December 1958
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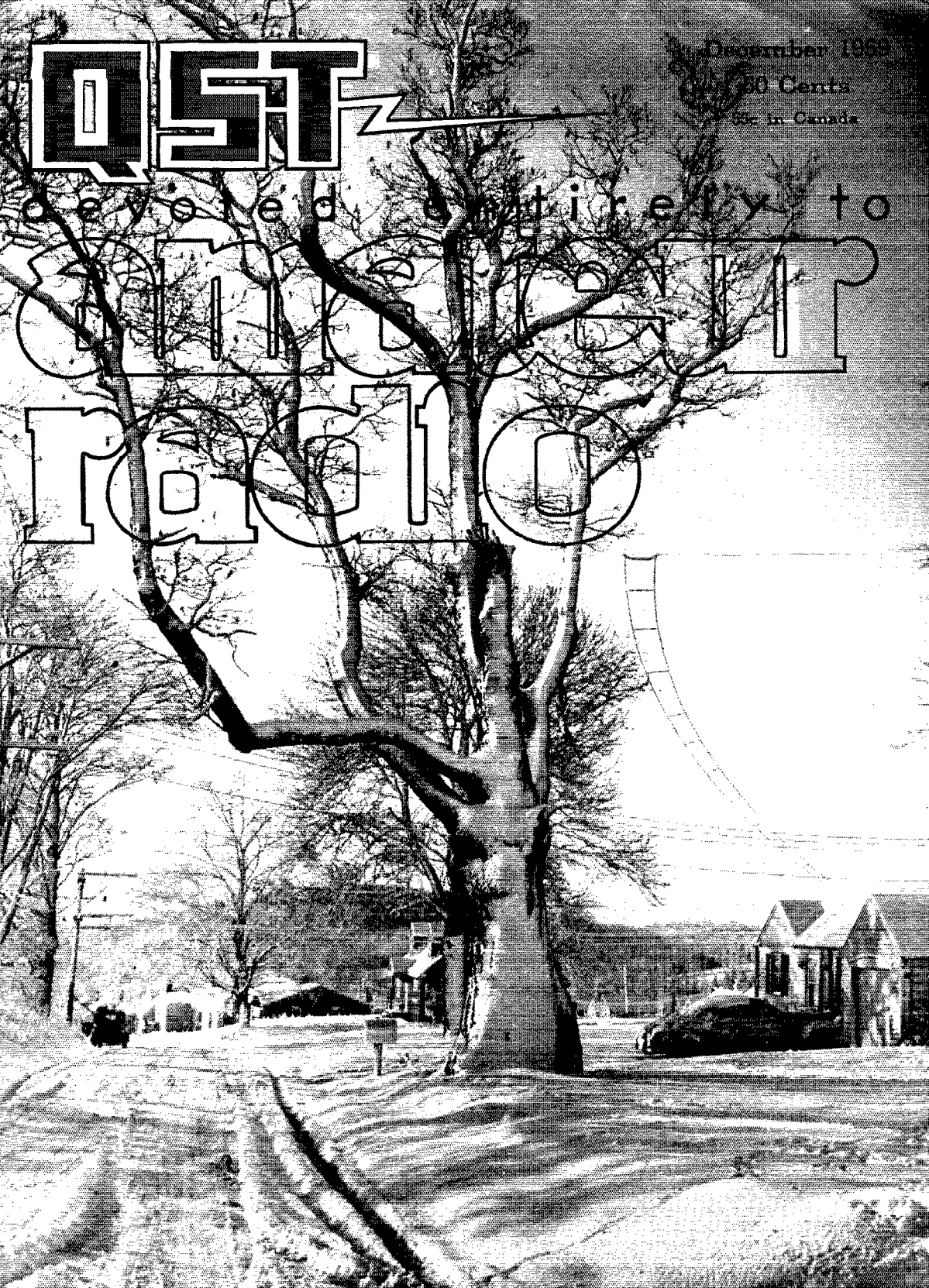

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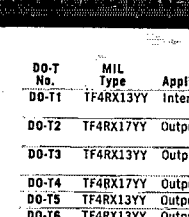
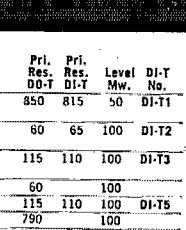
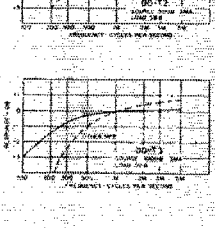
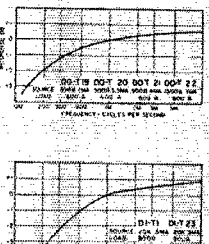
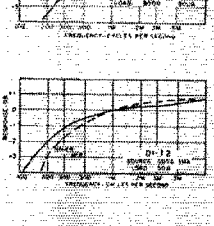
Revolutionary transistor transformers

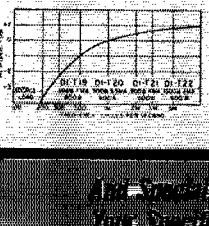


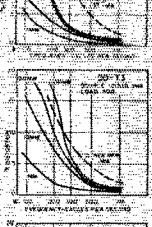


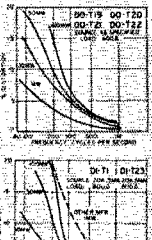


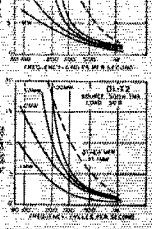


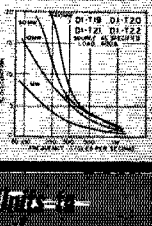












DO-T No.	MIL Type	Application	Pri. Imp.	D.C. Ma.‡ in Pri.	Sec. Imp.	Pri. Res. DO-T	Pri. Res. DI-T	Level Mw.	DI-T No.
DO-T1	TF4RX13YY	Interstage	20,000	.5	800	850	815	50	DI-T1
			30,000	.5	1200				
DO-T2	TF4RX17YY	Output	500	3	50	60	65	100	DI-T2
			600	3	60				
DO-T3	TF4RX13YY	Output	1000	3	50	115	110	100	DI-T3
			1200	3	60				
DO-T4	TF4RX17YY	Output	600	3	3.2	60		100	
DO-T5	TF4RX13YY	Output	1200	2	3.2	115	110	100	DI-T5
DO-T6	TF4RX13YY	Output	10,000	1	3.2	790		100	
DO-T7	TF4RX16YY	Input	200,000	0	1000	8500		25	
DO-T8	TF4RX20YY	Reactor 3.5 Hys. @ 2 Ma. DC, 1 Hy. @ 5 Ma. DC				630			
	TF4RX20YY	Reactor 2.5 Hys. @ 2 Ma. DC, .9 Hy. @ 4 Ma. DC					630		DI-T8
DO-T9	TF4RX13YY	Output or driver	10,000	1	500 CT	800	870	100	DI-T9
			12,000	1	600 CT				
DO-T10	TF4RX13YY	Driver	10,000	1	1200 CT	800	870	100	DI-T10
			12,000	1	1500 CT				
DO-T11	TF4RX13YY	Driver	10,000	1	2000 CT	800	870	100	DI-T11
			12,000	1	2500 CT				
DO-T12	TF4RX17YY	Single or PP output	150 CT	10	12	11		500	
			200 CT	10	16				
DO-T13	TF4RX17YY	Single or PP output	300 CT	7	12	20		500	
			400 CT	7	16				
DO-T14	TF4RX17YY	Single or PP output	600 CT	5	12	43		500	
			800 CT	5	16				
DO-T15	TF4RX17YY	Single or PP output	800 CT	4	12	51		500	
			1070 CT	4	16				
DO-T16	TF4RX13YY	Single or PP output	1000 CT	3.5	12	71		500	
			1330 CT	3.5	16				
DO-T17	TF4RX13YY	Single or PP output	1500 CT	3	12	108		500	
			2000 CT	3	16				
DO-T18	TF4RX13YY	Single or PP output	7500 CT	1	12	505		500	
			10,000 CT	1	16				
DO-T19	TF4RX17YY	Output to line	300 CT	7	600	19	20	500	DI-T19
DO-T20	TF4RX17YY	Output or line to line	500 CT	5.5	600	31	32	500	DI-T20
DO-T21	TF4RX17YY	Output to line	900 CT	4	600	53	53	500	DI-T21
DO-T22	TF4RX13YY	Output to line	1500 CT	3	600	86	87	500	DI-T22
DO-T23	TF4RX13YY	Interstage	20,000 CT	.5	800 CT	850	815	100	DI-T23
			30,000 CT	.5	1200 CT				
DO-T24	TF4RX16YY	Input (usable for chopper service)	200,000 CT	0	1000 CT	8500		25	
DO-T25	TF4RX13YY	Interstage	10,000 CT	1	1500 CT	800	870	100	DI-T25
			12,000 CT	1	1800 CT				
DO-T26	TF4RX20YY	Reactor 6 Hy. @ 2 Ma. DC, 1.5 Hy. @ 5 Ma. DC				2100			
	TF4RX20YY	Reactor 4.5 Hy. @ 2 Ma. DC, 1.2 Hy. @ 4 Ma. DC					2300		DI-T26
DO-T27	TF4RX20YY	Reactor 1.25 Hy. @ 2 Ma. DC, .5 Hy. @ 11 Ma. DC				100			
	TF4RX20YY	Reactor .9 Hy. @ 2 Ma. DC, .5 Hy. @ 6 Ma. DC					105		DI-T27
DO-T28	TF4RX20YY	Reactor .3 Hy. @ 4 Ma. DC, .15 Hy. @ 20 Ma. DC				25			
	TF4RX20YY	Reactor .1 Hy. @ 4 Ma. DC, .08 Hy. @ 10 Ma. DC					25		DI-T28
DO-T29	TF4RX17YY	Single or PP output	120 CT	10	3.2	10		500	
			150 CT	10	4				
DO-T30	TF4RX17YY	Single or PP output	320 CT	7	3.2	20		500	
			400 CT	7	4				
DO-T31	TF4RX17YY	Single or PP output	640 CT	5	3.2	43		500	
			800 CT	5	4				
DO-T32	TF4RX17YY	Single or PP output	800 CT	4	3.2	51		500	
			1,000 CT	4	4				
DO-T33	TF4RX13YY	Single or PP output	1,060 CT	3.5	3.2	71		500	
			1,330 CT	3.5	4				
DO-T34	TF4RX13YY	Single or PP output	1,600 CT	3	3.2	109		500	
			2,000 CT	3	4				
DO-T35	TF4RX13YY	Single or PP output	8,000 CT	1	3.2	505		500	
			10,000 CT	1	4				
DO-T36	TF4RX13YY	Isol. or Interstage	10,000 CT	1	10000 CT	950	970	500	DI-T36

