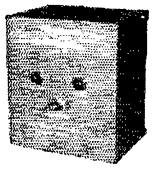

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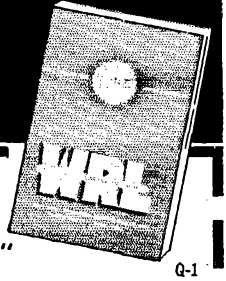

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The carpenter's vise is fastened with square-head carriage bolts countersunk so the heads are flush with the bench top. It will likely be necessary to put a piece of plywood between the base of the vise and the under side of the bench top so the jaws will be flush with the top surface.

I store my bench under the bed. Where are you going to keep yours?

Novice Roundup

(Continued from page 18)

contest is the "section multiplier." A fixed scoring credit may be earned by entrants who hold ARRL Code Proficiency certificates. If an entrant does not hold a CP award he can apply for credit by attaching to his Round-up report a copy of qualifying run from W6OWP, January 3rd or February 6th, or from W1AW, January 17th or February 15th. CP credit equals the w.p.m. speed indicated on the latest certificate or sticker held by the entrant. The final score equals the "total points" plus "Code Proficiency credit" multiplied by the "section multiplier."

5) *Reporting:* Contest work must be reported as shown in the sample form. Reporting forms and a map of the United States will be sent gratis upon request. Indicate starting and ending times for each period on the air. All Round-up reports become the property of ARRL and must be postmarked not later than March 14, 1957.

6) *Awards:* A certificate award will be given to the highest-scoring Novice in each ARRL section.

7) *Disqualifications:* Failure to comply with the contest rules or FCC regulations shall constitute grounds for disqualification. ARRL Contest Committee decisions are final.

World Above 50 Mc.

(Continued from page 55)

December *QST*, we learned that some nice contacts had been made. W4LTU, Orlando, Fla., ex-W2WFB, was the object of the big push in late October. Walt is running 400 watts to 826s, feeding a 48-element (four 12s) array, and is the first Florida station to evince an interest in meteor-scatter work.

On Oct. 21st, Walt worked W9WOK, Barrington, Ill., John's signal holding S9 for nearly two minutes at one time. Contact was made with W3GKP, Spencerville, Md., at 0051 EST Oct. 24th, also aided by a sustained strong burst. This one had to be strong, for W3GKP had a measured output of only 27 watts at the time. A long workout ending at 0100 EST on the 25th netted a successful QSO with W2ORI, Lockport, N. Y. This was done the hard way, with numerous short bursts, the best of which was only 25 seconds' duration. This work represents the first two-way communication on 144 Mc. between Florida and Illinois, Maryland and New York.

The Taurids, a minor shower running from Nov. 1st to 9th, did better than expected. Walt and W2NLY, Metuchen, N. J., were close to a QSO on the 3rd and 6th. A 70-minute workout on the 7th produced a complete exchange of all the necessary information for a complete QSO. A near miss was scored with W1REZ, and bursts were heard from W8KAY and W81LC. Tests during the Leonids, Nov. 13th to 19th, showed only a few pings from W8KAY and nothing from WØIHD.

(Continued on page 130)

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Moon-Bounce Prospects

One of the leading candidates for the first lunar-reflection QSO on 144 Mc, is W2NLY. Jim has eight 24-foot Yagis in a tremendous array designed especially for that purpose. He is shooting moonset, New York time, on 144.001, and would like to have reception reports, or schedules with qualified stations. (To be "qualified" means that you have to know something of the moon-bounce problems, and be equipped with a real antenna and all that goes with it.) W2NLY has received his own echoes up to 6 db. above the noise, which is a prime requirement for attempting two-way work. W2NLY's schedule for January and February: 2019 to 2029 Jan. 4th, 2106 to 2126 Jan. 5th, 2203 to 2223 Jan. 6th, 2300 to 2320 Jan. 7th. Feb. 2nd: 1956 to 2016, Feb. 3rd: 2054–2114, Feb. 4th: 2152–2212, Feb. 5th: 2253–2313.

A rival for the world's largest 2-meter antenna title is KH6NS, Ewa, Oahu. Ed has the same number of Yagis as Jim, 8, but his are arranged 2 high and 4 wide, making a structure 68 feet long, 30 feet high and 24 feet deep. The 30-foot height comes from an added feature: 32 50-Mc. elements mounted vertically on the same booms! *And*, the thing rotates from the horizon to 90 degrees, as well as 360 degrees in azimuth!

In the past year or so we've come across several ambitious moon-bounce projects, being conducted in an atmosphere of great secrecy. Just why all the hush-hush we don't quite understand. With the size of the antenna required for hope of success in lunar communication, keeping the project secret is somewhat like attempting the raising of elephants in a city apartment. Furthermore, it takes at least two stations to make a QSO. Wouldn't it be better to spread the word, and invite all comers? W2NLY and KH6NS have started the ball rolling in this direction. What are your moon-bounce "secrets?"

OES Notes

W1AHE, Stow, Mass. — 48-element 2-meter beam (8 6-element Yagis 4 high and 2 wide) bringing in more and louder sigs than old 24-element at same level.

W1HDQ, Canton, Conn. — Daily observations on 50 Mc. indicate m.u.f. to Europe higher than 1947 peak. Commercial sigs of many kinds heard almost daily in late October and through November, as high as 53.5 Mc. Band open to northeast until nearly 1400 EST Nov 18th. European reception possible every undisturbed day; sometimes as early as 0715 EST. M.u.f. 47 Mc. or higher to South America daily; often up to 50, but amateur sigs seldom heard. Only PZ1AE and LU9MA worked to date.

K2HRB, Lancaster, N. Y. — Aurora in late October followed by South American openings on 50 Mc. Many stations heard by back-scatter, but few seem to realize its potential for interesting QSOs.

K2ITP, Riverton, N. J. — Weekly ionospheric scatter tests with W4IKK still producing identifiable signals each way regularly, with low power. Information exchanged on nearly every schedule. Worked LU9MA Oct. 27th. Heard South American commercial sigs Oct. 21st.

W3GKP, Spencerville, Md. — Results with Collins 70E-8 PTO unit in 144-Mc. VFO markedly improved as to a.c. warble and drift by substituting heterodyning for some of the frequency multiplication. Output of the PTO unit on 1.8 Mc. was multiplied to 16 Mc. in two triplers previously. The PTO is now tuned near 1.72 Mc. and its output mixed with a 9.72-Mc. crystal to give 8-Mc. output. This is then doubled in a stage that formerly was a tripler, to 16 Mc. Various tubes checked in the PTO unit. Original 6SJ7 was worst. An old 6SK7 was good at first, but developed excessive a.c. modulation after two days' use. A 6AC7 did likewise. After tests with premium and ruggedized tubes a 5693 (red) tube was selected. This was still good after two weeks' use.

W4DAF, Erlanger, Ky. — Demonstrated flying-spot scanner at Greater Cincinnati Radio Assn. Hamfest.

W4IKK, Rome, Ga. — TVI in Channel 2 from Communicator can be reduced by converting oscillator to third overtone, thereby cutting out 58-Mc. component. (Filter needed on TV set to stop fundamental overload. W2IDZ design, June-July '54 *QST* is best yet.) Steps in conversion of oscillator: Remove r.f. choke from oscillator cathode lead, connecting bias resistor directly to cathode. Remove

(Continued on page 132)

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cathode-to-ground capacitor and replace with 0.001. Remove grid-cathode capacitor and lead from grid to crystal socket. Replace with 4-turn coil, same size as oscillator coil. This coil should be turned so that the crystal end is toward the B-plus end of oscillator coil. Adjust position for easy crystal starting, and cement in place.

W4VUO, Lanydale, Ala. — Increasing antenna height to 100 ft. Will have 64-element 144-Mc. array soon.

W6LWT, El Cajon, Cal. — Work on 420 Mc. with simple gear picking up in San Diego area. Active stations include K6OWV, K6PFP, W6UFI and W6KUG. Others have gear in works.

W6ORS, Alhambra, Cal. — More interest in 420 Mc. and higher bands as result of activity by San Bernardino Microwave Society. (Work on 1215 Mc. is being done by W6s DQJ JRK ZW NLZ and MMU, according to K6GKX, who says more equipment for this band is in the works.) Strong 144-Mc. signals on 150-mile path from W6MEP, Northridge, to K6TRL, Indio, over 11,000-foot Mt. San Jacinto. Simple antennas (vertical) and low power.

W6SOD, Torrance, Cal. — Getting to 220 Mc. with single 6J6, using 74-Mc. overtone oscillator and tripling in second section.

W7PUA, Eatonville, Wash. — Working W7BVV, Salem, Ore., with good steady sigs by aiming 144-Mc. beams at Mt. Rainier. Direct path obstructed, but Rainier is visible to both. No fade observed on any contacts to date.

W7YJE, Seattle, Wash. — Many 50-Mc. contacts made with Japan in early November. Signals very solid and strong, and up to 51 Mc. Band opens to Japan about 1415 to 1430, remaining open for 3 hours on best days. 18 JA stations logged Nov. 8th.

W9KLD, Kankakee, Ill. — Having church organ interference since increasing 144-Mc. power to 100 watts.

W9MHP, Indianapolis, Ind. — F_2 DX heard from South America Oct. 21st. Worked PZ1AE Oct. 28th.

W0USQ, Davenport, Iowa — Many short Es openings and frequent bursts of signals observed during fall.

DX Contest

(*Continued from page 64*)

10) *Quotas:* The maximum number of points per country per band which may be earned by W (K) stations *in the c.w. section* is 18, and contacts made on the *same* band with the same country after the quota is filled will not count. Thus complete exchanges with 6 stations in one country on one band fill the band quota for that country. The maximum number of points per country per band which may be earned by VE/VO stations *in the c.w. section* is 24, and contacts made on the same band with the same country after the quota is filled will not count. Exchanges with 8 stations in one country on one band are thus permitted Canadian participants. There is *no quota* for stations in the c.w. section *outside* of the U. S. and Canada. There is *no quota* for *any* station in the phone section.

11) *Reporting:* Contest work must be reported as shown in the sample form. Each entry must include the signed statement as shown in that example. Contest reports must be mailed no later than April 30, 1957, to be eligible for *QST* listings and awards. All DX Contest reports become the property of the American Radio Relay League and none can be returned.

12) *Awards:* To document the performance of participants in the 23rd ARRL International DX Competition, a full report will be carried in *QST*. In addition, special recognition will be made as follows:

a) A certificate will be awarded to the high-scoring single-operator phone and to the high-scoring single-operator c.w. entrant in each country (as shown in the ARRL Countries List) and in each of the 73 U. S. and Canadian ARRL sections (see page 6 of this issue) from which valid entries are received. In addition, a certificate will be awarded to the high-scoring multiple-operator station in each section or country from which three or more valid multiple-operator entries are received.

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

(*Continued on page 134*)

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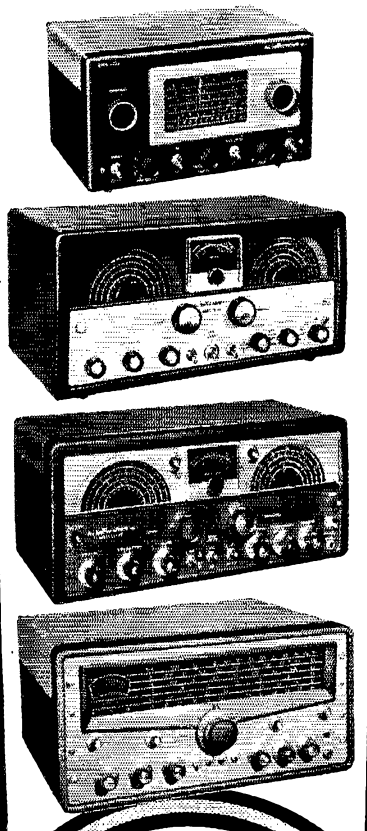

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in each club will be awarded a certificate under the same conditions. Only a bona fide resident member, operating a station in local club territory, may compete for club certificates.

c) ARRL will award a gavel to the affiliated club submitting the greatest aggregate phone and c.w. score by its members, whether single- or multiple-operator entries, provided such scores are confirmed by receipt at ARRL of the individual contest logs from such members. Only scores of bona fide resident members, operating stations in local club territory, may be included in club totals.

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

14) *Disqualifications:* Each participant agrees to observe the contest rules as well as all regulations established for amateur radio in his country. Violation of any regulation, as confirmed by a single FCC citation or advisory notice or two ARRL accredited Official Observer reports, may constitute grounds for disqualification. Some examples of practices which can result in disqualification: off-frequency (out-of-band) operation, harmonics, spurious emissions, low tone reports in logs, key clicks, splatter, excessive sidebands, W (K) stations working banned countries.

Hints & Kinks

(Continued from page 49)

The three alarm components, I_1, I_2 and S_1 of Fig. 1, can be mounted on the hinged lid of a "Band Aid" box as shown in Fig. 2. Remove the enamel from the inside surface of the lid so that the lamps, after being twisted into snug-fitting mounting holes, can be tacked securely in place with a spot or two of solder. Punch or drill a hole in the bottom of the can (this surface is actually the rear of the box when the unit rests as shown in the photograph) to clear the three leads that must run to the speaker and the output transformer at the receiver end. The finished job takes on a neat appearance if the box is painted with a coat or two of enamel.

Incidentally, if you are building one of the alarms for use in a weak-signal area, it may be advisable to use the No. 48 or 49 lamps rated at 2 volts and 60 ma. It takes much less signal input to the receiver to light 60-ma. bulbs to full brilliance than it does to really brighten up the 150-ma. jobs. If there is doubt as to the best type of lamp for your own particular installation, use a v.t.v.m. to measure the audio voltage — audio gain control full on and speaker disconnected — available at the secondary terminals of the output transformer. If the maximum output is less than 3.5 volts, use the 60-ma. bulbs.

— *C. Vernon Chambers, W1JEQ*

YL News & Views

(Continued from page 67)

Chicago C.D. Corps. Members participated in a city-wide c.d. drill in November.

San Diego YLRC: The new officers are Pres. W7YDN/6; Vice Pres. W6GGX; Secy. KN6PUC; and Treas. W7YLZ/6. In the November column W6MWU was incorrectly listed as president.

Washington YLRC: The first anniversary meeting was celebrated at the Gaithersburg, Md. hamfest. W3MSU was presented with a gift for her efforts in organizing and guiding the club through its first year. YLs present were *W3s* AKB, CDQ, DHL, MSU, OQF, RXJ, SLS, TSC, URU, UXU, VHF; *W4s* DEE, HLF, and TVT.

(Continued on page 136)

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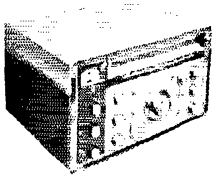

NC 300 Receiver
Amateur net: **$399.50**
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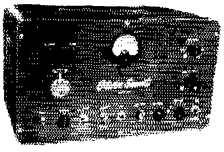
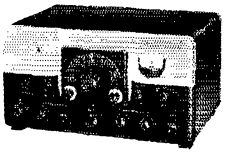
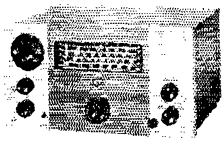


Globe Scout Transmitter
Amateur net: **$88.95** (kit)



Johnson Pacemaker Transmitter
Amateur net: **$495.00**



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Miscellany: YLs who attended the New England DXCC meeting in October were *W1s* FTJ (134), RYJ (100), VFK (101), and YYM (100). See photo December *QST*, p. 21. W1YYM, Ellen, is the ninth member of *QST* headquarters staff, and the first YL to become DXCC. A BPL medallion also for W1YYM. She made the League for the third time in October. . . . W1WED's multiband rig brought Ruth an award for the best home-built gear at the ARRL New England Division Convention. . . . Indiana SCM W9NTA reports that W9RTH, Adah, has been appointed EC of Jackson County. . . . *W5s* BDB, RYX, SYL, and WXY helped with "Ham-Day" activities at the Texas State Fair at Dallas. . . . Oregon YLs who participated in October SET were *W7s* BIB, DAT, ETM, FDB, FVF, HHH, NJS, ZLS, ZLT, and ZNG. . . . W7JFB, Miriam, believes she is the first YL in the state of Washington to operate s.s.b. with her own station. . . . A Penn-N. J. YL net is being formed. Contact W3AAU, Edith, for details. . . . W5EGD, Lillian, has worked 96 countries with her new Viking Ranger (75 watts). . . . A sixth grade Spokane school teacher, W7ULK has been doing some demonstration teaching on TV. Twenty-two pupils are enrolled in Rosella's theory and code classes at school this year. Her goal is one hundred new amateurs. . . . W7ENU, Mary, is a Master BRAT, and W7QKU, Donna, is a Grand-Master BRAT, in the Brotherhood of Radio Amateur Traffic-handlers. . . . We are sorry to record the passing of ex-KN6JGS, Nancy Kubly, the wife of W6KZO, of Santa Barbara. . . . KN6UHI, Mrs. Clement Coleman, who became a ham so she could sked her son in Wisconsin regularly, had a nice front-page write-up in a San Diego paper. . . . Just out of high school, W8HPP, Reta, is working for the Ohio Forestry Service as a radio operator. . . . *W8s* RIR and WQE, Beth and Shirley, had a YL ham radio display at a local hobby show.

KN6OSL and KN6OWD are pleased to announce that their marriage in November was the direct result of amateur radio. In April Hazel logged Ray for her third contact on two meters. Subsequent QSOs revealed mutual interests between the two. They met in person at a radio club dinner and from then on didn't care how many read their 144 Mc. mail. W6FDO was best man at the wedding.

Nets

The following are additions and corrections to the schedule of nets registered with the YLRL published in the November column:

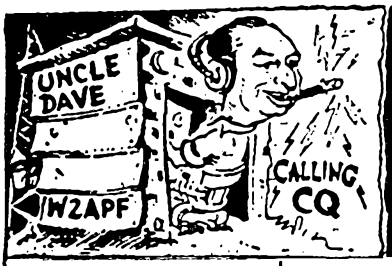
Additions: C.w. — 3750 kc., Thursday, 2:00 P.M. CST, W9MYC NCS (LARK C.W. Nest)
Phone — 29,640 kc., Friday, 10:00 P.M. CST, W9LDK NCS (LARK Nest)

Corrections: As of November 30th the 15-meter phone Cross-Country Net is scheduled as follows: 21,390 kc., Friday, 2:30 P.M. EST, KZ5VR NCS with W9RUJ, W5RYX, and W7WLX alternates. W6GGX was previously NCS, not W6QGX as listed.

From W8SPU comes word of a new Single-Side-Band YL net on 14,275 kc., Wednesday, at 2:00 P.M. EST. Stations who have checked in to date are W1CEW, K2MGE, K4ETB, *W4s* DEE and WPD, *W8s* HUX and SPU, K9DOT, and WØZTH. Those interested in a 75 or 40 meter s.s.b. YL net please contact W8SPU, Helen Smith, Sycamore, Ohio.

ARE YOU LICENSED ?

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



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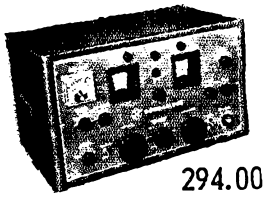

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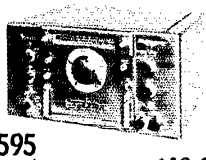

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5100S Barker and Williamson all band xmtr. set for 51SB	397.50
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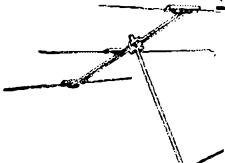
1 Home built receiver 2/pwr supply (As-is)	25.00
1 HRO-7 w/6 coils (a real good buy)	125.00



THE FAMOUS G4ZU PANDA BEAM

Imported from England

GLOBEMASTER – 3 Band Minibeam 10, 15 and 20 meters it's the Ham's dream beam–sold only by Fort Orange Radio. One antenna, one beam, one feed line–it's pre-tuned, fits any 2' pole. No tricky loading coils, twin boom for strength. $99.50

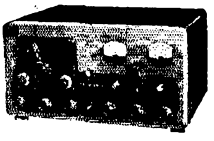
WE SPECIALIZE IN FOREIGN TRADE

Ask UNCLEDAVE about our easy payment plan that gives you up to 18 months to pay after the down payment. Life insurance included at no extra cost.

VIKING XMTRS

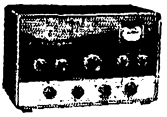
Pacemaker. . . $495

with tubes, xtal



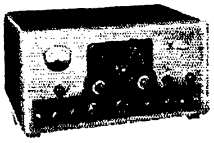
Five Hundred

Kit-$649.50-w/t-$799.50



"6N2". . $119.50

w/t. .$159.50



Valiant. . $349.50

w/t. .$439.50

B & W 5100B–$475

24 HR. SERVICE on stock items

How's DX?

(Continued from page 61)

right now should be bobbing somewhere between Papeete and Santiago. Drop a line to REF for details . . . . . VP2VB/P, after losing *Yasme* on Papuan reefs, was reported torn between continuing westward under new sail, visiting the U. S. A., or returning forthwith to England . . . . . W6YY notes that VK1IJ forsook Macquarie for a seven-week respite at VK3IJ, and that KM6AX's ten ops anticipate early installation of a new KWS-1 . . . . . VK5TL tells the NCDXC gang that VK5AL may be the only other Northern Territory ham active DXwise, although a W5 has arrived to claim the call VK5EW . . . . . Ex-JZ0PS reports from Indonesia that amateur radio prospects there continue grim . . . . . WVDXC states that YJ1RF still can be found on 14,045 kc. around 0730 GMT, Fridays and Saturdays.

The continuing steady turnover in Fiji ham personnel finds VR2AK one of the brighter new lights in Oceania's spacious DX firmament — twenty c.w. preferred. (*Photo via W1ICP*)

Europe — Welcome G3HCL to the select triple-DXCC circle! W1WPO's files reveal he made the grade previously as MD1D and ZC1CL . . . . . For folk interested in logging YL DX K2EQD suggests YU4JZ . . . . . G6GM, prominent proponent of and protagonist on 160 meters since 1935, is a ripe young 71. The British 1.8-Mc. 10-watt limit fits in well with Harry's remote power-lineless Devon QTH. W1BB says G6GM is particularly keen to nail elusive South America this season, on or near 1830 kc. . . . . W1WPO was interested to learn that DXCCer ON4KT is ex-G2BUV. Ted writes Bob, "Decided on mustering out of RAF that an ON4 call would key better than a G2 three-letter call, so I settled in Brussels in 1946 and have been there ever since. Run 72 watts (just can't push to 75!) to a 1625, long-wire, and 14-Mc. ground-plane." . . . . . From A3 sharpshooter W9RBI: "LZ1AM says the popular LZ2KN phone station apparently is in DL-land." . . . . . Bouquet for San Franciscans from widely worked I1ADW: "To W6AWT and W6CHL I owe a great deal for my present radio experience and the satisfaction I find in it." . . . . . W6YY finds OK1MB skeptical about UA1KTO/FJ because he understands that the proper Fridtjof Nansen Land call sequence still should be UA1KE-. And why the unusual use of indicator? . . . . . Reminder: The DARC (Germany) WAE DX Test carries on through this month. Its first c.w. session is scheduled for the 5th-6th, and the concluding phone period for the 19th-20th. (OK to repeat first-period contacts). Check last month's "How's" for details.

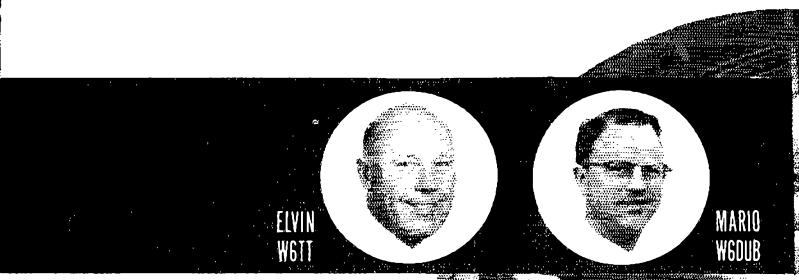
Hereabouts — O! the fickleness of fate. W4TFB worked VQ6LQ, sent his card to W5BNO as instructed, received notification that he was not in VQ6LQ's log, and then watched W4*FTB* receive an unexpected VQ6LQ QSL. "No wonder I'm old and grey before my time!" . . . . . More grief from W8HWY, formerly W1RDR. After confirming 96 countries in Massachusetts he shut down for three years while housebuilding. *Then* he gets transferred to Toledo! So can anyone help W8HWY (W1RDR) run down FF8AH, FQ8SN, KG6GX/KX6, KR6RG, VS7PW and ZP5BL worked in 1949-'50? . . . . . But life *can* be beautiful. K2BG, ARRL S.N.J. SCM, says that K2CPR decided as of March 14, 1956, to work "100 countries in 100 days with 100 watts on 21 Mc. with no beam." Jack made it with one day to spare, the clincher an OD5AV chat on October 14th . . . . . TG9AD, HR1AT and TI2EBS placed one-two-three in a CREN (Nicaragua) 40-meter Central American DX test held last summer . . . . . In response to inquiries we reiterate that the entire Antarctic Continent, including Grahamland, goes as a single entity on your ARRL DXCC Countries List . . . . . Observation by DX vagabond de luxe W6ITH: "In the fond hopes that a 'new' country will

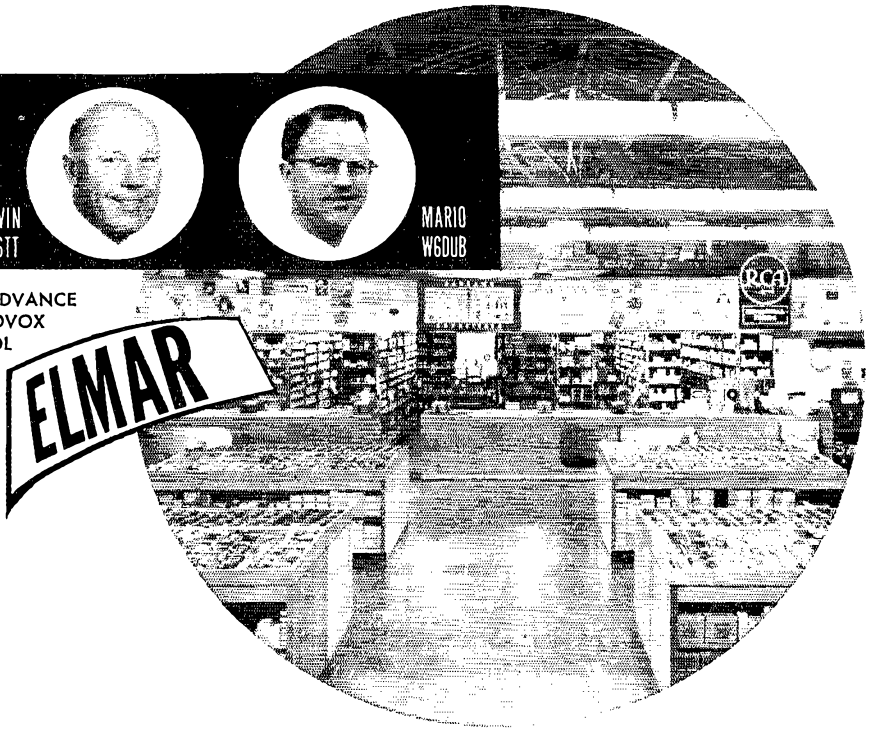
(Continued on page 140)

come on the air for them to work, some DX-minded amateurs send in for publication rumor, hearsay, and just plain scuttlebut as straight factual news. They fail to include 'it is rumored' or that 'so-and-so has only been thinking.' . . . These rumors published as fact without source qualifications, and the fact that only about a dozen out of perhaps a hundred proposed DXpeditions ever materialize, lead numerous amateurs to take a 'let's wait and see' attitude. It is perhaps true that most of these expedition plans are made in good faith but never come off for a variety of reasons, such as inability to get a license, to arrange transportation, to secure equipment, or to afford the costs of such undertakings." . . . . VE8s OJ and OO, in the company of VE8s RA and RW, strive for WAS and DXCC from an aurora-ridden location on the eastern shore of Great Bear Lake, 26 miles south of the Circle. VE8OJ is ex-GM3CXE-VE7ABH-VE7ABI and so far has accounted for 30 countries and 33 states . . . . . W6RW and W0NLY, taken with the "rarest DX" survey in our December, 1954, effort, want an up-dated encore. Others request a similar phone treatment. Big orders, but Jeeves will see what can be done . . . . . W4AUL was relieved to learn that a next-door-neighbor ham, long busily constructing an 813 rig, decided to move north to Richmond. Now John inquires if anyone can use an old Model-T spark coil in good condition . . . . . W6WLY/0's venerable T20s feed a 1050-foot long-wire angled toward Europe . . . . . Teetering at the brink of DXCC, W7KT could use advice re the present whereabouts of former KB6AO, OX3BD, VK1DY, VP9F, VR1EI, ZM6AC and ZS9F . . . . . HR1LW, moving north to the U. S. third call area, shipped out 800-plus QSLs in 1956 thanks to superb 10- and 15-meter conditions. Louis probably will be glad to operate on the tranquil DX end for a change . . . . . According to NCDXC early spring will find KC4s USH USK and USW added to the Yank antarctic IGY constituency . . . . . In club developments W9FDX is elected chairman of the W9-DXCC congregation, W7GHB relieves W7TML as editor of WVDXC's *DX*, and pressure of outside commitments causes W6YMD to relinquish editorship of SCSXC's *Bulletin*. Chairman W6TI still awaits inquiries concerning the joint NCDXC-SCDXC spree set for January 19–20th in Fresno.

Prime DX quarry on several bands, ET2US is manned by the staff of Kagnew Station MARS & Amateur Radio Club in Asmara. Op Phil Bohr, shown here, regularly holds forth Wednesdays, 2130 GMT, around 11,190 kc. to accommodate DXers seeking Eritrean phone-DXCC credits. (*Photo via W2BIQ*)

Ten Years Ago in "How's DX?" — Our second year of postwar DX is under way and the January, 1947, column reflects a stabilizing pattern. Eighty meters treats the W gang to VKs, ZLs and Europeans, with G6BY reporting five U. S. call areas heard on 75 phone. Forty is fairly quiet with Europeans, NY4s AB and CM drawing sporadic fire . . . . . In some parts of the world commercial stations are slow to vacate our 20-meter band. However, **CR9AG, EK1AA, EP1AL, ET1JJ, FN8C, HE1CE, HI8X, I7AA/I6, KP6AB, LX1AX, LZ1XX, MX3KP, OX1s BC Z, OY3-IGO, PKs 5JN 6HA, SU1US, TA6ST, UA9s AP CB CP UA0KAA, UB5AB, UD6BC, UQ2AB, VP8s AD AI, VQ6GC, VS7ES, VU2FM, W2OUB/C7, W5KGI/C7, W6VKV/I6, XU1YR, XZ2KM, YI6C, YR5V, ZD8A** and **ZK1AB** are raisable on c.w., while phone men rally 'round Dakar's **FG3FP, Js 2AAS, 5ABA, KA1SS, PK3MB, PZ1s** UD W, **W0MCF/C1** and **ZB1L** . . . . . Ten meters exhibits no noticeable loss of its pre-14-Mc. DX momentum. On phone there are **KA1ABA, PK1AW, VS7FF, VS9s** AB AN, **W4BOW/1wo, XU1RP, YI2CA** and **YR5B**. Code men cotton to **GC8NO, J9ACS, VP8LK, W6RMC/KJ6, XU6GRL (W6GRL), YR5G** and **ZB2A** . . . . . Though impeccably legitimate, your conductor's switch of *nom de guerre* from W1JPE to W1DX arouses comment, ribald and otherwise. Hi!





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RME
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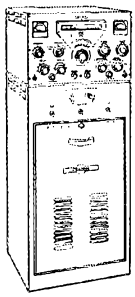
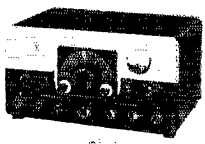
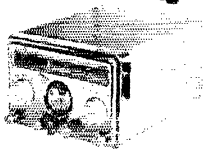
COLLINS KWS-1





E. F. JOHNSON, "PACEMAKER"



GONSET G-77 MOBILE TRANSMITTER

Serving the entire Western Region . . . Alaska . . . and the Pacific Area . . .

ELMAR electronics

140 Eleventh Street, Oakland 7, Calif. HIgate 4-7011

Recent Equipment

(Continued from page 36)

The input side of the network is tuned by one 180-$\mu\mu$f. section of a dual variable capacitor, the second 180-$\mu\mu$f. section being automatically switched in on 80 meters to provide adequate capacitance for that band. On the output side, loading is controlled by a ganged pair of variables, each having a maximum capacitance of 520 $\mu\mu$f., with an additional 400-$\mu\mu$f. fixed capacitor switched in for 80 meters.

The tuned grid circuits are resistance loaded to provide a termination, through the input link, for a coax line from whatever driver or exciter may be used. Since the 4X250B's are operated Class AB_1 their grids require no driving power, hence the loading resistors on the grid circuits establish the driving-power requirements — 3 watts peak envelope power on s.s.b.