DO-TSH Drawn Hipermalloy shield and cover for DO-T's, provides 25 to 30 db shielding, for DI-T's DI-TSH
‡DCMA shown is for single ended useage (under 5% distortion—100MW—1KC) . . . for push pull, DCMA can be any balanced value taken by .5W transistors (under 5% distortion—500MW—1KC)
*DO-T units have been designed for transistor application only . . . not for vacuum tube service. Pats. Pend.

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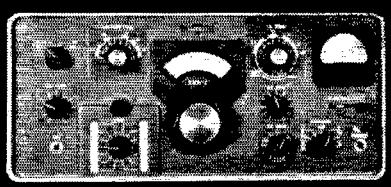

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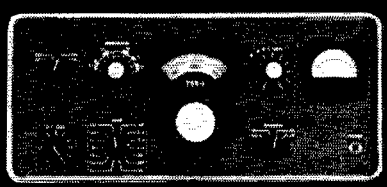

GIFT

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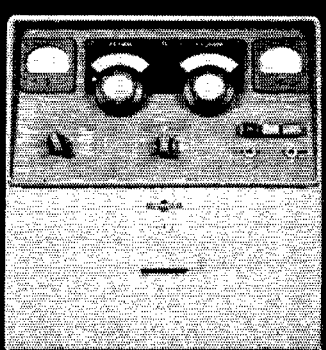
GREATER



PLEASURE

COLLINS

QST

DECEMBER 1959

VOLUME XLIII • NUMBER 12

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

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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
Applied Science and Technology Index

Library of Congress Catalog Card No.: 21-9421

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Christmas Greetings

from all of us to you

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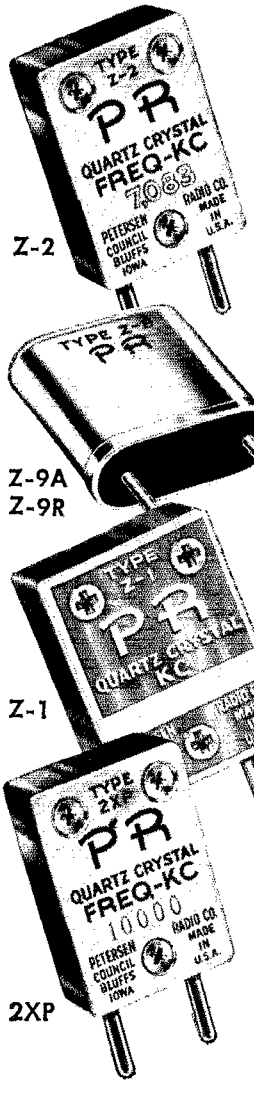

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Z-9R

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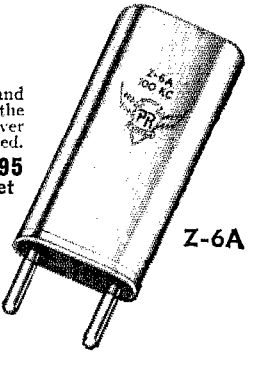

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Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio club reports are also desired by SCMs for inclusion in *QST*. **ARRL Field Organization station appointments** are available in the areas shown to qualified League members holding Canadian or FCC amateur license, General or Conditional Class or above. These include ORS, OES, OPS, OO and OBS. SCMs also desire applications for SEC, EC, RM and PAM where vacancies exist. OES appointment is available to Novices and Technicians.

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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.

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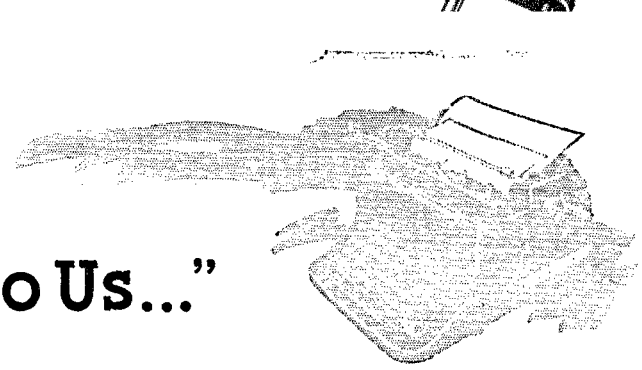


"It Seems to Us..."

ROGUE'S GALLERY

Last month our colleagues farther down the hall and further down the magazine, in the Communications Department, passed on WØIA's comments about a few of the fellows who show up in emergency work: the good guys, Reliable Roger and Silent Sid, and the bad guys, Inquisitive Ike, Cooperative Charley, Newshawk Ned, Relaying Rodney, Selfish Sam, and Demanding Dan (November *QST*, page 72). Jeeves and his pal take a crack this month (page 91) at another unsavory type, the weirdy who, finding life a little dull, decides to bootleg a DXotic call. Now we want to get in our licks, too. Some of the boys we're going to mention are *really* ripe and, sad to say, a real danger to the rest of us.

At first glance, you'll like Highpower Harry. He's a neat fellow, has an attractive XYL and two fine jr. ops, belongs to two or three clubs, and holds down a very good job as an electrical engineer. His shack is a model of orderliness, and his signal is one of the cleanest in the bands. The trouble is that it's 4 kw. too big! Not only does he drown out the poor guy using legal power or less, but much worse, Harry gives newcomers the opportunity to say, "Why should I bother to observe the regs? Look what Harry is getting away with!"

Helpful Hal is another guy you might like at first. He's the fellow who thinks John Doe down the street is a nice guy, and would make a good ham, and he's been studying hard, and it isn't John's fault that he didn't take physics in school, or can't seem to get right up to speed on the International Morse and anyway John just gets nervous when he has to take any kind of a test, so Hal decides he'll just take it easy on John when he comes to take his Novice, Technician or Conditional exam. Even worse is Greedy Greg, who does precisely the same thing, but expects an 813 in return!

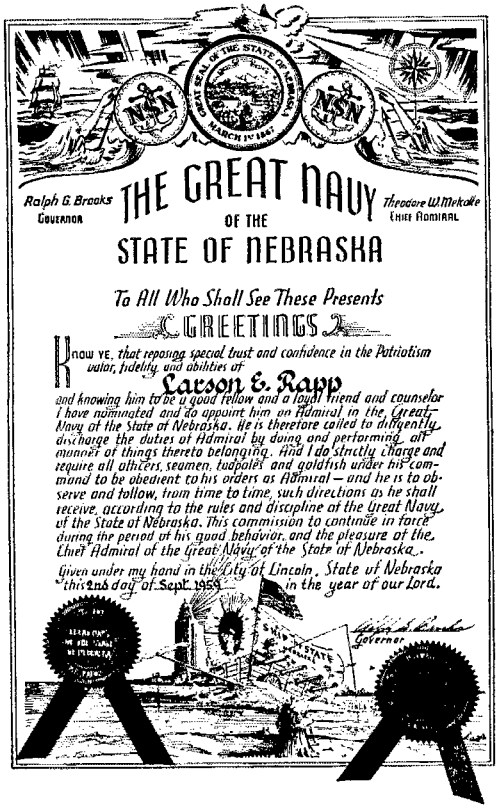
The next bird to watch is Moneybags Mike. Mike has the best of everything. He goes out, the day his General arrives, and buys two thousand bucks worth of beautifully engineered, ready-to-plug-in single sideband equipment and has it installed by the distributor's men. Then, without one glance at the instruction book, he proceeds to put the thing on the air. Complain to Mike about his squeals, squawks and splatter, and he'll say, "You don't know your apples, old boy. Probably got your a.v.c. on. Couldn't be anything wrong with my sig; I'm using a Duck Special Supersidebander," pride and scorn evident in his voice!