The main power supply is rated to deliver 500 ma. at 2000 volts. It uses a pair of 866 rectifiers and a single-section filter with a swinging input choke and an output capacitance of 10 μf. Screen power for the 4X250B's is taken from this supply through a dropping resistor. A string of regulator tubes, two OA2's in series with a OB2, is connected across the screens to hold the voltage at 400, approximately. A separate supply is included for furnishing grid bias. This supply uses selenium rectifiers so the grid bias will be available instantly when the tube filaments are turned on, and has a d.c. output of approximately 150 volts. A potentiometer across this voltage permits setting the bias to the optimum value for AB_1 operation of the power tubes.

A convenient operating feature is a built-in oscilloscope that not only serves as a monitor but also as a check on the linearity of the amplifier. The circuit is similar to the one used in the same company's SSB-100 transmitter.[1] The rectified envelope of the modulated signal applied to the amplifier grids is used as the horizontal sweep voltage, and a small amount of r.f. is capacitively coupled from the 4X250B plates to the vertical deflection plates of the 1CP1 scope tube. The envelope rectifier is a 1N34A and the sweep amplifier is a 6AU6.

Besides the customary tuning and loading controls in the r.f. circuits there is a "tune" switch that limits the plate current during tune-up operations by inserting a resistor in the cathode circuit of the amplifier tubes. An overload relay, with push-button reset, is also connected in the cathode circuit. A bias relay, for increasing the grid bias to beyond cutoff during receiving periods, is included and can be tied in with the exciter voice-control circuits. Items included as a matter of course in an amplifier of this design and power are a blower for cooling the 4X250B's and an interlock switch that cuts the primary power supply when the lid of the cabinet is opened.

Other than the cabinet itself, there is no

(Continued on page 144)

[1] See *QST* for February, 1956, page 31.

NEW!

CRYSTAL-CONTROLLED H. F. RADIO TERMINAL

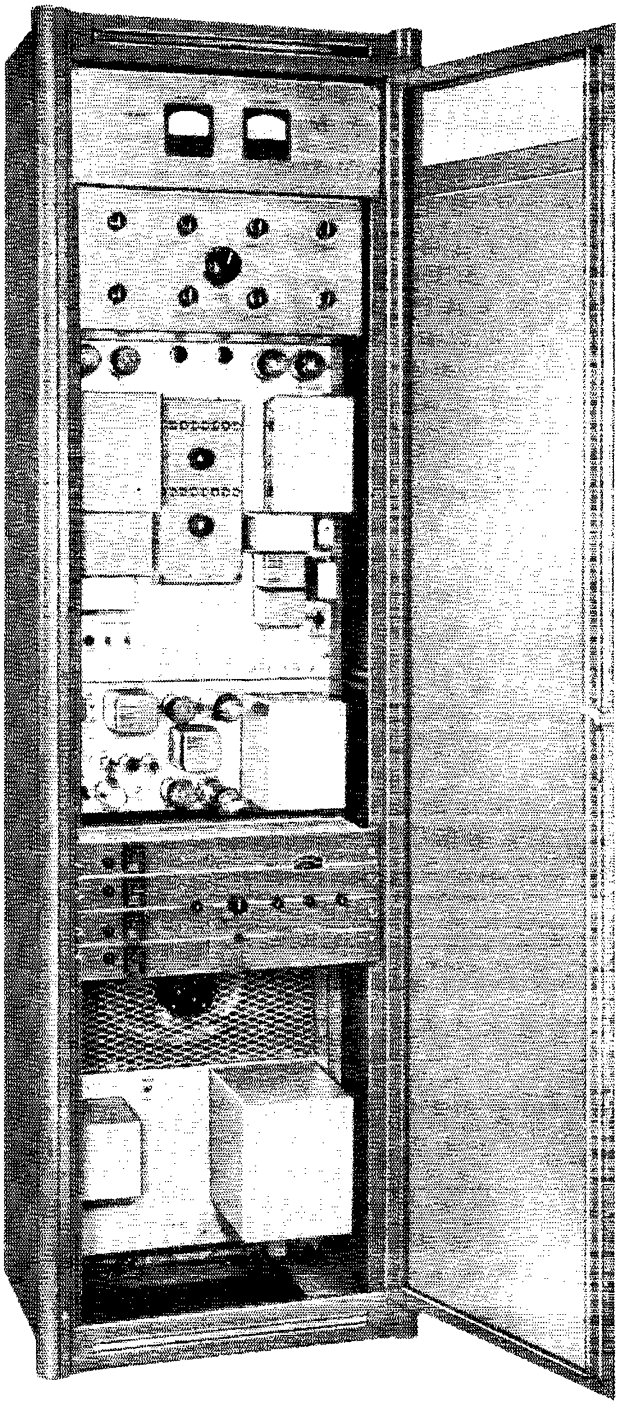
THE WESTREX 7C-3 Radio Terminal offers you all the features of the Westrex 7-Type Transmitters . . . eight frequencies . . . 100-watt carrier power between 1.6 and 27.5 megacycles with stability better than ±.001% . . . high operating economy on FS Teletype, CW telegraph and AM telephone.

The radio receiver is the famed Westrex Monatel which operates on any one of 10 frequencies in the 2 to 25 megacycle range. This receiver also has .001% frequency stability, which is of great importance in good radio printer reception.

These equipments are easy to operate. All frequency adjustments are preset by quartz crystals. The power source can be either 90-125 volt or 195-235 volt, 50/60 cycle.

The 7C-3 equipment is a complete radio transmitting and receiving terminal for point-to-point, ground-to-air, ship-to-shore, and police service.

Write for complete technical information.



A complete transmitter-receiver in a single cabinet. The Westrex 7C-3 equipment consists of the 7-Type Transmitter at the top of the cabinet and a Monatel Receiver at the bottom.

Westrex Corporation

111 Eighth Avenue, New York 11, N. Y.

Hollywood Division: 6601 Romaine Street, Hollywood 38, Calif.

Divatel

Monatel

special shielding about the amplifier tank circuit. Class AB_1 operation plus a high operating tank Q are relied upon for reducing harmonic output to a noninterfering level. The nominal output load impedance is 50-75 ohms, but the tank constants are such that loads of 40 to 200 ohms can normally be handled.

—*G. G.*

Happenings

(*Continued from page 47*)

Little Rock, Ark.: February 6, May 8, 1:00 P.M.
Los Angeles, Calif., 1431 Federal Bldg., 312 No. Spring St.: Wednesday, 9:00 A.M. and 1:00 P.M.
Louisville, Kentucky: Sometime in May.
Marquette, Mich.: May 8, 10 A.M.
Memphis, Tenn.: January 10, April 4.
Miami, Fla., 312 Federal Bldg.: Thursday.
Milwaukee, Wisc.: Sometime in January and April.
Mobile, Ala., 419 U. S. Courthouse and Customhouse: Wednesday by appointment.
Nashville, Tenn.: February 7, May 9.
New Orleans, La., 608 Federal Office Bldg., 600 South St.: Monday through Wednesday; code tests at 8:30 A.M. and 1:00 P.M.
New York, N. Y., 748 Federal Bldg., 641 Washington St.: Tuesday through Friday.
Norfolk, Va., 402 Federal Bldg.: Monday through Friday except Friday only when code test required.
Oklahoma City, Okla.: January 16, April 17.
Omaha, Nebr.: Sometime in January and April.
Philadelphia, Pa., 1005 New U. S. Customhouse: Monday through Friday, 8:30 A.M. to 2 P.M.
Phoenix, Ariz.: Sometime in January and April.
Pittsburgh, Pa.: Sometime in February and May.
Portland, Maine: April 9.
Portland, Ore., 507 U. S. Courthouse: Friday, 8:30 A.M.
Rapid City, S. D.: May 25, 8 A.M.
Roanoke, Va.: April 6.
St. Louis, Mo.: Sometime in February and May.
St. Paul, Minn., 208 Federal Courts Bldg.: Friday, 8:45 A.M.
Salt Lake City, Utah: March 16, June 15, 11 A.M.
San Antonio, Texas: February 7, May 9.
San Diego, Calif., 15-C U. S. Customhouse: Wednesday, by appointment.
San Francisco, Calif., 323-A Customhouse: Friday.
San Juan, P. R., 323 Federal Bldg.: Thursday, and Monday through Friday at 8 A.M. if no code test required.
Savannah, Ga., 214 P. O. Bldg.: By appointment.
Schenectady, N. Y.: March 13-14, June 12-13, 9 A.M. and 1 P.M.
Seattle, Wash., 802 Federal Office Bldg.: Friday.
Sioux Falls, S. D.: March 12, June 11, 10 A.M.
Spokane, Wash.: April 30.
Syracuse, N. Y.: Sometime in January and April.
Tampa, Fla., 410 P. O. Bldg.: By appointment.
Tucson, Ariz.: Sometime in April.
Tulsa, Okla.: February 12, May 15.
Washington, D. C., 415 22nd St., N.W.: Tuesday and Friday, 8:30 A.M. to 5 P.M.
Wichita, Kansas: Sometime in March.
Williamsport, Pa.: Sometime in March and June.
Wilmington, N. C.: June 1.
Winston-Salem, N. C.: February 2, May 4.

Results

(*Continued from page 52*)

K2MBY[3]..	693- 63-11-A	W2IN.....	112- 16- 7-AB
W2YHP....	287- 41- 7-B	W2AOD....	84- 21- 4-B
W2IYS....	210- 30- 7-B	K2AZT....	33- 11- 3-A
K2GYR....	165- 33- 5-B	W2TUK....	8- 8- 1-B
K2OIL....	128- 32- 4-A	K2IEJ/2	(W2MFN K2IEJ) 5278-203-26-AB
W2JBQ....	126- 21- 6-B		

(*Continued on page 146*)

Season's Greetings from all at TERMINAL

NEW "GEAR" RESOLUTION

For better deals on all new gear Call Terminal all through the year

JOHNSON'S VIKING "ADVENTURER" CW Transmitter Kit

Completely self-contained • 50 watt Power Input • TVI suppression • Pi-network output tuning • no antenna tuning needed • single knob bandswitching for 80, 40, 20, 15, 11, and 10 meters • **Compact!** Only 7⅜" x 10⅜" x 8⅛".

No. 240-181-1 VIKING ADVENTURER KIT Complete with tubes, instructions, less crystals and key. **$54.95**

VIKING "6N2" VHF Transmitter

for Real Power and Punch on 6 and 2 Meters!

Bandswitching • TVI Suppressed • Built-in XTL control • External VFO jack • 5894 PP output stage • 150 watts CW or 100 watts AM input. Adapted to use a wide variety of modulators and power supplies or use with your Viking "Ranger," Viking I or II or similar xmtrs.

VIKING 6N2 KIT with tubes and instructions, less key, mike, Xtl, Mod. and Pwr. supply..... **$119.50**

Viking 6N2 as above but wired and tested **$149.50**

Viking 2 Meter VFO Kit with tubes and pre-calib. dial **$29.50**

Viking 2 Meter VFO wired and tested... **$46.50**

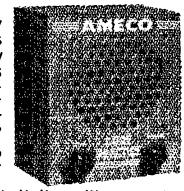
HALLICRAFTERS S-53A

Communication Receiver — features AC powered performance at only little more than AC-DC price!

Broadcast 540-1630 kc plus four S/W bands covering 2.5-31 and 48-54.5 Mc. Overseas dial—headphones jack—separate electrical bandspread. Seven tubes plus one rectifier—105/125V. 50/60 cycle AC. Satin black steel cabinet, silver trim, piano hinge top. 12⅞" x 7" x 7¾".

No. S-53A Hallicrafters **$89.95**

AMECO CODE PRACTICE OSCILLATOR



A real top quality unit that produces a pure, steady tone without clicks or chirps. Can handle a large number of headphones or keys. Includes 4" built-in speaker, variable tone control and volume control. 115 VAC-DC. Unit readily converts to an excellent CW monitor

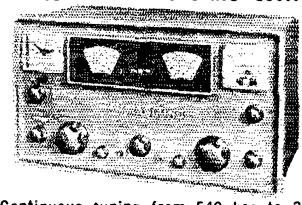
CPS-KL IN KIT FORM with complete instructions for assembly, less tubes. **$11.75**

CPS-WL Wired and tested, less tubes. **$12.95**

Set of two tubes (35W4 & 50C5). **$ 1.50**

HAMMARLUND'S New HQ-100

A True Communications Receiver At Moderate Cost!

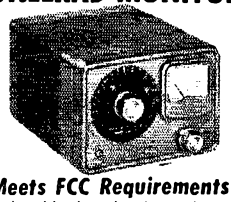


Continuous tuning from 540 kcs to 30 mcs • Customized Q multiplier • Electrical bandspread • Direct Dial Calibration • Noise Limiter • Individually Shielded RF and Oscillator coils • Voltage Regulated and Temperature-compensated H.F. Oscillator • Rock-like Stability • Rugged die-cast Aluminum Front Panel • Heavy Gauge Chassis and Cabinet • Compact! Only 16¼"x 9-7/16"x 9⅛"

HQ-100 less clock **$169.00**

With timer clock **$179.00**

MORROW CM-1 CONELRAD MONITOR



Meets FCC Requirements

5-tube tunable broadcast receiver with built-in speaker. Conelrad frequencies plainly marked. Meter permits visual monitoring, rear jack allows for relay connection to other signal devices. 115 VAC. **$39.50**

PASS FCC EXAMS WITH AMECO HOME CODE COURSES!

Let these 78 rpm recordings prepare you for all exams. Fast, easy method! You learn by listening!

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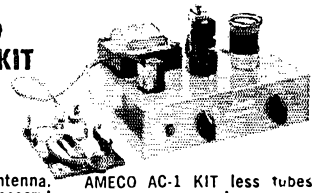
New AMECO TRANSMITTER KIT



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W2CXY....4473-213-21-B
W2ONV....2970-198-15-B
W2DZA.....750-39-15-ABC
W2CBB.....728-52-14-B
W2NYV.....558-62-9-B
K2ICE.....372-62-6-B
K2KIB.....340-85-4-B
K2DIG.....144-17-6-AC
W2AFU/2 (W2s MQT VIM K2s PZV RWF SBG) 1650-150-11-AB
K2GLQ (K2s GLQ JLQ) 1060-106-10-AB

MIDWEST DIVISION

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W0SMJ.....44-11-4-AB

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W0IHD.....480-60-8-AB
K0BVL.....46-23-2-A
W0WKG.....32-16-2-A
K0DOK (W0TGC K0s DOK DTO DUV) 440-88-5-AB

Nebraska

W0WRT....28-14-2-B

NEW ENGLAND DIVISION

Connecticut

W1PHR....2000-100-20-AB
W1OS.....924-66-14-B
W1RMU....312-52-6-B
W1SUZ....180-18-10-A
W1BDI[4]....100-25-4-B
WN1KFS...81-27-3-B
W1KHM....5-5-1-A
W1QAK/1[1] (W1s EYF KAC PTG QAK) 6048-224-27-AB
W1LGE/1 (multioperator) 3874-144-26-ABC
W1ORS (6 oprs.) 900-80-10-B
W1AW[4] (W1s QIS WPR) 312-39-8-AB

Maine

W1TAM....728-54-13-ABCD
W1KID/1(W1s AHE AQE AQR EHF KID) 5267-220-23-ABC

E. Massachusetts

W1HOY....2388-199-12-A
W1OOP....2254-91-23-ABCD
W1JSM....1807-139-13-B
W1KBN[5]....1548-129-12-AB
W1FZJ.....1159-61-19-AB
W1HDQ/1[4]....994-71-14-AB
W1AAI.....670-67-10-B
W1VYS.....650-50-13-AB
W1PYM....522-58-9-B
W1BDF/1....261-29-9-B
W1AQE.....135-27-5-B
W1ZAW....72-12-3-C
W1MEG....24-12-2-B
W1AHE....18-9-2-B

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W1RFU....8954-225-37-ABC
W1VNH....4089-137-29-ABCD
W1MNG....1540-77-20-AB
W1ZWL[3]....1200-100-12-A
W1HUN....264-33-8-A
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W1DRZ.....55-11-5-A
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W7NGW....140-35-4-AB
W7HBH....120-40-3-AB
W7RGS[3]....116-29-4-A
W7VJV.....56-28-2-A
W7WSP/7....26-13-2-A

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W7LHI.....735-99-7-ABD
W7JHX....210-38-5-ABD
W7WSP/7....70-35-2-A
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W4WSF....6-3-2-B

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W8BKI....33-11-3-B
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W4ABP....24-8-3-B
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Los Angeles

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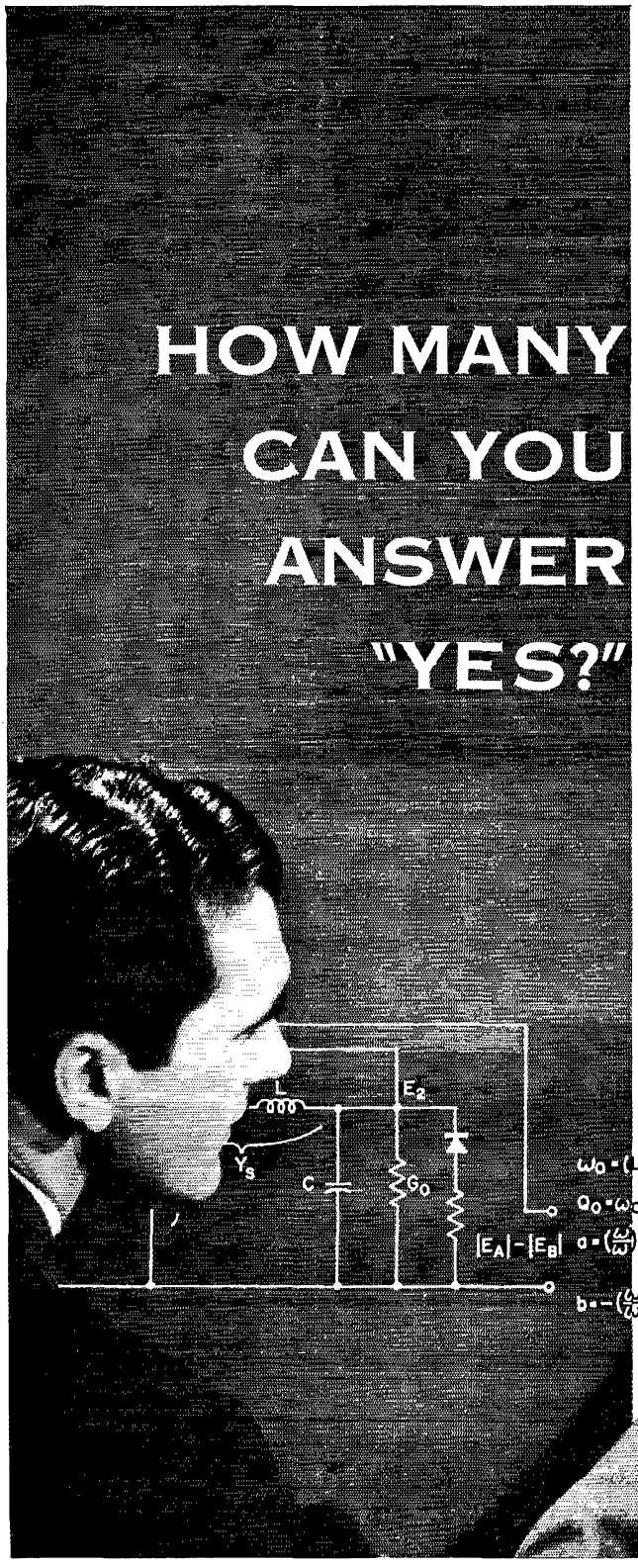
W6NLZ....540-35-12-ABD
W6MMU...290-23-10-BD

(Continued on page 148)



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K5BDL.... 29- 29- 1-A
W5GMA... 26- 26- 1-A

CANADIAN DIVISION

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VE3AIR... 198- 33- 6-AB
VE3DSP... 26- 13- 2-B

[1]Multioperator award winner; [2] Novice award winner; [3] Technician award winner; [4] Hq. Staff, not eligible for award; [5] W1EUJ, Opr.

W3LEZ/VE1

(Continued from page 45)

empty pint bottle will, however, but by the time I learned this fact I was wishing I had emptied the bottle instead of finding it on the ground. Nevertheless, the antenna was finally up and I was in business.

My first call, on 20 meter phone, was answered appropriately enough by Canadian VE3BCB. Shortly after, on 15 meters, I worked K5ALK, my first U. S. A. station, who told me he had just finished copying the ARRL Bulletin announcing my operating schedule, tuned up the band and there I was.

On Wednesday, again on the 15 meter band, I worked my first DX station, who was old reliable OK1MB himself.

By now the storm had blown itself out and the day was bright and clear. I therefore tackled my beam erection job. The parts went together just as I had planned. Using a 12 foot 2 × 2 I had brought for a gin pole and the car to furnish the pull, I had the whole thing up in no time. I was a little disconcerted to note that one of the beam elements had turned on the boom. Such things grate on my asthetic sense, so I lowered away. The only mistake I made was to think I had as much pull as an auto and so I tried to let the thing down by hand. Well, I didn't weigh enough and the beam found it out. It sailed majestically down with a thud and buckled the mast in the middle. Ah well, I should have known it wouldn't be so easy. Getting the mast sections apart was a real chore, but the worst job came when I found it necessary to cut off a piece of bent tubing. I learned that the edge of a triangular-shaped file will eventually cut aluminum, but it ain't easy. All the time I was filing, I stood there thinking about my losing debate with myself whether to take the hacksaw along. I took everything else.

Again I assembled the antenna and mast. This time, however, I installed an extra set of guy ropes. The raising was routine, and once more I was set to go. Of course, one of the 10-meter elements twisted on the boom, but I had learned my lesson, I just let it twist. You know something, that 10-meter beam worked just dandy!

The Island

To fail to pay tribute to the scenic beauties of "The Island" as the local residents term their home, would be completely unfair, as would the

(Continued on page 150)

omission of praise for the extreme friendliness of all those we met during our short stay.

The countryside is gently rolling, and there are no high hills to impede the easy flow of the landscape. Liberally interspersed throughout the 140-mile length of the island are ponds, lakes, streams, inlets and bays. Float a few fluffy white clouds on the horizon, add some Fall foliage, and you have a photographers paradise. If my trusty Leica didn't let me mess things up, I should have ample evidence to prove what I say.

Contrasting with nearby provinces of Canada, Prince Edward Island is almost entirely cultivated. The red loam soil, looking very much like Georgia's, is obviously quite fertile. Perhaps I should not have wondered at the advanced agricultural activity, because here was the beginning of the settlement of this area of the new world. Further, here was also the birthplace of the Confederation of Canada. Major crops are potatoes and grains. Strangely enough, we learned that the potatoes raised here are not consumed locally, but are shipped to Florida for use as seed potatoes. The Florida spuds are shipped back to be eaten. The Island potatoes are just too valuable to use for food.

Most farms appear modern and prosperous. All are equipped with tractors and other mechanical farming equipment. Being harvest time, we frequently encountered threshing crews at work. Yet in contrast with all this newness, we bought ground oatmeal near Stanley Bridge at an old mill, operated entirely by water power.

For a change of scene, we spent an afternoon at Rustico Harbor. Here is the home of the mackeral fishing fleet. We had seen these fellows from the road while we drove along the coast, as they pulled in their nets several miles off shore. During the time we were there, one of the boats came in with a record catch of 6,000 pounds of fish. This part of the island coast is also famous for its oysters and lobsters in season.

As I implied earlier, everywhere we went we were treated like old friends. One evening we attended a church supper in New Glasgow. Not only was the food delicious and plentiful, but all treated us as though we had always belonged there. The ham population was equally sociable. I spent an evening chewing the rag and looking at VE1ADE's gun collection. He repaid me by taking time away from his church duties long enough to drop in to see me on two different days. Bob, VE1ACP, from Charlottetown, 25 miles away, came in Sunday afternoon to say hello. I also had opportunities to say howdy to VE1ACL, VELKZ and VE1UE. Clary, VE1PE, and I had to be content with a rag chew over the air.

Charlottetown, the capital, and Summerside are both cities of some size. However, there is very little manufacturing of any kind, and the economy is distinctly rural.

Most of the main highways are paved, but even those that have no topping are usually wide and well-maintained, although dusty in dry weather.

Hunting and fishing is close at hand, for them as likes that sport. You can catch both fresh and

(Continued on page 162)

It's actually easy to save—when you buy Series E Savings Bonds through the Payroll Savings Plan. Once you've signed up at your pay office, your saving is done *for you*. The Bonds you receive pay good interest—3% a year, compounded half-yearly when held to maturity. And the longer you hold them, the better your return. Even after maturity, they go on earning 10 years more. So hold on to your Bonds! Join Payroll Savings today—or buy Bonds where you bank.

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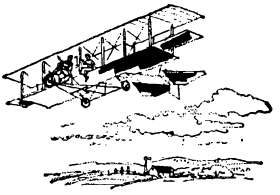
The bride wore goggles



ON OCTOBER 26, 1912, an ungainly biplane swooped into a Michigan pasture like an overfed duck and promptly nosed over on its back. Its contents proved to be a teen-age couple who got married as soon as they regained consciousness.

This was the world's first aerial elopement.

Art Smith, the groom, happened to have one of the country's few flying machines because he had built it, with his own hands, at age 15. And his parents had mortgaged their home to finance him. Their pride helped carry him through years of failure to soaring success as a famous early stunt flyer.

But he didn't remain a barnstormer long. In 1917 his pioneering skill was needed to train our World War I pilots. Then came America's first air-mail service. And again, Art helped break the way—though it eventually cost him his life.

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salt water fish. If you work it right, VE1ADE will arrange for you to spend a day out on a mackeral fishing boat.

Up to now, it was a tossup whether I was a ham on a sightseeing trip, or a sightseer on a hamming trip. The week-end of September 29th and 30th cleared up my status. Conditions were good and I spent the morning working DX on 10-meter phone. I had excellent solid contacts with G2DP, LU3CW, GC2RS, CT1PK, OZ3MP, SM4KF, LA7BB, F3XY and OZ7BG. The latter surprised me by stating that I was his 42nd Frankford Radio Club contact.

CQ W

Promptly at 1800 EST I lined up my sights on the W/VE Contest and started calling "CQ W." From then on until midnight Sunday I had no trouble finding an answer. Despite low power, temporary antennas and contest QRM, the magic letters "PEI" for my location brought calls from all directions. I had a taste of DX station perils on Saturday evening when I moved to the 7-Mc. band. So many stations called me at once after my first "CQ" that I couldn't make out a single call sign. I started working the fellows out on the edge of the pile and gradually peeled them off one by one. You can imagine the clatter, when you realize it took about a dozen contacts before I could make out W4KFC calling me.

I sacrificed chances for a higher contest score in my desire to bring "PEI" contacts to as many hams as I could. I worked stations on both phone and c.w. on the 10-, 15-, 20-, 40- and 80-meter bands. On Sunday afternoon I stuck to the 10-meter phone band long enough to work more than 50 west coast stations, who might have otherwise missed a chance to contact "The Island."

As the contest period ended I found I had worked 364 stations in 53 ARRL Sections. I contacted W3FSP, W3MSR and W4IA on four bands. I also worked VE1AEE, VE3AVS, and F9MS, each of whom broke in to ask for a PEI contact.

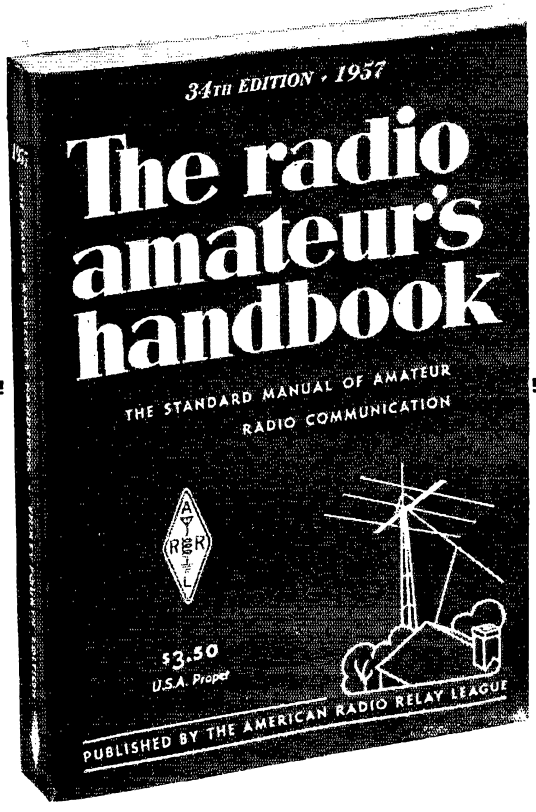
Any radio work after this was an anticlimax, although I kept my station on the air intermittently until noon Tuesday. All good things must eventually come to an end, so I reluctantly took down the antennas, packed away the radio gear, took another last look at the grand view over Shining Waters Lake to the Atlantic, gathered up Anne and our luggage and set out for home.

As we look back, we feel our vacation choice commendable. We had a lot of good food, a nice place to stay, a beautiful view, friendly people and good weather. What more could one ask for?

From a ham viewpoint the trip was a smashing success. In less than a week I contacted 452 stations, worked 42 states and 17 countries on 3 continents. The most gratifying return, however, came from the many hams who told me, "You are my first PEI," ". . . my last contact for WAVE," ". . . first PEI in 20 years on the air." These words really made the trip worthwhile.

. . . By the way, I still haven't worked Prince Edward Island!

1957 EDITION



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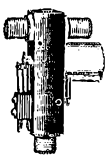

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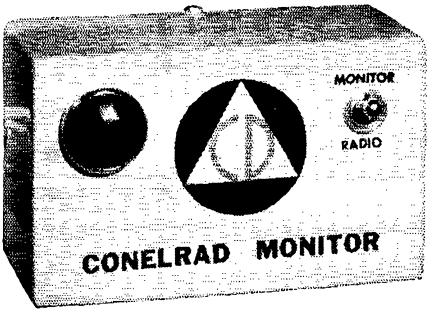

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MANITOWOC, WISCONSIN

MANUFACTURERS OF PRECISION ELECTRONIC EQUIPMENT

See Your Dealer or Write Today

TREMENDOUS CRYSTAL CLEARANCE SALE!

Save Money—Order in Package Quantities!

All crystals tested and guaranteed to oscillate. Please include 20¢ postage and handling charge for every 10 crystals or less. Minimum order $2.50. No. C.O.D's.

PACKAGE DEAL No. 1

25 Assorted FT-243 45 Assorted FT-241A
15 Assorted FT-171B 15 Assorted CR-1A

100 Crystals Our Choice **$8.95**

Assorted.....Regular value $66.00

PACKAGE DEAL No. 2

FT-241A Crystals for Single Sideband
370 KC–538 KC

35 Crystals Our Choice **$3.49**

Assorted.....Regular Value $14.00

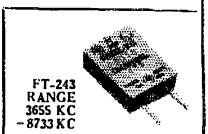
PACKAGE DEAL No. 3

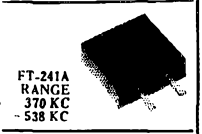
HAM BAND CRYSTALS — FT-243

For operating on 80, 40, 20, 15, 10, 6 and 2 meters—on either fundamentals or harmonics.

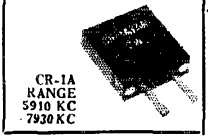
25 Crystals Our Choice **$6.95**

Assorted.....Regular Value $20.00


FT-243 RANGE 3655 KC – 8733 KC


FT-241A RANGE 370 KC – 538 KC


FT-171B RANGE 2030 KC – 3995 KC


CR-1A RANGE 5910 KC – 7930 KC

INDIVIDUAL CRYSTALS • Indicate 2nd choice—Substitution May Be Necessary

Low Frequency — FT-241A for SSB, Lattice Filter etc., .093" Pins, .486" SPC, marked in Channel Nos. 0 to 79, 54th Harmonic and 270 to 389, 72nd Harmonic. Listed below by Fundamental Frequencies, fractions omitted.

49¢ each—10 for $4.00

						79¢ each—10 for $6.50	
370	393	416	488	511	534	400	462
372	394	418	490	512	536	440	463
374	395	419	491	513	537	441	464
375	396	420	492	514	538	442	465
376	397	422	493	515	540	444	466
377	398	424	494	516		445	469
379	401	425	495	518		446	470
380	403	426	496	519		447	472
381	404	427	497	520		448	473
383	405	431	498	522		450	474
384	406	433	501	523		451	475
385	407	435	502	525		452	476
386	408	436	503	526		453	477
387	409	481	504	527		455	479
388	411	483	506	529		457	480
390	412	484	507	530		458	
391	414	485	508	531		459	
392	415	487	509	533		461	

79¢ each—10 for only $6.50

CR-1A SCR 522-½ Pin, ½" SP

5910	7810	2030	2258	2435	3250
6370	7930	2045	2260	2442	3322
6450		2065	2282	2532	3955
6497		2105	2300	2545	3995
6610		2125	2305	2557	
7380		2145	2360	3202	
7480		2155	2390	3215	
7580		2220	2415	3237	

FT-171B — BC-610 Banana Plugs, ¾" SPC

sun PARTS DISTRIBUTORS, LTD.