Next we deal with a couple of guys — Workshop Willie and his close friend, Comforting Cal. Willie is a do-it-himselfer, and has turned out a nice a.m. rig running 900 watts. He doesn't see any need for fooling around with an oscilloscope; he doesn't own one himself, and it's too much bother to drive across town to borrow Engineer Ed's. Besides, he's been having a little trouble with his back, and the scope is kinda heavy. So Willie throws the rig on 75 for his sked with Cal. Ol' Cal, sitting there with the mike on his chest and his feet on the operating desk, is happy to give his buddy a "critical" report: "Yep, your new rig sounds f.b., very natural, and you're putting out a terrific signal, Willie" he says. Only trouble is Cal didn't bother to rock his receiver dial up and down from Willie's frequency to see what type of junk Willie was radiating elsewhere.

Maybe this next character isn't especially dangerous to the fraternity, but he sure is obnoxious. Unless you're one of his friends of long standing who hasn't noticed him gradually growing crankier, we guarantee you won't like Squatter Squagg. Squagg got his "Class A" back when the Commission first issued this class. You can check your clock and your freq meter by Squagg: every night he gets on the air, same time, same spot, same cracks about everybody else. He won't budge off "his frequency" for anything or anybody; his v.f.o. dial is rusted to the panel!

There are plenty more we could mention — Swishbird Sol, Tailend Tom, Keyclick Kurt, Finebiz Fred and his first cousin, Okay Ollie — who are more nuisance than menace. We don't need to describe them further.

But Highpower Harry, Helpful Hal, Greedy Greg, Moneybags Mike, Workshop Willie and Comforting Cal (if you and I don't pin their ears back) may very well be the cause of tough new regulations which could make ham radio more work and less pleasure for all the rest of us. These creeps amount to only one or two per cent of the ham population, but they spoil our operating fun and wreck our reputation as a group. QST



You too can be an Admiral in the Nebraskan Navy, just like our esteemed Larson E. Rapp,—Admiral Rapp, that is. All you have to do, after January 1, if you are a W or VE, is to work one member of each of ten amateur radio clubs in Nebraska. There are actually 15 clubs in the state, so you have a little leeway. DX stations need work only five of the clubs. When you have worked the 10 stations, send a log of the contacts to Box No. 626, Omaha, Nebraska, and if you live in the States include 8¢ postage. The reproduction of the commission that you see here is but a pale shadow of the original, which is a handsome thing.

Some of the participating clubs are: the Hastings Radio Club, the Alliance High School Radio Club, the Crete Amateur Radio Club, the Falls City Ham Club, the Grand Island Amateur Radio Society, the Homesteader Radio Club, the Northeast Nebraska Radio Club, the Pioneer Radio Club, the Tri-State Radio Club, the Western Nebraska Radio Amateurs, and the Ak-Sar-Ben Radio Club.

Strays

The United States has a navy, too, and a newly activated National Naval Reserve Radio Network is now operating each Friday night. This circuit gets underway at 0200 GMT on 7375 kc. (with 4010 as an alternate), and continues for approximately two hours on c.w. The network is controlled by NCR in Arlington, Va., which is at the same location as the old Navy radio NAA. Participation in the net is open to all individual Navy, Marine Corps, and Naval Reserve radio stations.

If you are a Marine Corps or Naval reservist with an amateur license and want to take part in the net, follow this procedure. Use your amateur call sign, replacing the "W" or "K" prefix with "N" and using the "W" or "K" prefix at the end of the call. For example, on the Navy circuit W1IKE would sign N1IKEW, while KN1MJA would sign N1MJAKN. The net will be opened by the master control station or a designated alternate. Do not attempt to report in until after the net has been officially opened. A taped broadcast will follow immediately after the net is opened, and for about a half hour will send information of general interest. Upon completion of the broadcast, stations will be requested to report in. Stations reporting in should acknowledge receipt of the broadcast if received.

If you are in doubt about the procedure to be followed, monitor the net for a week or so and see how the others do it. Complete instructions concerning this network will be found in OPNAV Instruction 2000.22.

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On Christmas Day, 1959, 52 children, patients at the National Foundation for Asthmatic Children, Tucson, will get to talk with their parents by amateur radio. Tucson hams hope that the following frequencies will be kept clear from 0800 to 1700 MST on Dec. 25: 29.3, 21.39, 14.265 and 7.275 Mc. This will be the third year for Operation 52. For more information, contact its originator, W7CKV.

OUR COVER

Our cover this month shows a quiet winter scene in New England. A light snow has fallen during the night and the temperature is hovering around the zero mark. It's a crisp winter day and the DX is rolling in nicely on all bands. Conditions are just *fine*, and we hope it's the same where you are.

Transequatorial Propagation of V.H.F. Signals

A Study of North-South V.H.F. Propagation Based on the work of F9BG, G4LX, ZC4IP, ZC4WR and ZE2JV

BY R. G. CRACKNELL,* ZE2JV

In 1947 a form of long-distance propagation of 50-Mc. signals hitherto unknown was discovered when XE1KE began working Argentine stations on 50 Mc. in the afternoon and evening hours. In recent years this transequatorial propagation has received much attention in scientific as well as amateur circles. Detailed here are the results of a remarkable series of observations by competent v.h.f. enthusiasts bearing on this as yet little-understood phenomenon.

DURING the years since the end of World War II increasing use of the 50-Mc. band by amateurs in areas adjacent to the tropics has revealed the existence of radio propagation in the v.h.f. region, up to at least 80 Mc., that cannot be explained by conventional theories. Peculiarities of the earth's magnetic equator,[1] about which this mode of propagation occurs, give Southern Rhodesia a most favorable position from which to observe *TE* effects. For this reason study of transequatorial propagation was chosen as a project for the International Geophysical Year.

Commercial and other use of the 30-80-Mc. portion of the spectrum is mainly restricted to short-range "groundwave" services, such as television broadcasting and mobile communication. Results of amateur observations indicate, however, that for the areas of the world where *TE* propagation is encountered it represents an opportunity for long-distance communication having a high degree of reliability for certain hours and seasons.

In general, the *TE* path is between areas on either side of the geomagnetic equator [1] and 1500 to 2500 miles away from it. It is effective during the hours of darkness, and on frequencies up to 1.5 times the observed daytime maximum usable frequency for *F*-layer propagation. Optimum propagation conditions occur at the time of the equinox, between points in the same longitude, located about 2000 miles from the geomagnetic equator.

The *TE* mode may be usable between locations where the direct line between the two stations cuts the geomagnetic equator at an angle as low as 45 degrees, and beyond the distance limits mentioned above, but moving away from the most favorable spots causes both the reliability and the maximum usable frequency to drop off. The quality of the modulation on a *TE*-propagated signal is often distorted by a characteristic flutter fading. The signal is good enough for communication purposes, but the mode is unlikely to be of value for broadcasting or television. The transmitter power required to produce an intelligible signal is small. A few watts of r.f. in a vertical quarter-wave aerial may induce a signal of one microvolt or more in a similar aerial located 4000 miles away in the opposite *TE* zone.

Transequatorial propagation is by no means limited to the hours of darkness. At the peak of solar activity, daytime signals above 50 Mc. were weak and infrequent at Salisbury, but in 1959, probably due to decreased ionization at the lower levels, signals from the *TE* area around the Mediterranean have been received at ZE2JV very regularly, and at great strength on frequencies up to 56 Mc., throughout the day.

Examination of Fig. 1 shows that the geomagnetic equator traverses Africa in an arc approximately centered on Victoria Falls, and having a radius of about 2000 miles. The effect of this curvature is to give places in southern Africa lying within the *TE* belt an abnormally large zone into which *TE* propagation takes place, and from which interference and noise can be received.

The density of ionization is affected by the angle of the sun. Across Africa the geomagnetic equator lies well to the north of the geographical equator. Hence Southern Rhodesia and its neighbors experience *TE* propagation effects together with a higher density of ionization than is generally experienced elsewhere.