514 TENTH ST.
N.W., Wash., D. C. Dept. Q.

FT-243 — .093" Dia. — .486" SPC

49¢ each—10 for $4.00

4035	5740	6340	7500	7773
4080	5750	6350	7506	7775
4165	5773	6373	7520	7800
4190	5780	6375	7525	7806
4280	5806	6400	7540	7825
4340	5810	6406	7550	7840
4397	5852	6425	7573	7841
4490	5873	6673	7575	7850
4495	5875	6675	7583	7873
4840	5880	6700	7600	7875
4852	5892	6706	7608	7900
4930	5906	6725	7625	7906
4950	5925	6750	7640	7925
5030	5940	6775	7641	7940
5327	5955	6800	7650	7950
5360	5973	6825	7660	7975
5385	6206	6850	7673	8250
5397	6225	6875	7675	8273
5437	6240	6900	7700	8300
5485	6250	6925	7706	8310
5500	6273	6950	7710	8316
5660	6275	6975	7725	8320
5675	6300	7450	7740	8630
5700	6306	7473	7750	8690
5706	6325	7475	7766	

79¢ each—10 for $6.50

3735	6450	6650	8280	8625
6025	6473	7000	8350	8650
6042	6475	7075	8375	8690
6073	6500	7125	8400	8700
6075	6506	7150	8425	8733
6100	6525	7306	8430	
6125	6550	7300	8450	
6140	6573	7425	8475	
6150	6575	7440	8500	
6173	6600	8173	8525	
6175	6606	8175	8550	
6185	6625	8225	8575	
6200	6640	8275	8600	

SPECIAL—200 KC in FT241A Holder—$1.25 Without Holder 39¢ ea.-3 for $1.00

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...NOW! YOU MAY AS WELL GET THE BEST! FOR LESS!

Available in ½" space .093 or .125 dia. pins. Also ¾" spac., .125 pins.

A crystal oscillator is the heart of your transmitter or converter, etc. Inadequate frequency control only tends to make radio operation difficult. (Novices are required to use crystal control only.) Today you can equip your rig with the finest in crystals . . . and at lower prices, too! Master Crystals offers you the largest selection of precision crystals, calibrated in BERKELEY ELECTRONIC COUNTERS to your exact frequency.

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For other frequencies—C.A.P., MARS, C.D., Police, Marine, Aircraft, etc. . .

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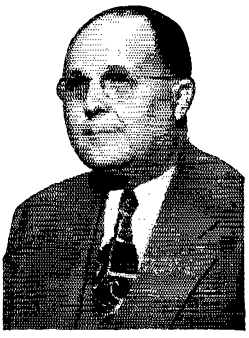

WARD, W2FEU

YES, every day more and more Hams are contacting Ward, W2FEU before they buy or trade any Ham gear.

There MUST Be a Reason

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Be sure to write us for our latest used Ham gear list. It contains many, many bargains. Drop us a card. **Ask for Used List No. 8.**

Time Payments Arranged at Low Cost Through Our Local Bank on Purchases of $100.00 Net and Over

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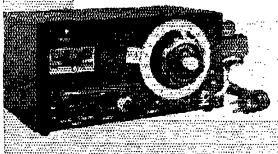
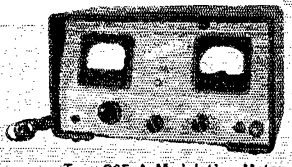
LAMPKIN EASY PAYMENT PLAN

For the first time ever — LAMPKIN frequency and FM modulation meters can be purchased on

EASY MONTHLY PAYMENTS!



Type 105-B Frequency Meter. Range 0.1 to 175 MC. and up. Price $220.00



Type 205-A Modulation Meter. Range 25 to 500 MC. Price $240.00

LAMPKIN LABORATORIES, INC. BRADENTON FLORIDA

LAMPKIN meters are the test equipment preferred by thousands of successful mobile-radio maintenance engineers!

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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. No Box Reply Service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) **Remittance in full must accompany copy, since Ham-Ads are not carried on our books. No cash or contract discount or agency commission will be allowed.**

(5) Closing date for Ham-Ads is the 20th 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.** 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, takes the 7¢ rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified 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. Typewritten copy preferred but handwritten signature must accompany all authorized insertions.**

(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 OST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 248 Madison Ave., New York City 16.

MOTOROLA used FM communication equipment bought and sold. W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

WANTED: Cash or trade, fixed frequency receivers 28/42 Mc. W9VIV, Troy, Ill.

MICHIGAN Hams! Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 327 E. Hoover St., Ann Arbor, Michigan. Tel. NOrmandy 8-8696. NOrmandy 8-8262.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

WANTED: All types aircraft & ground transmitters, receivers ART-13, RT18/ARC1, R5/ARN7, BC610E, ARN6, BC788C, ARC3, BC342. Highest prices possible paid. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

RECEIVERS repaired and aligned by competent engineers, using factory standard instruments. Hallicrafters, Hammarlund, National. Collins authorized service station. Our twentieth year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

ATTENTION Mobileers! Leece-Neville 6 volt 100 amp. system alternator, regulator & rectifier, $45.00. Also Leece-Neville 12-volt 100 amp. system, alternator, regulator & rectifier, $85.00. Good condition. H. A. Zimmermann Jr., K2PAT, 115 Willow St., Brooklyn 1, N. Y. Ulster 2-3472.

CASH for your gear. We buy as well as sell. Write for cash offer or trade. We stock Elmac, Gonset, Hallicrafters, Hammarlund, Johnson, Lysco Master Mobile, Morrow, National and other ham gear. H & H Electronic Supply, Inc., 506 Kisbwaukee St., Rockford, Ill.

MIAMI and vicinity: Communications receivers repaired. Bryant Electronics, 13341 N.W. 7th Ave. Phone 84-4001.

URGENTLY need AN/APR-4 items particularly tuning units for important defense contracts. New high prices. Engineering Associates, 434 Patterson Rd., Dayton 9, Ohio.

HAM Guest Register Books, $2.00 in U. S. A. postpaid; $2.25 in Canada postpaid. Gratton George, W4PJU, Clewiston, Fla.

MEDICAL Hams! Swap Burdick EK-2 for Globe King, 500-A. C. R. Faulkner, M. D., K4AXE, 106 No. Main, Somerset, Ky.

OUTSTANDING ham list revised monthly. Our prices are realistic and attractive. Standout values in used Barker & Williamson, Collins, Central Electronics, Elmac, Gonset, Hallicrafters, Hammarlund, Harvey-Wells, Johnson, Morrow, and National units. We deal easy and offer time payments tailored for you. All leading brands of new equipment always in stock. Write immediately for this month's Bulletin and our new exclusively amateur catalog just out. Stan Burghardt, W0BJV, Burghardt Radio Supply, Inc., Box 746, Watertown, S. Dak.

PLASTIKASE rubber stamp, your call name and address. Economy with pad $1.00. Top quality with handle, $1.50, pad 35¢. Ei-Kay Stamps, Box 5-WT, Toledo 12, Ohio.

WANTED: Receiver R5/ARN-7, MN-62A transceivers, RT18/ARC-1, AN/ARC-3, BC-788C, 1-152C, Collins, Bendix equipment, test sets, dynamotors, inverters. We pay highest prices. Advise quantity, condition, price in first letter. Aircraft Radio Industries, Inc., 15 East 40th St., New York City. Tel. LExington 2-6254.

DX'ERS Notice! Save money? Save Time? Free info. DX QSL Coop, Box 5938, Kansas City 11, Mo.

PANORAMIC Adapter ID-60/APA-10 Tech. Manuals $2.75 postpaid in U. S. A. Electronicraft, 27 Milburn St., Bronxville 8, N. Y.

QSLS? SWLS? Finest and latest variety samples 25¢ (refunded). Callbooks (Winter), $4.50. "Rus" Sakkers, W8DED, P. O. Box 218, Holland, Mich.

C. Fritz for better QSLS-SWLS! Samples 10¢. 1213 Briargate, Joliet, Ill.

QSLS-SWLS. Meade WØKXL, 1507 Central Avenue, Kansas City, Kans.

QSLS-SWLS. 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSLS. Nice designs. Samples, Reseparis, W3QCC, 207 S. Ballict St., Frackville, Pa.

DELUXE QSLS — Petty, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

QSLS-SWLS. Samples free. Bartinoski, W2CVE Press, Williamstown, N. J.

QSLS "Brownie," W3CII, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSLS-SWLS. Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

WOODY's QSLS. Box 164, Asher Sta., Little Rock, Ark.

QSLS. Western states only. Fast delivery. Samples 10¢. Dauphinee, K6JCN, Box 66009, Mar Vista 66, Calif.

QSLS, Taprint, Union, Miss.

QSLS, sharp, 200 one color, three bucks. Multi-color samples dime, refunded. Edward Green & Sons, 4422 Marquette Drive, Ft. Wayne, Ind.

QSLS. Samples 10¢. Bob Morris, W2IHM, 230 Rose St., Metuchen, N. J.

QSLS — All kinds and prices, samples 10¢ fast service. DX Card Co., Kulik St., Clifton, N. J. GR 3-4779.

QSLS-SWLS. Reasonable. Catalog, 25¢. Speedy delivery. Dick, K6GJM, 10558 E. Olive, Temple City, Calif.

QSLS. Twenty exclusive designs in 3 colors. Rush $3 for 100 or $5 for 200 and get surprise of your life. 48 hour service. Satisfaction guaranteed. Constantine Press, Bladensburg, Md.

QSL Samples. Dime, refundable. Roy Gale, W1BD, Box 154, Waterford, Conn.

QSLS of distinction. Three colors and up. 10¢ brings you samples of distinction. Uncle Fred, Box 86, Lynn, Penna.

NOVICES! Generals! (samples 9½¢). Want reasonably evaluated "tacked-up-type" different, unique, comic, sedate, infrequent, uncommon, curious, peculiar, incomparable, singular, unprecedented, extraordinary, remarkable, unusual QSL's, SWL's, YL-OM's? Rogers, KØAAB, 737 Lincoln Ave., Saint Paul 5, Minn.

QSLS. Samples, dime. Printer, Corwith, Iowa.

QSLS, SWLS. 3-colors, 100, $2.00. Bob Garra, W3UQL, Lehighton, Penna.

QSLS-SWLS. Samples free. Backus, 703 Cumberland St., Richmond, Va.

QSLS: Cartoons, colors, something different! Samples 15¢. Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

QSLS! Plaques! Signs! Catalog, 3¢. WAT, Box 128, Brecksville, Ohio.

QSLS. You've seen the rest — now try the best! Ham's "Super-Speed Specials" are the most! 2-3-4 colors. Samples 10¢. Robinson, W9AYH, 12811 Sacramento, Blue Island 5, Ill.

QSLS-SWLS. Lower than 1¢ each and up. Samples free. Bolles, Box 9907, Austin 17, Texas.

QSLS-SWLS. 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore 29, Md.

QSLS-SWLS. Samples, dime. Rusprint, Box 7507, North Kansas City 16, Missouri.

QSLS. Glossy. Samples 10¢. W1OLU Press, 30 Magoun, Medford, Mass.

QSL Special. Free sample. "Nat Stinnette", W4AVV, P. O. Box 155, Umatilla, Fla.

FOR Sale: QST 1932 to 1947, 25¢ ea. Four or more. WØMCX, Art Jablonsky, 1022 N. Rockhill Rd., Rock Hill 19, Mo.

MULTI-BAND Antenna. 80-40-20-15-10, $19.95. Patented. Send stamp for information. Lattin Radio Laboratories, Owensboro, Ky.

FOR Sale: One kilowatt xmitter, C.W. 80 thru 10. Pushpull 813's, Hunter doubling unit; outboard VFO. Six ft. cabinet, two antenna couplers. Prefer local sale: $600. W2JA.

SALE: 6 volt dynamotors, like new, 645 volts 155 Ma., $14.95; 600 volts 265 Ma., $16.95; 380 volts 340 Ma., $16.95; 1CA Deluxe Signatone code practice oscillators. $7.95. Postage extra. Lectronic Research, 719 Arch Street, Phila. 6, Pa.

WANTED: BC-221, BC-348, BC-312, BC-342, BC-610-E, ARN-7, BC-788, ARN-6, APR-4, ARC-1, ARC-3, ART-13. All types surplus or amateur transmitters, receivers, test equipment taken in trade for New Johnson Viking Ranger, Pacemaker, Valiant, Hallicrafters, Hammarlund, National B&W, Gonset, Elmac, Telrex, Fisher Hi-Fi, etc. Write Tom, W1AFN, Alltronics, Box 19, Boston 1, Mass. Tel. Richmond 2-0048.

TELEPHONE Transmitter. Hand-set type. Suitable for inter-house phones, speakers or any communication purpose. Delivered two for $1.00. No C.O.D.'s! Dept. C-230, 1760 Lunt, Chicago 26, Ill.

SAN FRANCISCO and vicinity. Communication receivers repaired and realigned. Guaranteed work. Factory methods. Special problems invited any equipment. Associated Electronics, 167 So. Livermore, Livermore, Calif. W6KF, Skipper.

WANTED: 2-way FM equipment. Phillips, 1312 McGee St., Kansas City, Mo.

WANTED: Used receivers and transmitters! Will pay cash or trade. 10% down with up to 24 months to pay. Have in stock: Collins 75A4, KWS1, new 75A3, Johnson, Barker & Williamson, National, Hallicrafters, Hammarlund, Gonset, Central Electronics, Hi-Gain, Gotham and Mosley beams. Write Ken, WØZCN or Glen, WØZKD, Ken-Els Radio Supply Co., 501 1st Ave. North, Ft. Dodge, Iowa.

SELL: 2-meter Communicator $175; 60 dynamotors 600V 250 Ma, $10; Motorola FM 30-50-Mc. transmitters and receivers, $70. Other gear. Will consider trade. W8LRT.

FOR Sale: One Meissner Signal Shifter with power supply. Partially built rig, cabinet complete with meters, knobs, frontal plates and all parts necessary for completion. Rig runs pair of 812As in final and is modulated with pair of 811s. Spare transformer for bigger final included. Any reasonable offer accepted. Sturgis Hiller, W1-KPG, Foxboro, Mass. Tel. KIngswood 3-5736.

SELL: 150W shielded bandswitching fone/c.w. amplifier, pwr. supply; Meissner EX signal shifter, TVI suppressed, both $100. Will not ship. W4RWA, 1502 No. 18th Ave., Lake Worth, Fla.

WANTED: Highest prices paid for ARC-3, ARC-1, BC788, BC610, BC348, ART13, BC312, BC342 and other military or aeronautical surplus. Name your price. We pay freight and c.o.d. James S. Spivey, Inc., 4908 Hampden Lane, Bethesda, Md.

BC-610, complete with coupler, filter, mike, spare tubes; 750 watts, VFO 160 to 30 Mc. Answer all inquiries. W8SWF, 7711 W. Morrow Circle, Dearborn, Mich.

SCHEMATIC diagrams ARC-5 80-40 meter rcvrs and xmitters, 25¢ each or trade. S. Consalvo, 4905 Roanne Drive, Washington 21, D. C.

FOR Sale: Dismantling three 1 K.W. rigs. All parts for sale. High and low voltage rack mounted power supplies: 500-4000 v.; two 6.1 KVA motor driven "Powerstats," G-E, Weston AC and DC meters, preamplifier, two 6 ft. racks, 2 VM-5 Multi-Match modulation transformer. W1JYQ, P. O. Box 426, Stamford, Conn.

KNOW Morse Code in minutes. Revolutionary code teacher proved 10 years. 50¢ and self-addressed stamped envelope to "Philkoda-S", 7120 Lahser, Birmingham, Mich.

POSITION Wanted. Poor health forces me to seek employment at home, either full or part time. I am an electronics school graduate. Also have a First Class radiotelephone license and ham radio experience. Please contact: Eugene May, W3ZST, 3337 Ivanhoe Rd., Pittsburgh 34, Pa.

SALE: NC-173 receiver with speaker, good operating condition; must sell. First $100 takes it. F.o.b. Blacksburg, Va., Box B-20, Tech Station.

NEW 417-A tubes. Swap for two Eimac 4-250A tubes. Lauder, W9PVD, Park Forest, Ill.

SELL: NC-125 with spkr, like new, $120 or best offer. Tom Salzer, 737 Chestnut St., Waban 68, Mass.

SELL-TRADE: 45 amp. Variac; BC-438 frequency meter, 20 to 470 Mc., Hallicrafters S-27 AM/FM receiver, 27 to 145 Mc., 12 volt 50 amp generator; BC-1162A Heterodyne wavemeter, 150 to 220 Mc.; Ferrit model 610 sine square wave generator; RCA WO-55A 'scope, new CR tube; potential transformer, 3,300 volts-115 volts, 50 volt amps, 1½% 14,000 volt condenser. Slim's, 2025 Sunkist, Waukesha, Wis.

20 Tube amateur communications receiver and small transmitter in one case; 2 R.F. stages; 85 K.C. 2nd, I.F., 6146 final; 115 volts A.C. $200 cash. Ed Chapman, VE6PK, Brooks, Alta., Canada.