* Salisbury, Southern Rhodesia.

[1] Southworth, "A Look Back and Ahead at PRP," *QST*, June, 1959, page 48.

The Experimental Program

An automatically keyed c.w. transmitter delivering 60 watts to a 4-element array has been in operation from the author's location in Salisbury, Southern Rhodesia, since September, 1957. Its transmissions on 50.04 Mc. have been received with varying degrees of consistency in Poona, Bahrein, Israel, Cyprus, Libya, Switzerland, Morocco, France, Portugal, Madeira Islands, England and North America. Two-way contacts were made with all of these countries where operation on 50 Mc. is permitted. Crossband work was done with the others, 50–28 Mc.

Jean Garat, F9BG, Toulon, France, George Barrett, ZC4IP, and R. A. Whiting, ZC4WR, Limassol, Cyprus, accurately recorded the time of arrival, variations in signal strength, and peculiarities of the propagation of these signals throughout the evening, over long periods. It was found impractical to record the time of closure of the propagation path, it being in the early morning hours ordinarily. Gordon Spencer, G4LX, Newcastle, England, undertook similar thorough observation of the 50-Mc. signals, though he received them for much shorter periods and with considerably reduced regularity. From February 1959 on, L. S. Cole, ZS6IG, Johannesburg, South Africa, transmitted twice each evening, for regular observation on Cyprus. Regular reception of European television signals in Salisbury was of interest, but multiple use of the same frequencies, especially 48.25, 49.75 and 53.25 Mc., was confusing.

An estimate of the m.u.f. was made regularly in Salisbury by tuning a receiver over the range of 30 to 75 Mc. Television signals and harmonics of commercial stations in southern Europe and the Middle East countries were sufficient for reasonable accuracy. It is probable that the m.u.f. actually rose above 75 Mc. many times. However, resonant beam antennas are necessary for effective reception at these frequencies, and for practical reasons these were limited to the amateur bands at 28, 50, 72 and 144 Mc. From March through May, 1958, F9BG made three transmissions nightly on 72.025 Mc. His signal was never positively identified in Salisbury, but this may have been due to strong interference on this frequency from Beirut, Lebanon.

ZC4WR, who conducted the experimental work on the characteristics of *TE*, developed a technique for photographing the received signal, as displayed on an oscilloscope. The receiver was operated without a.v.c., and the signal voltage was taken from the a.m. diode detector and fed to the oscilloscope amplifier. Though the technique was later improved, the pictures were taken with a time-base duration of 0.08 to 0.1 second. First exposures were 0.1 second at f.2. Pulses of 0.03 and 0.02 second were transmitted, and photographs were made of signals received during various kinds of propagation. Normal 28-Mc. signals were also photographed for comparison purposes.

As the directional properties of the antennas appeared to vary from day to day, and even from hour to hour, tests were made to determine the degree of scatter, and to investigate possible correlations between this and the percentage of flutter, and extensions of the *TE* zone. The Yagi array at ZE2JV was aimed first north, then east and then south, while signal levels and characteristics were recorded at Cyprus. The tabulated observations showed very marked differences in both scatter and degree of signal flutter, but there was no significant correlation between the two. The strength of signals received in Cyprus from Johannesburg was found to vary directly with the degree of scatter. The scatter indication was also high when the ZE2JV signal was heard in England by *TE*, and when direct contact was possible on 50 Mc. between Salisbury and Kenya-Uganda.

An attempt was made to determine the effect of vertical directivity. The 4-element Yagi (low-angle radiator) was compared with a half-wave dipole mounted ¾ wavelength above ground (high-angle radiator). These tests showed a fairly constant gain of about 6 db. for the Yagi, but the percentage of flutter was always higher with the dipole.

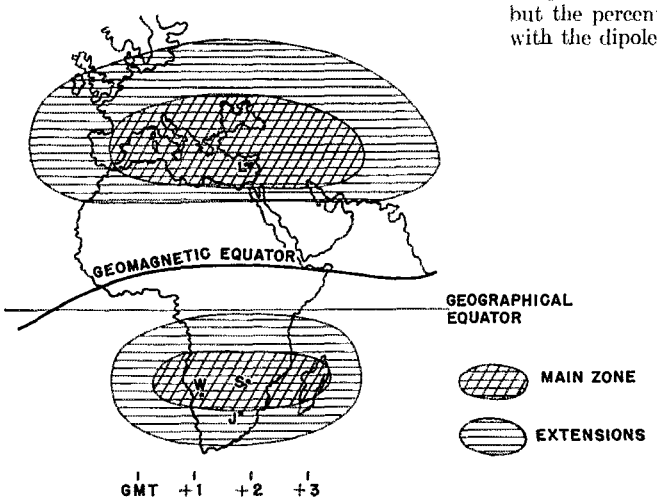


Fig. 1—Northern and southern *TE* zones, as indicated by amateur experience. The curve in the Geomagnetic Equator as it crosses Africa appears to have a focussing effect on *TE* propagation. The cities of Windhoek, Salisbury, Limassol and Johannesburg are indicated by their initial letters.

Results

Extent of Zones: The northern and southern *TE* zones, as indicated by our observations, are shown in Fig. 1. The extent of the northern zone is based on reports of reception of the 50-Mc. transmissions made from ZE2JV, and from reception of television and other signals in the v.h.f. range at Salisbury. The southern zone outlines are based on the reception of amateur 50-Mc. signals in Limassol, Cyprus. At frequencies higher than the 50-Mc. band, the zones are more limited in geographical extent, but extensions at lower frequencies were of no significance.

To avoid complication of the results by the possibility of confusion between normal F_2 and *TE* propagation, no account has been taken of the reception of signals lower in frequency than 50 Mc. Reports from England showed that our 50-Mc. signals were received there frequently for two brief evening periods, 1700 to 1715 GMT, usually showing a "clean" signal, and 1900 to 1930, always showing flutter fading that is characteristic of *TE* propagation. (Local time in Southern Rhodesia is GMT plus two hours.)

The 1700-to-1715 period was discounted, as F_2 propagation may have been responsible, but F_2 propagation during the later period appeared unlikely. Tests on 52.5 Mc. in the other direction bore this out. Transmissions on this frequency by G4LX were received in Salisbury (though very weakly) in the later period, but only one 5-second burst was heard during the 1700 to 1715 period in three months of testing.

There are some 500 television stations in Europe and the Middle East. With the majority of them in the 40-to-70-Mc. range there is no way of telling with any degree of certainty the origin of the mass of TV signals received at Salisbury in this frequency band. It was assumed, for example, that a very strong video signal on 49.75 Mc., heard from 1000 to 2200 daily for 6 months of the year, and less consistently the rest of the year, was from Odessa. Published data indicated that all Russian stations used this frequency (video 49.75 Mc., audio 56.25 Mc.), but an Odessa amateur told us that the video of that station had been shifted to 97 Mc., and that the only Russian video on 49.75 Mc. after early 1959 was the 100-kw. station in Moscow. If this information is accurate, the reception of strong signals on this frequency consistently is of considerable significance.

A graph of the m.u.f. as observed at 1830 GMT for an entire year is given in Fig. 3. Typical m.u.f. for the evenings of April, 1958, is shown in Fig. 4.

Extensions of the southern zone over Africa were observable with greater accuracy, since they were based on the reception of amateur signals in Cyprus. The geographical location and power limitations of these stations are, of course, readily ascertained, but it is by no means certain that a 100-kw. TV signal comes by direct path. Test transmissions from Jinji, Uganda, beamed at Cyprus, were not received there, but Uganda

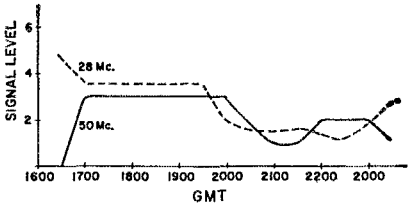


Fig. 2—Signal levels during a long evening contact, October 18, 1957. ZC4IP, Limassol, Cyprus, was on 28 Mc. and ZE2JV, Salisbury, Southern Rhodesia, on 50 Mc.

stations have been heard in Cyprus when they were beamed south, into the region where backscatter can carry them back north across the equator. Test transmissions from Johannesburg showed clearly that this city is at or just outside the main *TE* zone.

It would appear that Newcastle, England, is situated near the northern limit of *TE*, and that Capetown, South Africa, is near the southern limit. From this it would appear to be possible that reception of TV from the north of England on 48.75 Mc. in Capetown is the longest "one-hop" propagation that has been experienced.

Seasonal Effects: The principal effects of the position of the sun are discussed later, but it may be mentioned here that there tend to be more frequent and longer extensions to the south in the southern summer, and to the north in the

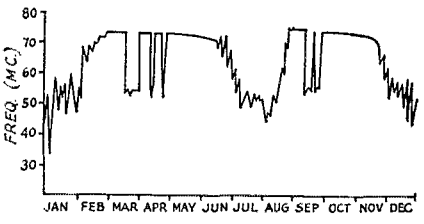


Fig. 3—Maximum usable frequency at Salisbury, Southern Rhodesia, at 1830 GMT. Two major *TE* seasons are clearly indicated.

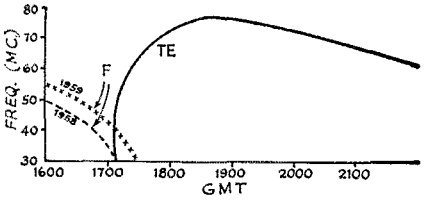


Fig. 4—Hourly curve of the m.u.f. as observed by ZE2JV in April, 1958. F_2-layer curves for 1958 and 1959 are given at the left.

northern summer. These are most noticeable a month or so each side of the respective solstice. The line joining locations most favorably situated with respect to each other appears to veer away from the line of longitude between an equinox and a solstice. This can possibly be explained by a tendency for conditions to be optimum when the

time of sunset approximates. Thus, from Southern Rhodesia there is an extension to the east in the southern winter, and to the west in summer.

Scatter and seasonal extensions of the *TE* zone do not appear to be entirely independent. The longest scatter extensions to the north take place in the northern summer, and vice versa.

Extension of the range by other forms of propagation was experienced in February and November to North America (northwest) and in May to Japan (northeast). In order that this may occur at 50 Mc. the m.u.f. at the point of the second reflection must be high enough to propagate the wave at the angle at which it was propagated by *TE*. These openings were of a sporadic nature, but they seemed to occur 48 to 60 hours after an outburst of fairly high sunspot activity. The distance was always in the region of 8000 miles. No east-west DX was worked, except by back-scatter or tropospheric propagation.

Reliability

September–November, 1957: Although the equipment used by ZC4IP for this period was not as good as that employed subsequently, and his antenna was merely an indoor dipole in a built-up area of Limassol, he received signals from ZE2JV on 50 Mc. 58 evenings out of 63 on which tests were made. Frequently conditions were good enough for duplex telephony, using 50 and 28 Mc. An attempt to determine the time of closure of the path was made on the night of October 18–19, but it was abandoned at 0135 local time, with both bands still open. Communication had been maintained crossband since 1830. Fig. 2 shows the signal levels on both bands during this 5-hour contact.

March–July, 1958 F9BG, Toulon, had cooperated in many tests since September, 1957. From September to November he received the ZE2JV 50-Mc. transmissions less regularly, and for shorter periods, than they were received at Cyprus. In March, 1958, he erected a 3-element Yagi on the top of a building overlooking the Mediterranean, and thereafter failed to hear the transmissions on only four evenings, testing 4 or 5 evenings each week. Many of the transmissions were received with considerable strength.

Though commercial transmissions on 70 to 71 Mc. from Cyprus and f.m. and other signals up to 74 Mc. were frequently received at Salisbury in March and April, the 72-Mc. transmissions of F9BG were never positively identified.

September, 1958: G4LX, Newcastle, England, reported reception of the ZE2JV tests several times in May, 1958. In the fall he had permission for operation on 52.5 Mc. He made tests every evening in September, and at noontime (at the midpoint) on Sundays only. The evening tests were received at Salisbury 3 evenings out of 29 tried in September, though European television interference made reception very difficult. G4LX, on the other hand, heard ZE2JV 15 evenings out of 29 tried, and heard noontime tests on 2 out of 4 tries.

September–December, 1958: ZC4WR, also of Limassol, Cyprus, listened to the 50-Mc. tests in 1957. He was then using a single 6J6 converter and a vertical wire of random length. Even so, he heard the 50-Mc. signals every day in October that tests were made by ZE2JV (all but two days). In 1958 he erected a 4-element Yagi on the top of a block of flats, 100 feet above ground, and employed a crystal-controlled converter of modern design. The signal levels during October and November, 1957, and September and October, 1958, are shown graphically in Fig. 5.

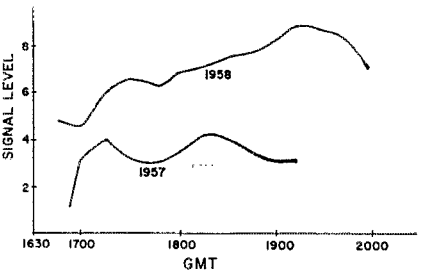
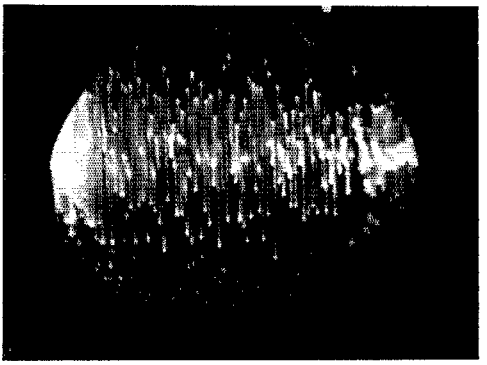


Fig. 5—Average 50-Mc. signal level of ZE2JV, as observed by ZC4WR during 20 days in October and November, 1957, and September and October, 1958. Higher levels in 1958 were due in part to improved equipment at the Cyprus end.

Looking at TE Signals

The first photograph shows an unmodulated signal from ZE2JV as received on Cyprus. This and subsequent photographs were made with an exposure of .08 second at f.4, from a short-persistance cathode-ray tube. The time base was truly one-shot, in that opening the camera shutter triggered the time base, which gave a single sweep. Fly-back could not occur until the shutter was closed. Examination of *TE* signals is still in progress, but it seems safe to assume that the received energy consists of components arriving so that they differ in phase or frequency. Oscillograms of this nature do not appear continuously, but rather at five times per second, or thereabouts, at irregular intervals. The rest of the time the carrier is relatively "clean."



Unmodulated carrier of ZE2JV, as received on 50 Mc. by ZC4WR by *TE* propagation.

Flutter is usually of a complex nature. Phase distortion can make amplitude modulation unintelligible, and amplitude variations can "key" a signal so that even the slowest code is difficult to copy. These effects can appear simultaneously, each in varying degrees, but extremes of flutter are experienced only with simple antennas. Never, when low-angle antenna systems have been in use at both ends, has the degree of flutter been sufficient to destroy intelligibility. A.m. signals appear to be demodulated. More speech clipping than would normally be tolerated, and modulation depth in excess of 100 per cent (with suitable precautions to prevent carrier splitting) are helpful under conditions of severe flutter.

Flutter is not an essential feature of *TE* propagation, though it is normally present in the late evening. It may appear over the whole band of *TE*-propagated signals, or only over a segment of it. Generally signals within a few kilocycles of the m.u.f. show little or no flutter.

Types of Evening Propagation

Most evenings showed propagation similar to that of the early-evening part of Fig. 2. The 50-Mc. signal appeared about 1900 local time (1700 GMT), building up to moderate strength with only minor variations. Flutter fade was present after about the first hour, and beam tests would show a moderate degree of scatter. Fig. 6 shows an average of three such evenings in September and October, 1958.

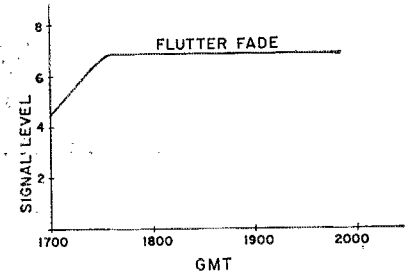


Fig. 6—Average of three typical evenings of *TE* propagation. Signal levels build up to moderate levels around 1900 local time, and thereafter show only minor variations. *TE* flutter appears after the first hour.

On abnormal evenings following high daytime m.u.f., signals of *F*-type characteristics may last as late as 2100 local time. When this happens, the fadeout affects all frequencies from 28 to 56 Mc. simultaneously. Fadeout is not necessarily rapid, and signals from high-powered TV stations (at the high end of the range) may last for 30 minutes after weaker signals have faded out. *TE* propagation has not been observed after these occurrences, but this is not proof that it did not occur later at night. No flutter appeared on these signals, but beam tests indicate that the degree of scatter may be very high.

More frequently *F*-type signals would not appear until late afternoon, and in these cases fadeout occurred earlier in the evening, to be followed by the return of a signal showing *TE* characteristics, but with exceptional strength. Fig. 7 shows a graph of signal strengths on two such evenings. Photographs of the received signals show the characteristics of *F* and *TE* propagation. Still another type, Fig. 8, shows no fadeout in the period of transition from *F* to *TE*. Photographs made of this (not reproduced here) show a mixture of the two types of propagation.