TRADE: Heathkit 20 W Hi-Fi amp. for 40-watt modulator. Sell; SCR522 rig. Partly conv. with panels, $15. George Leininger, W8-QZF, 16412 Marquis Ave., Cleveland 11, Ohio.

BRAND New original carton American Electronics Moniscope. Regular $129.95. Best offer over $100. W0PRM.

LEECE-Neville Alt. 6v-60 amp, $40; Westinghouse Dynamotor 6v-600v-155 Ma. with RCA Vibra. Transf. 6v-200v-50 Ma., $10, in perfect condition. W9UFX, R #1, Box 221, Stoughton, Wis.

SELL: Modified ATI, perfect condx, $25; VFI with power supply, $15; 20 watt Modulator, $12. Charles Sonberg, K2OKG, 17 Hillside Ave., Peekskill, N. Y.

RANGER $175, Matchbox, $30; Signal Sentry, $12.50; Johnson LP filter, $10; Johnson SWR Bridge, $7; unused Dow 115 VAC coax switch, $10. All above in excellent condx. Marvin Fein, 29 Wynmor Rd., Scarsdale, N. Y. Phone 3-3493.

FOR Sale: Car radio converter 1.6, 6 Mcs. with antenna used 6 months: $65. Fred L. Mayer, Mt. Pulaski, Ill.

SELL: Lakeshore Linear, P-400-GG $75 watts SSB 200 watts AM, $219. Central Electronics Model B slicer, $75; both items used less than one month. Guaranteed. Want: 6-meter Gonset converter trade. G. F. Guler, Palmetto Trailer Park, Box 205, Merritt Island, Fla.

PAIR of Vocaline citizens' band xcvrs w/ground plane antennas, $99; 1956 Motorola color TV set, blond, $300. Reason for sale: too far from station. Complete G-E 60-watt 34-44 Mc. FM mobile set model FMD, 6 volt, $75. Two stage Novice 30 W xmittr w/pwr supply and xtral, $22; BC453 converted w/pwr supp., $15; Astatic JT30 and floor stand, $15. W9IDSV, Webster, Wis.

COMPLETE Novice station: New National SW-54 rcvr, like new, 30 watt xmitter, key, xtal, etc., all-band field strength meter; 75 ft. new coax with fittings. Everything: $65. Like new 6 volt 75 meter 20 watt mobile phone transmitter, dual Vibrapack, new chest-mike, 25 ft. new coax with fittings, everything: $45; 10 unused supplies ranging from 500-1000v./250Ma., $15 each; 8 unused 40-watt modulators, $15 each; 5 unused A.C. bias packs adjustable 0-115v., negative, $5 each; new 1000-0-1000v./250 Ma. transformer, $10. W8QKU, 2748 Meade St., Detroit 12, Mich.

SALE: Bud coils, VCL, MCL, MLS, others. Send for list. Any reasonable offer. W2DUO.

WANTED: Millen 90810, set HDVL coils, 45 RPM (only) changer modestly priced. J. Gillson, Mullin Lane, Wilmington 3, Del.

FOR Sale: Gonset 6-meter Communicator, in perf. condx, incl. 4 xtals, carbon mike, finger tuning knobs and rack for portable Mobile Mount: $177; 60 in. 6 meter stainless steel mobile whip, $4; perfect Gardiner AC operated code practice machine with 12 new tapes, $15; pair new 829B's, $5 each; pair surplus new 304TH's, $5 each. Al Cookson, K2LHP, 96 Westland Rd., Cedar Grove, N. J.

LIMITED Quantities: Surplus equipment at astounding low prices. Order by stock number. Dynamotor less filter b., input 14V., output 375V. 150 MA (20) Stock No. 58P161, $3.50; Dynamotor w. filter b., input 14V., output 425V. 163 MA (80) Stock No. 58P162, $6.30; Mobile Dynamotor DM 42A, input 14V., output 515V. 215 Ma or 1030V.-260V. (40) Stock No. 58PZ172, $9.95; T21 ARC-5 (BC-458 VFO) Exciter, 5.3-7.0 mc. (40) Stock No. 58SX159, $8.75; T23 ARC-5 Exciter, 100-150 MC (20) Stock No. 58SX287, $8.95. Send for list of reconditioned equipment with 90-day new set guarantee. Write to Allied Radio, Chicago 80.

SUPER-PRO (SP-210-X) receiver with power supply and matching speaker, in excellent condx, $150. A. Metzger, 3556 So. View Ave., Wantagh, New York. Tel. SU 1-6300.

PREFER Wife. Must sell 6 volt mobile station. Morrow 5BR converter; commercial appearing 25 watt homebrew bandswitching xmttr; dynamotor supply; Master Mobile antenna complete; all cables, etc. Presently operating. All for $150. K2LGS, Auguste Schwab, Jr., 560 Woodmere Blvd., Woodmere, L. I., N. Y.

FACTORY-built 20A with QT1 like new, $170; 458 VFO factory case and panel, $30; Gonset mobile complete in one package (picture on request), complete, $195 or: Command transmitter $75; VFO $20; Superceiver $80; Super Six, $25. Complete price includes dynamotor and relay. Collins crystal calibrator for 75A receivers, $12.50; Turner type 999 quality microphone with desk stand, $17.50; Hallicrafters SX-96, original packing case and manual, $165. All equipment guaranteed clean and perfect. F.o.b. Phoenix, Ariz. Frank Shopen, W7-EBG, 4916 W. Indianola, Glendale, Ariz.

VIKING II and VFO w/push-to-talk, perfect condx, $260 or make offer. Dick Shamis, W0OFL, Valentine, Nebr.

WANTED: Good used type approved citizen's hand equipment, State price and type. Don C. Palmer, W0SNL, 1220 4th Ave. South Ft. Dodge, Iowa.

NC-98 and speaker; TBS-50D and VFO TVI suppressed, $175; will sell separately. 3650 CT xfrmr at 450 Ma., $20; Gonset clipper-squelch $12.50; PE101C dyn. converted 6 or 12V mounted, $10.50; crystals. R. D. Connor, W12QP, 65 Suffolk St., Worcester, Mass.

HQ-129X, last series, in new condx, $169. R. Long, 933 E. Broadway, So. Boston, Mass.

COLLINS 310-B1 TVI suppressed; switch pi-net output, instruction manual: $195. D. P. Lucido, 100 Morello Ave., Martinez, Calif.

HELP Wanted: Engineer Electronic Test equipment. Test equipment engineer to supervise and conduct experiments for development and improvement of test equipment. Five (5) years of experience on electronic test gear. Excellent starting rate. Send resume to A. P. Kokoska, Personnel Manager, or phone DuBois 2100. Jeffers Electronics Division, Speer Carbon, DuBois, Pa.

RADIO magazines. Buy, sell or trade. Bob Farmer, Plainview, Texas.

EICO 325 generator, $35. K2LVK.

COLLINS 32V3, $500; RME speech clipper, $35; Johnson Matchbox, $35; National grid dipper, $40; all equipment like brand new. Bill Tucker, W2FXE, 456 Colonial Ave., Union, N. J.

75A-1, $225; B&W 5100, $250; B&W 380 TR switch, $15; Johnson SWR Bridge, $5; TS-9 Handset, $3; D-104 mike with G stand, $20; Superior 670-A VOM, $20; Remington 17 mill, all caps, $35. Fred S. Eggert, 11833 Wisconsin, Detroit 4, Mich.

SELL: Excellent condition Model A slicer, factory wired, $45. KN2SIF, Moss, 70 Longfellow Rd., Great Neck, L. I., N. Y.

KW Final amplifier for sale: pair 810's, p.p. final, pair 810's, Class B modulators, 110V. AC relays for filament and hi. voltage, 2½ K VA power supply. All equipment built in standard relay rack, commercially built with meters in each unit. Make an offer. Will sell right. Alfonzo Izzo, White River Jct., Vt. (Rim Elec., W. Lebanon, N. H.)

WANTED: Inexpensive VFO, preferably with power supply but will consider any good offer. Richard Light, 640 Riverside Dr., New York City.

RECEIVER National 183-D with speaker, like new, first $325 takes it. K2TZB, Steve Pieklo, 400 Brook St., Linden, N. J.

HALLICRAFTERS SX-28/spkr. Recently reconditioned by an expert. Gud sensitivity on all bands except 10 M. Ship for $80. W3ONE.

FOR Sale: New, used and surplus test equipment, receiving tubes and components, books and magazines. Write for list. Cecil Baumgartner, W3TYD, Box 343, Milton, Pa.

ARE you a "gambler"? Moving. Will guarantee net cost inventory over $1000. Yours for $250. Transmitting parts, tubes, meters, everything. 90% new, no junk. No time to list or ship. Bring a truck. Grab real bargain fast. W2RTM, 443 Saratoga Road, NYS Rte #50, Scotia, N. Y. Phone EX 9-1131.

COLLINS KWS-1 with 4X250BS in exc. condx: $1600 F.o.b. Bristol, Conn. W1AVR, A. B. Nelson, 350 Fern Hill Rd., Bristol, Conn.

WANTED: Beam filter type NAF 68304 in perfect shape, no changes. Pay good price. W1AJZ, 38 Ayer Lane, Harwichport, Mass.

TV Experimenters! Used imagine-orthicons, $25; deflection yokes, $75; focus coils, $40. R. A. Holbrook, W4UO, 3102 Lawrenceville Rd., Decatur, Ga.

COLLINS KWS-1. Purchased new, delivered late November 1956. Late series and never uncrated. $1895 cash or consider trade on retail price of $2095. W0FMK, Barnett. Telephone TE 7-3491, St. Louis, Mo.

FOR Sale: Complete single unit monitoring ten meter station 110 VAC Motorola 69-17AS receiver and 69-20A transmitter, $100; Gonset Communicator I, $125; National SOJ; unaltered RCA MI-7800 transmitter (10 or 6 meter mobile), $10; Lysco VFOR381; Reliance Electronic photoflash $10; Revere tape recorder, $100; Pickering model 230H preamplifier $10. F.o.b. W9OKM, Henry Kampe, 1207 Oneida St., Joliet, Ill.

SALE: 1 B&W model 370 single sideband receiving adapter, new and unused, $90; new and unused B&W Mod 51SB generator, $220; 1 Heath 3" 'scope, perfect, with RF probe B&W coils, $35; 12 meter station complete, Lettine Model 242 45 watts input; Tecraft converter, receiver, etc., etc. FB for CD Hq. station, $100. C. Judd, W2LZW.

COLLINS 75A1 and 32V1. Like new. Cash and carry $500. W6JXW, 11126 LaMaida Street, North Hollywood, Calif.

FOR Sale: Temco 75GA transmitter, $125; also several Petersen crystals 3.5 and 7 Mc. bands, $1.00 each. W1DBS, John Savonis, 11 Dwight Court, New Britain, Conn.

SWAP or sell: Central Electronics 10B, $95.00; Model B Signal Slicer, $60; bandswitching BC458 VFO, $20.00. Looking for DX-100. Local deal preferred. K2EOB, Golembeski, 16 East 48th St., Bayonne, N. J.

SELL: PCA-2T-200 Panadaptor with spare CRT, $50; B&W Butterfly cond. CX45B, $10; Millen R9r with 6, 10, 20 coils, $15; BC453B, $7. Wanted: Rotator and 20M Mini-Beam. W2LPC, 51 Elmira St., Hicksville, L. I., N. Y.

BARGAINS: With new guarantee: SX-43 $109.00; S-38C $30.00; SX-28 rack $99.00; SX-62 $179.00; S-27 VHF $79.00; Lysco 600 $69.00; Eldico TR75TV $40.00; Meissner EX VFO $25.00; SW-54 $30.00; NC-57 $65.00; Millen 90800 $14.95; Johnson VFO $24.95; Viking II $229.00; Ranger $189.00; RME-84 $65.00; Sonar SRT-120 $99.00; Globe Trotter $39.00; Scout 40 $49.00; Scout 40A $59.00; Scout 65A $75.00; Globe King 275 $225.00; Heath AT-1 $24.50; Heath AR-2 $22.50; BC-779w/p.s. (rack) $119.00 and many others. Free trial. Terms financed by Leo, W0GFQ. Write for catalog and best deals to World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

FOR Sale: Hallicrafters Panadaptor, $45; SX-71 rcvr, $150; 75A1 rcvr/spkr, $250; 310B1 TVI supp., $150; new Telrad freq. standard, $20; DB20A, $30; DB20, $20; VHF1S2, $40; SCR522, $20 new PE-103A, 2 at $25 ea; TBV, complete p.s. mike, etc., $30; Navy RBC rcvr, $60; Millen g.d. meter, complete, $45; Triplett VOM 625, $30; Millen ABS freq. meters, 4 in box, $20. Also new boxed Xmttg. tubes, meters, etc. W7FIR, Box 17, Coolin, Idaho.

GOING SSB! Sell Johnson Adventurer, Heathkit AT-1 and VFO. In excellent condx. Bargain! K2MLA, William Stern, 99-19 66 Road, Forest Hills 74, L. I., N. Y.

FOR Sale: 500 volt 200 Ma. supply (commercial), $15; 350 volt 200 Ma. 6 volt Vibrapack, $10; new 250TH, $10; various meters, $2; 2000 volt, 4 μfd, $2 ea. W7CTI, Erickson, 2756 Adams, Salt Lake City, Utah.

HRO60T, the finest, perfect — not a scratch; 20 hours use, 4 coils, $418; C.E. 20A, voice control, same beautiful condx, $192. Both in original cartons. Unused Telrex 20 mtr. 3-el. beam, $65. W2HQH, Rosencranz, 644 Wildwood Rd., W. Hempstead, L. I. N. Y. Tel: IVanhoe 1-1875.

SELL QST's and CQ's, 1943 to 1953 inclusive run; $1.50 full year. I. E. Aston, W3FMZ, R.D. 3, Box 134, Lancaster, Penna.

BEAUTIFUL Nickel-plated self-inking pocket rubber stamp. Name, address and call, $1.40. For sale: back issues of *QST*. Howard Rapple, W9VRB, 401 N. 2nd St., Humboldt, Iowa.

SELL: Jones MM-252 coupler and indicator in watts, Panadaptor PCA 2T-200; low pass filter, 300 ohm, Sonar low pass 52 ohm; National R-175A choke; Collins speaker, G.I. tape-disc recording mechanism, mobile power supply with relays 425V-375 Ma.; Johnson whip-load, Bi-net, G-E, FM tuner; Heath 'scope OM-1, Regency voltage booster; B & W KW balun 75 meters, UTC xtrmrs S-54, 62, 40; Merit P-3146, Gonset G-66 and power. Make offers to R. R. Lamb, 1219 Vardley Road, Morrisville, Penna.

COLLINS 32V2 new condx, $395; HQ129X and speaker, gud condx, $145; new 4D32 prepaid, $13; Lettine xmitter, $55, xtal calibrator, mounted baluns, new tube checker, mikes, etc. List and detailed info for stamp. Sickness in family reason for selling. L. Blum, 396 E. Whittier St., Columbus 6, Ohio.

COLLINS Xmitter 32V3 with TVI supp. filter used 20 hours, $500; Collins 75A1 rcvr A-1 condx, $200. Will sell both for $700 and throw in BC-221 with AC pack, mike and 20-meter coaxial fed dipole antenna. S. Hack, W2JBW, 74 Meadow Woods Rd., Lake Success, N. Y.

SALE: 5-el. 2-meter Telrex beam, $8. W4WSF, Kanode, 244 Parkway, Winchester, Va.

I Apologize for the derogatory ad inserted in the November QST with regards to my Harvey-Wells T-90, R-9A and APS-90. I had been made momentarily angry by the prospect of leaving the country without the rig of my choice and in which I still have full confidence. The Harvey-Wells Electronics Co. has been the innocent victim of my resentment. I am very sorry. W1LRV.

FOR Sale: Viking Ranger with tubes, $200; Hallicrafters S-76 receiver with Bud FCC-90 xtal calibrator, $115; Johnson 275 watt Matchbox, $30. F.o.b. Maplewood, N. J. H. C. Vance, Sr., K2FF, 33 Oakview Avenue, Maplewood, N. J.

CASH Paid! Sell your surplus electronic tubes. Want unused, clean transmitting, special purpose, receiving, TV types, magnetrons, klystrons, broadcast, etc. Also want military, and commercial lab test and communications gear. We swap, too, for tubes or choice equipment. Send specific details in first letter. For a fair deal write, wire or telephone: Barry Electronics, 512 Broadway, New York 12, N. Y. Tel. WAlker 5-7000.

COMPLETE Mobile outfit for sale or for trade: Elmac AF67 transmitter, Elmac PSR6A receiver; PSR-6 power supply; P. E. 103 dynamotor w/cables; Johnson Whipload-6 loading coil; deluxe mount and whip, mike, coaxial relay, all cables and harness. Best offer over $200 or will trade for gud Collins rcvr or what have you? Stan Pope, W4ZPU, P. O. Box 774, Cramerton, N. C.