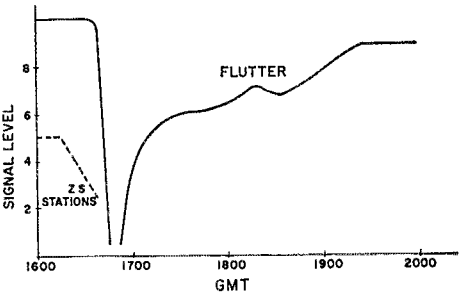


Fig. 7—Both *F* and *TE* propagation appear in this graph for September 26 and October 7, 1958. Solid line is the ZE2JV signal. Farther south ZS signals are shown in broken line at the left.

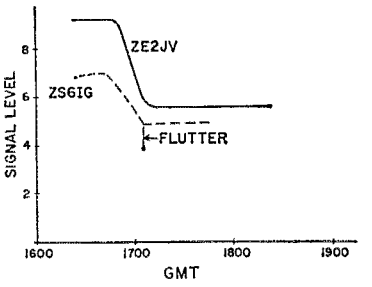


Fig. 8—Gradual transition from *F* to *TE* reception at ZC4WR, September 18, 1958. ZS6IG, Johannesburg, South Africa, is shown in dashed line.

There were few evenings when propagation was not in one of the categories described above. Ionospheric storms apparently had little effect. Disturbed conditions are of two types, as shown in Figs. 9 and 10. Of the two, the first occurred more often, and was probably due to late-persisting ionization in the lower levels. The second shows sporadic signals observed, and it would appear that late-evening *F*-type signals were being cut off by sporadic-*E*.

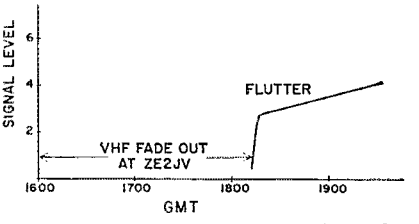


Fig. 9—ZE2JV signal during disturbed conditions, September 9. The v.h.f. range was devoid of signals from the north at ZE2JV, between 1800 and 2000 local time.

Noise Levels

Noise measurements made in Salisbury show the level to be high through the *TE* seasons.

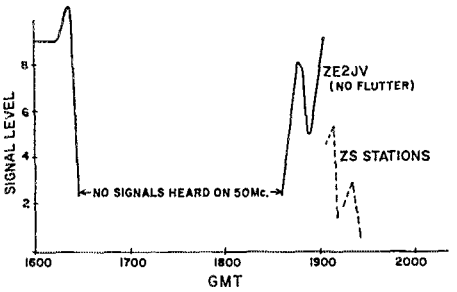


Fig. 10—Another type of disturbed conditions, September 30, showed the ZE2JV signal hitting a high level in the early evening at Cyprus, followed by a 2-hour fadeout and subsequent *TE* propagation from ZE and ZS.

There is a marked drop in midsummer and midwinter, when receiving on frequencies above the m.u.f. At these times the noise level is comparable with that experienced in temperate zones. Noise level during the *TE* seasons stays high through the day, and often does not appear to vary with propagation conditions. It does vary directly with the degree of scatter, however.

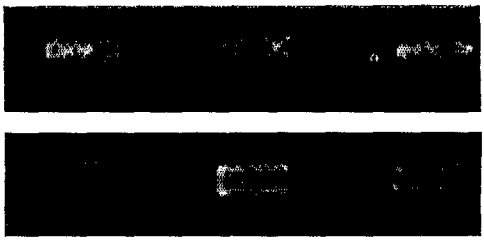
Observations on Cyprus were quite different. There the noise level rose with propagation conditions. A belt of severe thunderstorms across the Rhodesias gave an S-unit increase in noise level at the Cyprus end of the path. Apparent contradictions in these noise observations can be explained by two factors: The *TE* zone as seen from Salisbury is larger, and the geomagnetic equator crosses Africa well to the north of the geographical equator.

The tropical convergence zone can be considered as a vast noise generator. This zone remaining approximately in the subsolar region is substantially in the southern *TE* belt. North of the geographical equator (Kenya-Uganda, from where 50-Mc. signals scatter back into Rhodesia with great strength) desert conditions are rapidly approached. Noise from the tropical convergence zone can, therefore, be received in Cyprus only by *TE* propagation, whereas in Rhodesia noise from the zone can be received by direct scatter and back-scatter propagation. This is consistent with the fact that noise is received throughout the day up to the highest frequency reached by *TE* propagation.

Echoes

Occasionally echoes indicating a ⅙-second delay appear on *TE* signals. Unfortunately, these have not yet been photographed. Such echoes were prevalent on the 40-Mc. signals of Sputnik I as it travelled over the *TE* zones during the evening.

The delay suggests that these echoes may be circumterrestrial. It is difficult to imagine how this can happen when east-west work within the *TE* belts has not been possible. (IGY beacon stations in South America, just below 50 Mc., were never received.) Unconfirmed evidence has



Periods of unmodulated carrier showing the complex fading pattern of *TE* propagation (upper three examples) in comparison with the steadier F_2 signal in the lower row.

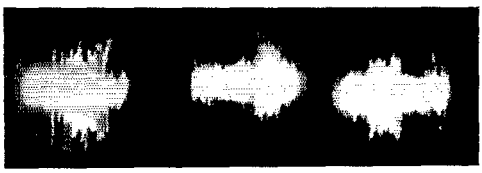
suggested that signals may be propagated to east and west by beaming a powerful signal away from the equator. If, as seems likely, ionization at the lower levels is the main barrier to east-west work, it would appear possible for such propagation to take place.

Echoes of even longer delay have been reported.

Back-Scatter

Contacts on 50 Mc. with Kenya and Uganda were commonplace in the evening hours. Signals usually had *TE* characteristics, but when these East African stations work farther south into Johannesburg and Windhoek their signals are often without flutter. Such contacts took place only when the indication of scatter was high.

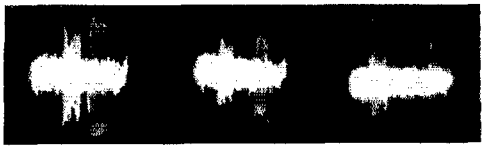
Back-scatter from other Rhodesian amateurs is common on 28 Mc. when both stations beam north. Signals are the flutter type, but remarkably constant day and night. The level is just sufficient for readability on a.m. with 100-watt stations. Back-scatter is not so consistent on 50 Mc., but the lower level of activity, lower power, and frequent interference from DX television are limiting factors.



50-Mc. pulses from ZE2JV, recorded when flutter was relatively severe and beam tests showed a high degree of scatter.

A portable station on a 5,200-foot elevation near Umtali provided round-the-clock communication on 50 Mc. with Salisbury, a 160-mile path. During the evening its back-scatter signal from the north was of good strength. The same transmitter working from the town itself was never heard, despite numerous tests.

Only once was a sporadic-*E* signal heard on 50 Mc. This was from Windhoek, Southwest Africa. Lack of sporadic-*E* signals otherwise is in part due to low activity, as there are few stations within the usual range for this type of propagation.



Split pulses from ZE2JV recorded during October, 1958. Such pulses appeared only occasionally, in a string of normal ones. Breaks in the continuity of the signal in this way occasionally make keyed signals difficult to copy.

Conclusions

For purposes of this account, *TE* propagation is definited as v.h.f. propagation between points on opposite sides of the geomagnetic equator, and at least 1000 miles from it, without intermediate reflection from the surface of the earth. It will be noted that the term "*TE* scatter" is avoided. This term is thought unsuitable, as scatter appears to play a part only in certain circumstances.

The differences in signal characteristics at various times might suggest entirely different modes of propagation, but the writer feels that the mode is substantially similar for each type mentioned, and that all are merely variations of the same basic mode. The regions of the ionosphere between the temperate zones and the geomagnetic equator have been said to exhibit a tilt, and would appear to be regions of flux and turbulence. A wave transmitted toward the geomagnetic equator, striking the tilted ionosphere, could be projected forward to take a similar deflection at the region of tilt on the other side of the geomagnetic equator before being returned to earth. This low angle of strike at both points would enable higher frequencies to be propagated by the F_2-layer than would normally be possible.

There would appear to be no reason why a signal so propagated should have characteristics widely different from those propagated in the normal manner. However, a wave reflected from a moving medium will show a frequency shift (Doppler effect) and should the ionosphere in these regions be turbulent it would seem likely that characteristics similar to those observed would be imparted to the signal.

The effect of lower-level ionization in the *E* and *D* regions appears to be the controlling factor, in daytime, of the maximum usable frequency. Late persistence of lower-level ionization may delay the appearance of *TE*, and sporadic-*E* may occasionally obstruct propagation. The possibility of propagation from the top of lower-level ionization in the subsolar region is not entirely rejected as a possible explanation for long-persisting *F*-type propagation. Duct propagation conceivably could support circumterrestrial propagation around the equator.

All types of propagation observed exhibit certain features in common. The zone into which signals propagate remains substantially the same irrespective of the type of propagation (two-hop propagation excluded.) All types of propagation are observed over a wide band of frequencies. Scatter readings do not vary with different types of propagation observed on the Salisbury-Cyprus path.

Carrier photographs show that the types of propagation tend to mix, even when this is not apparent in listening to the received signals.

The possibility of propagation outside the F_2-layer is discounted by the similarity of conditions over the range from 18 to 72 Mc.

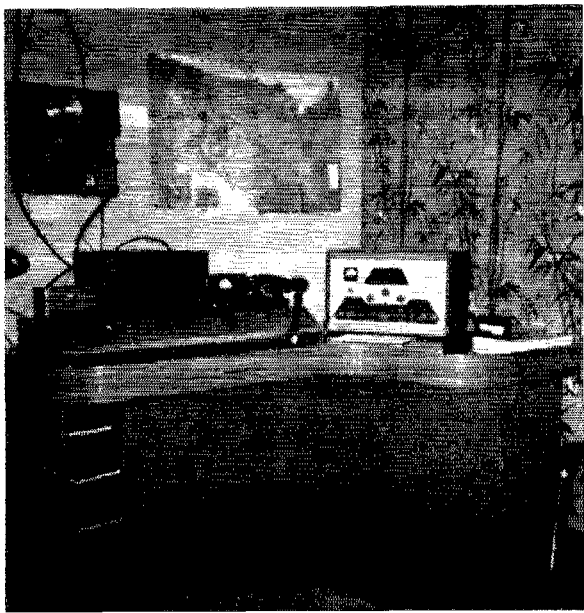
Pulse tests and carrier photography, and the lack of connection between scatter tests and the degree of flutter, indicate that the flutter is caused by the state of the ionosphere at the regions of refraction. The presence of identical flutter on signals from East Africa, and the sharp directivity of beams on this path, confirm this opinion.

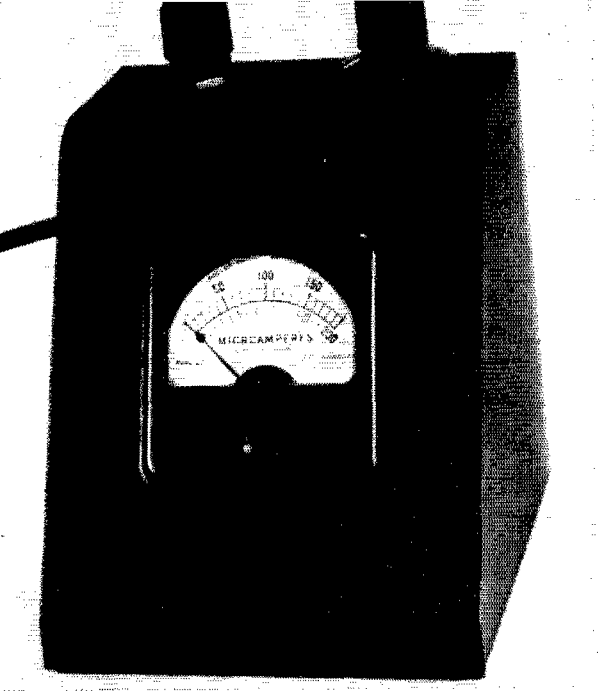
Acknowledgments

The help and information supplied by the Propagation Research Project of The American Radio Relay League was responsible for the beginning, and to a large degree, the continuation of this project across the African continent. The willing cooperation of amateurs in many countries, who supplied data upon which this account is based, and the work of R. A. Whiting, ZC4WR, who played a major part in the experiments, are gratefully acknowledged. QST

Strays

Here's another neat console, this one the pride and joy at W7CQK. It is a home-built job, and certainly no wife could ever object to such a handsome piece of furniture. Incidentally, that map in the background is made up from two of the United Airlines maps that are found at the seat of each airline passenger. Pasted together at the center (they are in register) you end up with a fine relief map of the country. Back to the console—it's made up of hardboard (perforated in the lower sections, for ventilation) fastened to a wooden frame, and finished off with a smooth-as-glass top.





The S meter is built into a sloping-panel cabinet, with the controls at the top. The one at the left is for R_1. The skirted-knob at the right is for R_2.

Auxiliary Unit for Surplus and Other Receivers

BY H. O. LORENZEN,* W3BLC

Owners of surplus receivers and other receivers not equipped with signal-strength meters will be interested in this S-meter unit. It is simple, easy to install and universally adaptable.

A Foolproof S Meter

Over the years I have tried many S-meter circuits without very gratifying results. Some of the circuits resulted in the meter reading backwards, while others compressed the scale all in one short part of the meter's reading range. Most of these circuits used the usual 1-ma. meter in some form of a bridge circuit in the plate of a pentode.

This S meter uses the simple circuit shown in Fig. 1.[1] It is the essence of simplicity and yet it has many features to make it foolproof for any application. By using a 0-to-200 microammeter (readily available from surplus), a better range of sensitivity is achieved over those circuits using a 0-to-1 milliammeter. The 500-ohm potentiometer R_1 allows for a zero adjustment of the S meter to compensate for different levels of circuit noise. Some receivers have gain-adjusting circuits which have a major influence on the residual noise level in the a.v.c. circuit, but the adjustment of R_1 permits compensation for these varying noise levels. The a.v.c. level control R_2 also permits the matching of the meter scale to the a.v.c. voltage. When a converter or an extra r.f. stage is used ahead of any of the conventional S-meter circuits, the scale no longer reads correctly. Not so with this circuit. All that is required is a simple readjustment of the a.v.c. level control R_2 and the S meter again reads correctly.

A photograph shows a close-up of the calibration scale on the 0-to-200 microammeter. Adequate spread is provided for the lower S units, but likewise, the scale also accommodates readings up to 20 db. over 9. Beyond this I feel the reading is unimportant.

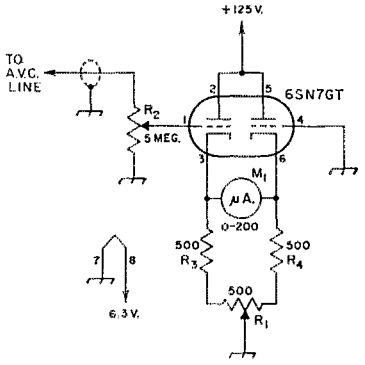
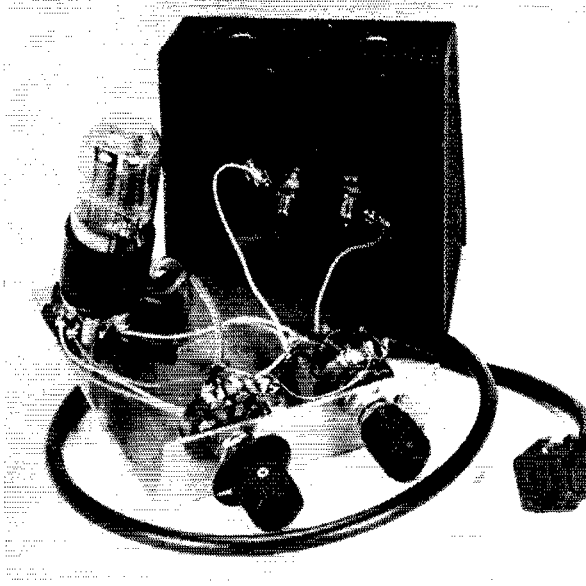


Fig. 1—Circuit of the foolproof S meter. Resistances are in ohms and fixed resistors are ½ watt. R_1 and R_2 are potentiometers. M_1 is a 0–200 d.c. microammeter. R_3 and R_4 preferably should have 10 per cent tolerance ratings.

[1] A similar circuit was suggested by WØWLR in *QST* for March, 1955. See Amfahr, "Unidirectional Loops for Transmitter Hunting," that issue.

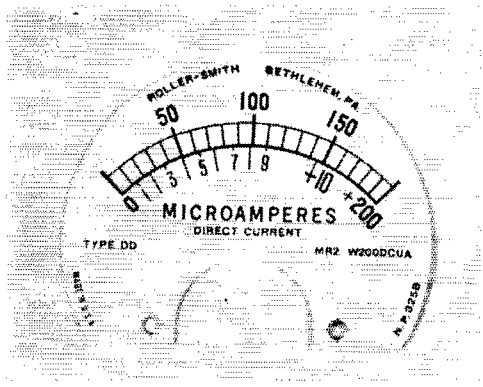
* 3713 Bangor St., S.E., Washington 20, D. C.



Interior view of the S meter showing the mounting of the 6SN7GT and the potentiometers R_1 and R_2.