RUBBER Stamps, call, name, QTH. Send for samples. C. W. Hamm, 542 N. 93rd St., Milwaukee, WI9UNY.

FOR Sale: Globe King 400A xmittr, LN condx, $285; Meck T60-1 xmittr, excl. condx, $30; Sonar CFC VFO, LN $20; HQ120X, rcv. $90; Eico Model 566 Multimeter, new, $12; Eico Model 625 tube tester, $25; Weston Mod. 785, Industrial tester, $20; new 3" RD Simpson 0-400 Ma. meter, $5; T-32 desk type carbon mike, $3; Bud Deluxe 19" cabinet, 26½" panel spacing screened for TVI suppression, $15; Johnson automatic key, $8; 40 surplus tubes, all $8, one pr. Mitchell wireless intercoms, $35; 40 & 80 meter xtals, 75¢ ea; Lot of small items free with each sale. All F.o.b. John H. Ashley, W4OSC, Box 254, Ware Shoals, S. C.

SELL: Factory-wired 20A rack mount, with QT1 and low pass audio filter, Central Electronics Deluxe VFO. Both in excellent condition: $200. W1SUQ.

WANTED: Collins 75A2, 75A3, 32V2, 32V3, state lowest cash price. Sell: Gonset 2 meter Communicator II with Astatic mike, $160; Hammarlund Super-Pro broadcast thru 21 Mc. with spkr and pwr supp., $125; RK4D32 new, $12; 4E27A, $9; 4-125 $9; Vibropack VP554 225-250-275-300 V., 100 Ma., $9; Heathkit 0-6 'scope, $19; Amertran Multimatch CL-B transformer, $9; all in excellent condition. F.o.b. List of meters, transformers, etc. for stamped envelope. Joe Harms, W1GET, Plaistow, New Hampshire.

FAMOUS VHF "Lunenburg" antennas, 6 meter 5 element, $14.95; 2 meter 6 element, $6.95; 6 meter horizontally polarized Mobile antenna. Wholesale Supply Co., Lunenburg, Mass.

SELL: Heath AT-1, used six months, perf. condx, $26. John Kellerman, KN9DEZ, Watertown, Wisc.

FOR Sale: Items described in October Ham-Ad reduced: Signal Shifter, $32; 'scope, $38; relay $5; selsyns pair $7; Multi-Match $6. Also few brand new W.E. 8 volt filament equivalents of 4-400A, $5, pair $9. New T-17 hand mike, $4. Collins 75A3 top condx, $365. First check buys. S. Tucker, W2HLT, 51-10 Little Neck Pkwy, Little Neck 62, N. Y.

HAMMARLUND SP600JX, rack model in perf. condx, $550. F.o.b. Chicago, W9DHT, Dick Karl, 2836 Leland Ave., Chicago, Ill.

COLLINS 75A3 800 cyc. 3 KC filters, calibrator and matching spkr, $375; Viking Ranger, one year old, factory-wired, $180. Jim Baron, W9TVF, 6040 W. Foster Ave., Chicago 31, Ill.

PRINTED Circuit board, 4 x 8½" sheets, ⅛" thick, .0014" copper, and plastic protective coating, 40¢. Other sizes on request. Robert Parks, 1245 Overlook, Lakewood, Ohio.

FOR Sale: Radio Specialties 3-Bander beam, brand new condx, used one month, will ship: $65; Model 12 teletype, $50; Master Mobile Mount antenna, new bumper mount, $7.50; SCR-522 with RA-66 110V power supply, $50. Will trade Exackta 1V 35 mm. f1.9 camera for equivalent ($250) communications equipment. Gordon Turner, W1QWI, Monomoy Rd., Nantucket Island, P. O. Box 1198, Mass.

FOR Sale: "Gardiner" automatic code sender with ten rolls of tape. Excellent condition. $20. South Philadelphia Amateur Radio Klub, c/o Joseph Mammino, W3NJS, 537 W. Springfield Rd., Springfield, Pa.

WANTED: 20A SSB exciter, QT1, BC458, 75A4. State price and condition. U. C. Nolte, K2EQT/5, 150 A. Luna Lp., Holloman AFB, New Mexico.

BEST Offer over $150. Two meter station of W2K1R. Transmitter, 12AT7, 12AT7, 2E26, 829, 811's modulator, four power supplies in 32" table rack. Twenty element beam with 75 ft. RG8U. Alliance U83 rotator and indicator, Tecraft converter 14-18 Mc. IF. Will not ship. Al Ekblad, 161 Evans St., New Hyde Park, L. I., N. Y. Tel. FL 4-4122.

WANTED: 75A4 receiver, in perfect condition. Vernier dial, 3 filters. W6MHW. Box 403, China Lake, Calif.

PERFORATED Aluminum sheet .051, 5/64" OD holes, ½" centers, $1.20 sq. ft., cut to size. Send for listing on beams, aluminum tubing, etc. Radcliff's, Fostoria, Ohio.

FOR Sale: Deluxe 2 meter Communicator for 6VDC and 110VAC operation, set new in August 1956 and never used. Complete with ant., schematic and instructions. Must sell. Am shipping overseas. $150 or best offer. A/2C Frank T. Laughner, 46th FTR INTCP SQDN (ADC) Dover AFB, Del.

SELL: RME Preselector DB23. Used only 3 hours. New, $40. W3ZSC, Bostert, 128 Hershberger St., Johnstown, Pa.

USED Knight Space Spanner receiver $10. T. Marsh, 3321 Cadillac, Wayne, Mich.

FOR Sale: B&W 5100 excellent condition. $450. W5TOM, 1811 Ave. K, Galveston, Texas.

MILLEN 90887 RF amp. with 812As, filament transformer and coils for all bands, $60; Lysco Transmaster 600, $70; components for 1000V 250 Ma. power supply, $20; 20 watt plate modulator with multi-impedance output and built-in power supply, $20. R. Sykes, W2INV, Elmira, N. Y.

FOR Sale: NC24OD, $130; Hallicrafters HT-9 trans. w/3 coil sets and spare final, $125; 24G 10 mtr. final with spare tubes, rack mounted, $15; 75 watt CW trans and P.S., $20; English receiver type R-1147A and 12 V. Dyna. P.S. $15; Gonset 3-30 converter, $20; BC-603-D receiver, 20-28 Mc., $20. Two 814's, $10. W5QEX, R. J. Rudolph, 2709 Dakota, N. E., Albuquerque, New Mexico.

SALE: 65-watt phone/c.w. bandswitching xmittr described February 1956 QST, $85; new Triplett 630A VOM, $30; 2 new 6146 tubes, $2.50 ea.; new Shure 505C mike, $10; 6 volt coax relay $7. W7AVS, 2910 Rickie Vista, Tucson, Ariz.

HRO-W (militarized HRO-5) for sale. A-1 condx, new ANL, 10 sets coils, P.S., spkr, $125. Will deliver 100 mile radius. K2SPR 2-4 Edgehill Terr., Troy, N. Y.

SELL: Priced for a quick sale! Morrow 5BRF converter and FTR (mobile receiver) combination. Also, RCA tube caddy, 12 volt dynamotor, tool boxes, miscellaneous tools, tubes and parts. George Kravitz, 7919 20th Ave., Brooklyn 14, N. Y.

UNUSED BC-429 receivers, complete with 6 tubes, 2500-4700 Kc; coil and 201-398, 4150-7700 Kc 2-band coil. Shipping weight app. 18#, $2.95, c.o.d. only. George Salyers, 112 Neal Ave., Dayton, Ohio.

FOR Sale: Hammarlund Super Pro and Comet Pro w/spkrs; RME45 w/spkr; RME HF 10-15-20 converter; RME UHF 152A; RME DB22A Preselector, all with instrux books in gud condx. Many other ham articles. W8MF, 123 Winter St., Battle Creek, Mich.

MEISSNER EX Shifter, factory-wired, $45. Frank A. Chionchio, W2QIU, 90-05 242nd St., Bellerose, L. I., N. Y.

MOVING to 6. Sell my Novice gear. S38C, $35; Knight 50 watt xmittr, $50; CIRE Communications Course with TV, complete, used, $75. 100% QSL. Bob Wille, KN2RQU, 521 Ridge Road E., Rochester 21, N. Y.

FOR Sale: Collins 75A2 with spkr; Viking II, Viking VFO, factory-wired, D-104 mike. All in fine condx. Complete, $550. W1UFV, Blake, 75 Great Hill Rd., East Hartford, Conn.

CODE made easy with your Tape Recorder. Most modern method known. Novice course, $11. General, $10. Pass that code test with a breeze. Dual track 33/4 IPS. Tapecode, Box 31-E, Langhorne, Pa.

COLLINS 75A4, bulletin improvements incorporated by factory. Will ship. $475. Art Andersen, W8DEA, 1328 W. Home Ave., Flint 5, Mich.

LINEAR 400 Watt final, Lakeshore P-400-GG, factory fresh; first $200 F.o.b. Grand Rapids, Mich. W8QBA, Beineman, 136 Guild St., N. E.

SELL Or Trade: 75A3, spkr, calibrator, 3 and 6 Kc filters, $450. LM-15, freq. meter, AC supply, cables, original book, $100; Temco 75GA, 150 watt CW/AM 80-10 meters, Final 4-65A, $125; Amphenol Mims rotator, Selsyn indicator, $150; Navy RBV-2 Panadaptor, 455 Kc, $125; B&W 380B-TR switch, $18; Wanted: Variac: 2 KVA or larger; 4X250B tubes: Jones 264, SWR meter, 2 and 6 Kc filters 4A; Am variable VAC condensers; Winchester 50, 12ga.; Ampro 40, projector or equal. Will buy or swap. State your needs. Quote best price and condition. F.o.b. Oakdale, L. I., N. Y. Ted Wildin, W2HS, 288 Woodlawn Ave.

WANTED: Collins 51J-4, condition prime importance. Any 51J considered. Cash and/or Hi-Fi equipment. Complete details, price in your first letter. G. Stauch, 3303 Pope, Sacramento, Calif.

CANADIANS! BC348P receiver, BC221 and C2 frequency meters. New Hammond 10 meter 3-element beam; Transmitter: Sonar VFX 680 exciter; Millen 6L6-807 model 90800, 50 watt transmitter exciter unit; Millen 90881 amplifier 500 watt with power supplies in completely enclosed metal cabinet; assorted high voltage oil-filled condensers, filter chokes, new transmitting and receiving tubes, complete 250 watt Class B amplifier; Vibroplex, Bliley crystals, variable transmitting condensers, Hammond 765 transformer, 600 watt; also 1000 volt 350 watt transformer, relays, meters, etc. Send for list. VE3HJ. Telephone MO-9741, Toronto. W. F. Jones, 20 Donino Ave., Toronto 12, Ont., Can.

813 P.P. final amplifier on 9 x 17" panel, bandswitching grid circuit filament supply, B&W TVH coils, 10 thru 80, two 3" square Simpson meters 0-150-0-750 Ma. with tubes, $60. New dual power supply Stancor 1500 VDC at 300 Ma.; 360 V at 120 Ma. Never used, $65. F.o.b. W5NW, Box 586, Odessa, Texas.

FOR Sale: Hallicrafters SX-88, like new condx, used very little, $375 or will trade for Collins 75A-3 or A-4. Also, RME-45 rcvr Cal-O-Matic tuning, $85. Meissner Ex Signal Shifter, including 160 meter coil strip and NBFM adapter, $45. Wanted: Johnson Ranger. W8-SWI, Fred Chevillot, 15105 Tracey, Detroit 27, Mich.

INVERTER, 6V D.C. input, 117 V, 60 cyc. 100 watt output, new. $35. W1FVU, Robert Pavey, #7 4th Ave., Waterford, Conn.

SELLING out my station. Have three (3) transmitters, 3 (three) receivers, various odds and ends, and test equipment. Also mobile gear and antennaas and back issues of QST. All are in good shape and priced right. Send for free list. Ron, W9JVF, Box 256, Cumberland, Ind.

VIKING Valiant, $350, Collins 75A2 with 100 Kc., xtal, $325; Telrex 2 ele. 20M Super Mini-Beam, $50; HF 10-20, $40; SX-18 $50; prop pitch motor, $25; Sonar VFX 680, $20; Heath QF-1, $9.95, test equipment. W1ERX, 919 High Ridge Rd., Stamford, Conn.

SELL New 4D32 tube, $14 prepaid. Roy Sawdey, 5255 Harper, Solon, Ohio.

NOVICES! Sonar SR9 2-meter rcvr, slightly used. Will accept any offer over $40. John Daley, 30 River Road, Pittsfield, N. H.

AROUND THE WORLD HAM CARAVAN departing February 9th from New York City. Are you interested in going along? Write for details to Uncledave, W2APF, David L. Marks, 904 Broadway, Tel. 5-1594, Albany, N. Y.

SELL: 2-Meter Gonset Communicator II (6/115V) in gud condx, with Lysco ground plane antenna, $170. Phil Merikle, K2GJZ, Norman Place, Tenafly, N. J.

CENTRAL "A"-slicer $49.94, "B"-slicer $74.95, 10B $139.95, 20A $199.95, AP1 $4.95, QT1 $6.95; Collins 32V2 $450.00, 32V3 $550.00, 75A2 $299.95, 75A3 $375.00; Elmac A54 $99.95, PSR116 $19.95; Gonset 3025 $179.95, 3026 $149.50, 3041 $79.95; Hallicrafters S36A $69.95, S53A $69.95, SX62A $250.00, S76 $139.95, R46A $12.95; Hammarlund HQ140X $199.95, SP400X $229.95; Hi-Wells TBS50SR $59.95; Johnson Adventurer $44.95, Vik-II $249.95, VFO $39.95; National HFS $75.00, HRO50T1 $325.00, NC200 $129.95, NC100ASD $69.95, NC183D $275.00, NC300 $329.95, XCU300 $14.95; RME DB23 $39.95, 45 $99.95, 84 $59.95, MC55 $49.95, VHF152 $49.95. Many other used items available; write for latest list. Evans Radio, Box 312, Concord, N. H.

2-6-10 METER Hams. Overstock clearance of TV Boosters suitable for Pre-selectors, Converters and Experimentation. New, factory cartoned, Transformer powered for 110 VAC, with tubes and instructions; Standard B51 $2.40; Regency DB520 $2.50; Anchor 101-75 $2.50; Anchor 101-100 $3.50; Silman $2.50; Masco $3.50; Regency DB410 $2.50; Alliance AB-5 $4.95; Astatic AT1 $9.50; Astatic BT2 $4.95; Masco Superchief $9.50; Taco 1628 Ch3-6 $9.95; others. 300-Ohm 3-Way Antenna Switches-VEE-DX SW-1 $1.95, Taco #873 $1.95. Couplers-VEE-DX SOMM25 $1.00, JFD Q283 $1.00. Will ship C.O.D. or you may send Check or Money Order. Please include postage. Ladd Electronics, 111 North 41st, Omaha, Nebraska.

NEW for all Hams and SWL-ers. Great for the Mobile Rig, too. Ur call letters in plastic that attaches to any smooth surface, car windshields, xmitter, rcvr, etc. Only $1.00 postpaid. Frad Co., Dept. A2, Box 234, Coshocton, Ohio.

COMPLETE Station and equipment for sale: One KW/CW xmitter, stable VFO, worked 100 countries. Built into desk, well metered, diagrams. Highest quality components. NC-200 rcvr, built-in keying monitor; Riders Manuals, like new, Vol. 1 thru 19 (except 18); TV Manual No. 1; tube checker, signal generator, auto radio service power supply Multitester. Hundreds of tubes, condensers, resistors. Thousands of parts, extras. Prefer Detroit area deal. First $600 takes everything. W8DEH, 22332 Ann Arbor Trail, Dearborn, Mich. Tel. LOgan 3-6780.

WANTED: Buy, rent, or borrow for copying. Complete instruction book Pierson KP-81 receiver. K2DFE, 263 So. White Horse Pk, Berlin, N. J.

GEORGIA Sale: Complete KW/CW rig, PP813's including all power supplies with two 6KVA power transformers, $200. Also other items. Call, write or visit G. D. Guler, DE 9057, 119 Vidal Blvd., Decatur, Ga.

SELL or swap for 2-meter gear. All-band 450 watt final. 75T's P.P. 838's mod. Sep. power supplies. Full metering. Auto xfrmr controls primaries. Rack, dolly, spare tubes, $125. RA-32-8 phone/c.w. Collins xmittr. 4 pretuned frequencies, $50. Norm Harner, W9YWF, 911 W. Mishawaka Ave., Mishawaka, Ind.

CLEANING House: Large quantity of parts, tubes, tools, books, magazines for sale. Stamp for list. M. Marshall, 455 Washington Ave., Dumont, N. J.

BARGAINS: Reconditioned with new guarantee. Shipped on approval. Hallicrafters S38 $29.00; S40 $39.00; S40B $79.00; S85 $89.00; SX43 $99.00; SX99 $119.00; S76 $109.00; SX96 $189.00 SX100 $229.00; SX71 $149.00; National NC-57 $59.00; NC88 $79.00; NC98 $119.00; NC-125 $129.00; NC183, NC240D, NC183D, HRO5TA1, HRO50T, HRO50T1, HRO60, NC300, Hammarlund HQ140X $179.00; HQ129X, HQ150, Super Pro, SP600JX, Viking Adventurer $89.00; Ranger $189.00; Viking II $199.00; Collins 75A1, 75A2, 75A3, 75A4, 32V2, 32V3, mobile converters, receivers, transmitters, many other items. Easy terms. Write for list. Henry Radio, Butler, Mo.

BEFORE You Sell — Check with Rex! Wanted: Surplus military and commercial aircraft electronics. BC-788, 1-152, ARN-7, ARC-1, ARC-3, BC-221, RTA1B, ART-13, DY-21, APN-9, transmitters, receivers, test equipment, etc. Also Want Electronic Tubes: broadcast, transmitting, receiving, Magnetrons, Klystrons, miniatures, sub-miniatures, ruggedized, etc. For Top Prices Contact: Bob E. Sanett, W6REX, 1524 S. Edris Dr., Los Angeles 35, Cal. Phone: REpublic 5-0215.

ONE 3-el. Gordon 20 m. beam & rotator, $200; 1 NC-125 rcvr, $100; 1 SW3 rcvr (DC) $20; 2-H.V. voltage pwr supp: 1-1A. @ 3M volts (overload relay, etc.) $150; 1-500 Ma. @ 1500 V, $50; 1-404TI, with socket, $5, 2-806's, $10, both never used; 1-Weston 0-2000 Voltmeter, $10; 1-Telrad #18 freq. std., $15; 1-500 Ma. 2M volt xfrmer, $15; Geo. Gathman, 32 Delaware St., Elizabeth 1, N. J.

ELMAC A54H, $90; Morrow 3BR, $30; B&W 5100S, $350; B&W 515B, $150; 36 in. standard rack cabinet, with steel castors, $15; BC454 and BC455 "as is", $5 ea.; Elmac 4-65A, $10; New Thordarson 866 fil. transf., $4; 5 volt 15 amp. steel cased fil. transf. $5. All f.o.b. John Huey, 390 Hill, Elmhurst, Ill.

COMMUNICATOR "S" Meters. Illuminated. Just plugs in to attach. Also, new and used Gonset Communicators, linear amplifiers, V.F.O.'s, G-66's Commander Transmitters, Super-Sixes, Elmac AF-67's, PMR-7 rcvrs, etc. Special: Gonset 2-Meter Communicator II, brand new, $199.50. Graham Co., Bob Graham, W1KTJ, Stoneham, Mass. Tel. ST 6-1966.

SELL: NC57, $50; Adventurer, $40. Richard Kirkpatrick, Sr. 41 East, South Hadley, Mass.

300 Watt Mobile Transmitter: Terrific performance. Complete with 6 volt Leece-Neville system delivering 700 watts 115 AC thru transformers. All-band, custom built, TVI suppressed; Grammer 4E27 final, 811-A Class B modulators; 3 stage dash-mount VFO cathode follower output to transmitter in trunk; remote-tuned antenna. Operating in 1950 Ford. Price, $450. Also sell car $350 in deal to transmitter customer include excellent BC946 fully-converted rcevr., Gonset Converter. Spent $400 for factory rebuilt motor, other components. Everything tiptop. No time to operate. Won't ship. S. W. Ellner, W2TC, 393 West End Ave., NYC. Phone evenings AC 2-0877 or days, LO 5-5200.

TRADE: Tiny Tim battery charger, model L124, 12 volts, 300 watts. Powered by Continental gas engine. Ideal for mobile work in the field. Will trade for 3000 v. 500 m. power supply complete. H. C. McDonald, 19 First St., Shelby, Mich.

HALLICRAFTERS SX-25 receiver and speaker perfect, $60. Meissner Signal Shifter with power supply, $25; Carter Dynamotor 6 V. DC, 50 DC output complete with relay filters, $15. Dan Antrim, 4022 Woodruff Rd., Lafayette Hill, Pa. (Montgomery County). Tel. TAylor 8-9604.

FLORIDA Vacationing? Ham facilities available on premises. Wigwam Village, Motel Tepees, South Orange Blossom Trail, Orlando Fla. Johnny Southerland, Jr. W4TBH.

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SELL a single or par 813 final, pi output, grid complete, grid and plate metered, on chassis and panel, with a 1000/2000 volt heavy duty power supply with relays, etc. both mounted in 19 x 21 metal cabinet, $60. AN SCR522 converted for commercial oper, mounted in 19 x 20 metal cabinet, complete with power and bias supplies, with extra tubes, $60. My junk box, xfrmrs, chokes, many tubes, even a Gonset 6-10-15 meter converter, full of valuable articles, $60. Will answer inquiries. D. C. Paulsen, W5FTK, 220 Cedar, Franklin, La.

TRANSMITTERS. Stancor 60P, phone/c.w., 60 watt complete, $29; 90 watt VFO, c.w. xmitter, $16. W. Gardner, 4627 Briarcliff, Baltimore 29, Md.

1000 Kc xtals, in FT 171B holders, $1.50; 500 Kc xtals in FT 241A holders, 75c. Combination offer, $2. All items postpaid and guaranteed. E. Engebretsen, Country Hamshack, R.D. 1, West Monroe, N. Y.

FOR Sale: Used Ameco Senior Code Course, 22 recordings up to 18 wpm. In excellent condx. $10 ppd. R. G. Sickly, KN2TSX, Geneseo, N. Y.

Factory-built ham receivers and transmitters bought & sold. Olson, 1165 So. Saint Paul, Denver, Colo.

WANTED To buy: BC-224, BC-348 receivers. Also urgently need: ARC-3, BC-788, R5/ARN-7. Trade or top cash offer. Harjo Sales Co., Dept. E., 503 North Victory Blvd., Burbank, Calif.

FOR Sale: Variable condensers 3 25 $\mu\mu$fd 3500 volts, $1; two 80 $\mu\mu$fd 4500 volts, $3; one Cardwell 70-70 $\mu\mu$fd 3000 volt, $3; one Cardwell 150 $\mu\mu$fd 3000 volt, $2.25; dials ACN, $2.50 National N, $1.25; tubes 1 100TH, $4; 4 815, $1; 2 811A, $2.50; 2 Kenyon 10H 300 Ma. chokes, $4; 1000 Kc. xtal for BC221, $3.50; National MB40, $9.50; Mallory VP6-260 Vibrapack, $10. W2JGF, 5 Oakbrook Rd., Ossining, N. Y. Tel. OSsining 2-5372.

MILLEN 90811 RF amplifier for 2 to 20 meters. Comes complete with 829B tube, 2 and 10 meter coils, $25. K2POA, Johnson, 29 Boone St., Bethpage, L. I., N. Y.

FOR Sale: Viking KW with matching desk, Collins 75A3 w/mtch spkr, Viking Ranger set up to drive the KW; tape recorder (Bell); Oscilloscope (5"), high pass filter for KW, coax relays for the station, 20 meter Gonset beam and many extras. Station cost over $4000. Will sell for $1950 cash. La Verne Gerboth, P. O. Box 893, Redwood City, Calif.

COMPLETE Station: Collins TCS transmitter, receiver, and pwr supply; 65 watts AM, 75-110 CW., 1.5 to 12 Mc, xtal/VFO; low pass filter, antenna relay, loading coil, speech amplifier, noise clipper, stable VFO, etc. at no extra cost. $130. Al Steigerwald, K9AOU, 4716 North Paulina, Chi., Ill.

JAGUAR XK-120 Sports Roadster, color red, green leather upholstery, 1952 model, wraparound rear bumper, twin Douglas mufflers, wind wings sideview mirrors, radio & heater. Only 15,000 miles. Exc. condx. Will swap for Collins KW-1 factory condx. How about it, fellas? W3AKP, B-60 Ranch, Crownsville, Md.

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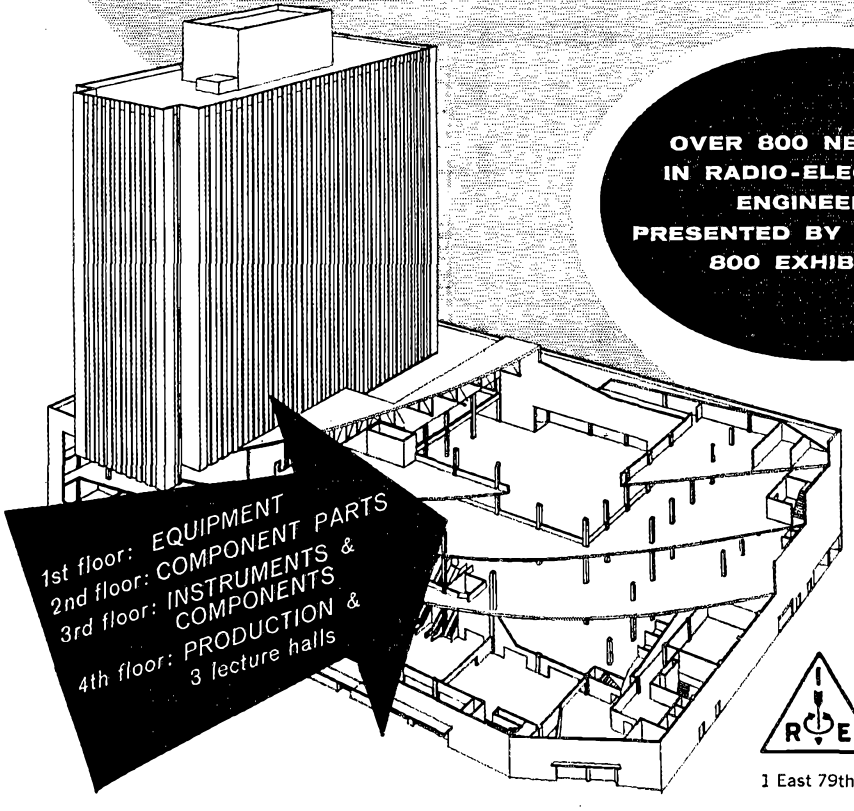

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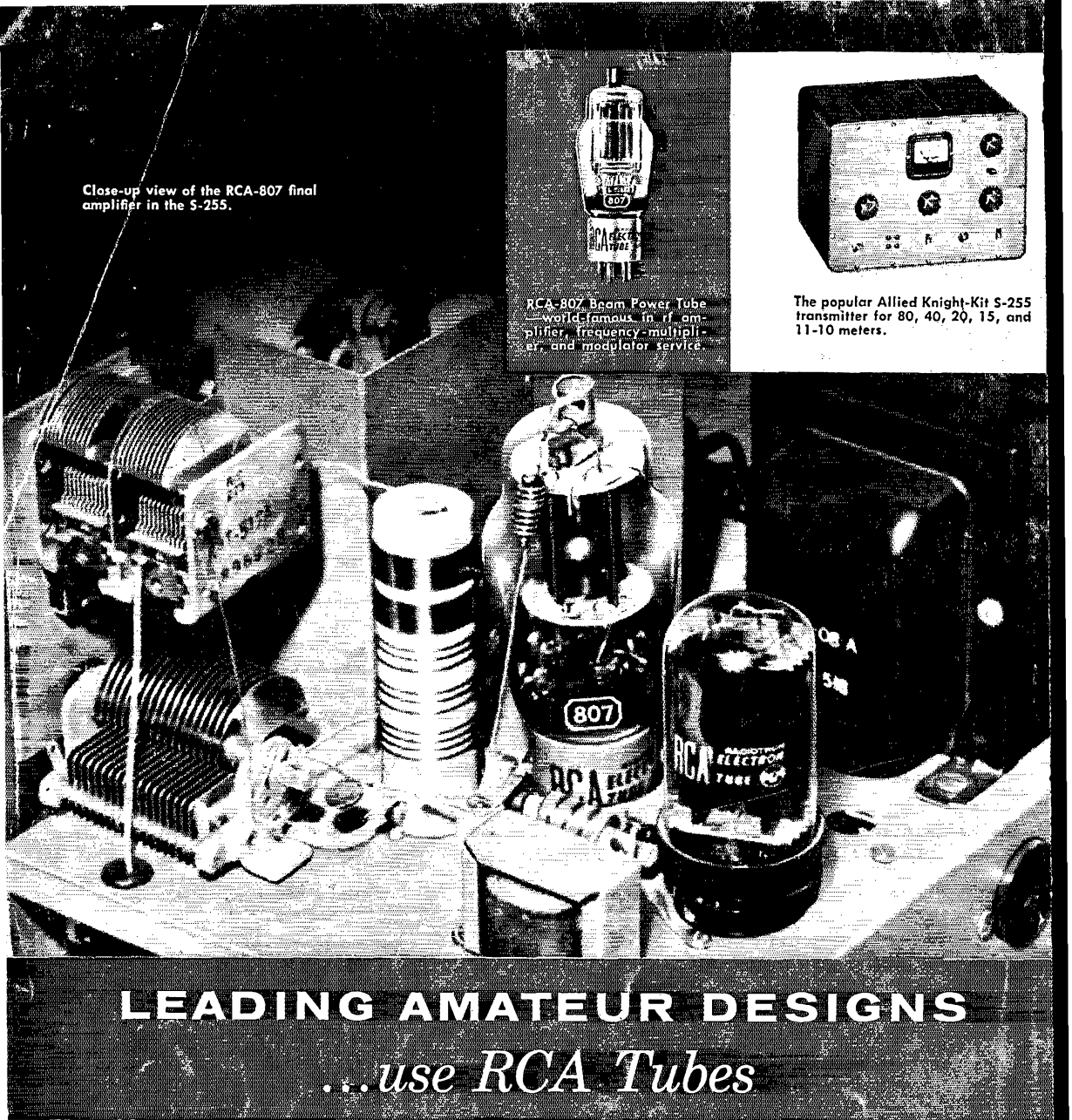

Close-up view of the RCA-807 final amplifier in the S-255.

RCA-807 Beam Power Tube —world-famous in rf amplifier, frequency-multiplier, and modulator service.

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Compact, versatile, and capable of delivering a hefty CW signal on any band from 10 to 80, Allied's Knight-Kit S-255 transmitter pictured here is making friends with novices and seasoned amateurs alike for its outstanding on-the-air performance. The rig is designed around an RCA-807 beam power final!

And there's good reason why RCA-807 is specified in so many amateur and commercial designs. The tube has an excellent watts-per-dollar factor. Performance is noteworthy—even at low plate voltage. And, of course, an RCA-807 is easy to excite (a single 6AG7 can drive it to full plate input; a pair of 807's can modulate it).

RCA-807—as well as the complete line of RCA beam power tubes, triodes, and rectifier tubes—is available through your RCA Tube Distributor. For technical data on RCA-807 write RCA, Commercial Engineering, Section A37M, Harrison, N.J.

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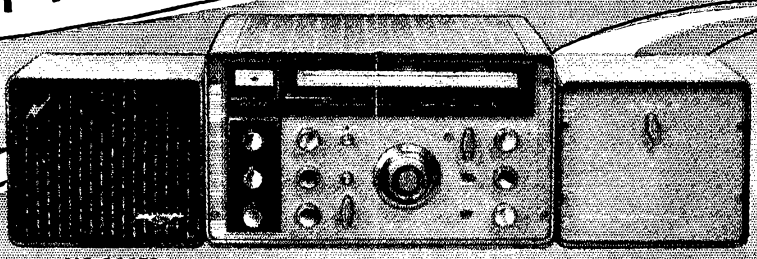

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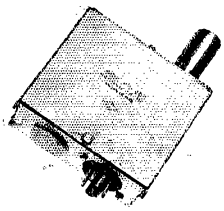
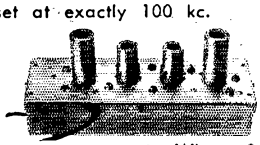


XCU-300 PLUG-IN CRYSTAL CALIBRATOR. Plugs into NC-300 receiver where its operating power is derived. Provides calibrating signal every 100 kc up to 29.7 mc. Is factory pre-set at exactly 100 kc.



CRYSTAL CONVERTERS. When fitted into converter cabinet (above), these converters need not be unplugged or shut off to change bands. Can be used with 3 separate antennas, thus eliminating the need for changing antennas when switching bands. Output frequency: 30–35 mc. Input impedance: 50–70 ohms. Output impedance: 50 ohms. Power required: 6.3 volts at 1.2 amps, 150 volts at 25 ma derived from NC-300 receiver. Shipping weight: 2 lbs.

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