R_3 and R_4 in the cathodes of the 6SN7 are not critical but probably ought to be 10 per cent resistors so R_1 will balance near the center of its range.

The B+ lead shown was connected to the screen supply on my BC-348 which provided 125 volts. This gave about the right sensitivity. The same voltage could be obtained from a simple voltage divider across the plate supply with the 6SN7 plates tied to the center point of the two resistors.



The calibrated S-meter scale.

Other photos show the meter mounted in a conventional sloping-front meter cabinet. As shown in the rear view, all the components are mounted on a $\frac{1}{16}$-inch aluminum bracket which fits the back opening in the sloping panel cabinet. This aluminum bracket is held in the cabinet by the two extra nuts on the potentiometers. R_1 is shown on the right with R_3 and R_4 mounted between the two end terminals and two phenolic stand-off bushings. The socket for the 6SN7 is mounted on two bushings slipped over mounting screws which support the socket from the base. R_2 has a pointer knob on it so it can be set to the correct value and marked for the various converter or receiver combinations. Wires for the power and a.v.c. connections are formed into a cable terminated with a 4-prong Jones plug. Shielded wire should be used for the a.v.c. connection. A covering of black vinyl tubing gives the cable a professional finished look. By providing matching sockets for the cable plug, the S meter can be used on more than one receiver combination. Later I plan to use it on a Command-receiver Q5-er, also.

Operation of this unit has been extremely gratifying. After trying lots of circuits that required cutting and trying to get them to work suitably, I must report this unit worked the first time. It hasn't been necessary to make any modifications either. Calibration of the unit was arrived at by using the comparison method with two of the more reputable commercial receivers equipped with S meters. The two receivers didn't match each other when the S meters were compared on the air. However, by adjusting R_2, the a.v.c. level control, I could match the scale of either one extremely closely. That's the advantage of the controls. So, if you have been searching for a foolproof S-meter circuit, I can't see how you could possibly go wrong using this one. I am sure some of the fellows using BC-348s, BC-342s and other combinations will appreciate this extremely versatile S-meter circuit. QST

Strays

You will note in "Correspondence" this month that we have been taken to task for the story on the railroad mobile that appeared in October *QST*. Also in our mailbag was one letter saying that the story was liked, and another pointing out that there *has* been other railroad mobile. A couple of other fellows admitted to submarine/mobile, but don't care to be identified!

The normal output of an existing low-power transmitter is often considerably in excess of that required to drive a high-power amplifier. This usually presents a problem, since the output coupling of the driver cannot always be reduced conveniently to the required level. Even in cases where this can be done, it may result in excessive screen dissipation, and otherwise impair the proper functioning of the driver stage. The T-pad attenuator described here permits operation of the driver at its normal load, and yet provides for adjustment of drive to the high-power amplifier's proper level.

Reducing Driver Output for Linear and Other Amplifiers

BY EUGENE A. HUBBELL,* W9ERU

A Step-Type R.F. Attenuator

It came as a distinct shock to the author to find that there are times when it is necessary to throw away some of that precious r.f. energy from a transmitter. This realization came about with the advent of s.s.b. in the shack.

The Pacemaker sideband exciter has a normal output of 60 to 70 watts, as indicated by an M. C. Jones Micro-Match s.w.r. bridge. The Johnson Kilowatt, operating in Class AB_1, requires only 2 to 3 watts of driving power. It is not recommended that the Pacemaker be operated at lower than full input, because the signal-to-noise and signal-to-carrier ratios will suffer. The problem, therefore, was how to drop the full output of the Pacemaker to the necessary drive level for the Kilowatt.

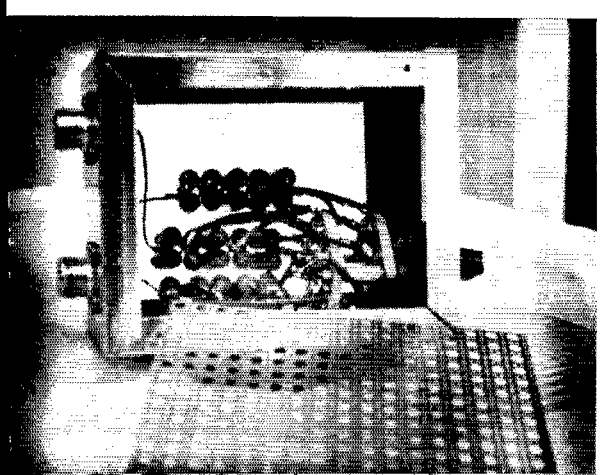
A 50-watt noninductive dummy load resistor was used across the grid-input line when driving the amplifier on a.m. and c.w. With this dummy load in the circuit, the Pacemaker drive was still far in excess of what was needed. Apparently, some sort of variable attenuator was indicated. A continuously-variable attenuator would be nice, but nothing practical which would present a constant load to the Pacemaker turned up in any of the various handbooks. So a step-type attenuator seemed the practical solution.

A suitable formula for H, T, and L pads was found in Nilson & Hornung's *Practical Radio Communications*. The T pad was chosen, mostly because the resulting unit would be usable in either direction without regard to how it was hooked up. The first design was for one with five steps of 0, 3, 6, 9 and 12-db. attenuation. It was built and found to operate satisfactorily, except that it did not provide quite enough attenuation on 75-meter phone. So a redesigned unit was built, adding another step which brought the maximum attenuation to 15 db. The description to follow is of this unit.

* Box 273, R.R. 4, Rockford, Illinois.

Circuit

The basic T-pad configuration is shown in the inset of Fig. 1, while the main diagram shows the practical circuit used in the construction of the unit. A resistance of 50 ohms was chosen for input and output impedances because results would be easy to check with the 50-ohm Micro-Match, the Pacemaker would operate into this load, and the grid-input circuit could be swamped down to this value with the dummy load mentioned



The step attenuator is assembled in a standard 3 × 4 × 5-inch aluminum box fitted with perforated aluminum covers.

(Photos by K9BJA.)

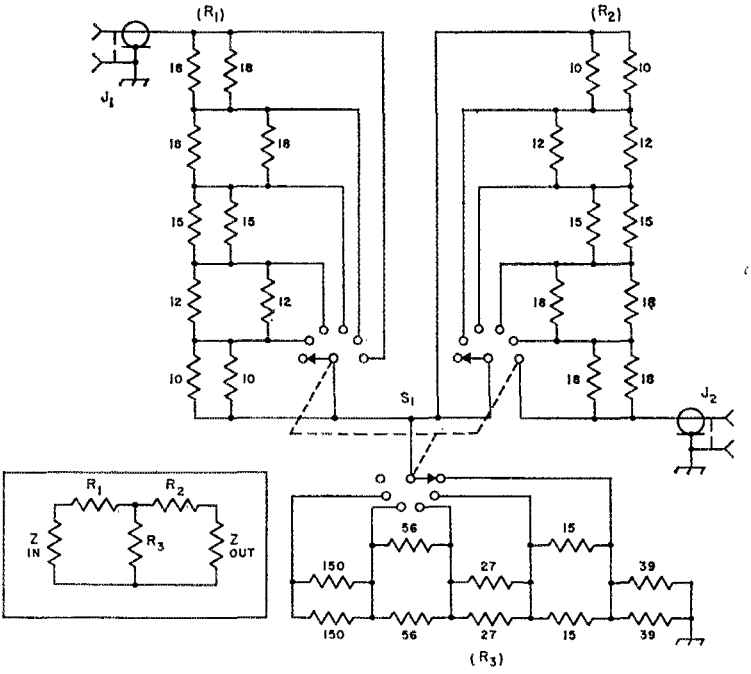


Fig. 1—Circuit of the T-network attenuator. Resistances are in ohms, and resistors are 10-per-cent, 2-watt composition. J_1 and J_2 are chassis-mounting coax receptacles (SO-239). The switch, described in the text, is in the maximum-attenuation position.

above. With the dummy load next to the Pacemaker and the step-type attenuator on the grid input, the dummy load current does not pass through the attenuator. Values of resistance for the three legs of the pad for various levels of attenuation are given in the accompanying table. The table includes both the calculated values and the actual values of standard resistors that were used.

The resistors are 2-watt types made by Ohmite or Allen-Bradley. Since the calculated values were below 10 ohms in many cases, the required resistance was obtained by paralleling two resistors. Ten ohms is the lower limit for these carbon resistors. Be careful not to use wire-wound units since they may have sufficient inductance to make the attenuator useless at radio frequencies. The paralleled values also result in sufficient dissipation rating to handle the full output of the Pacemaker over the short duty cycle of s.s.b.

Construction

The box in which the resistors and switch are mounted is a Premier AC-453, 3 by 4 by 5 inches in size, with two removable 4 × 5-inch sides. The original sides are replaced by perforated aluminum sheet or aluminum screen, for ventilating purposes. Two coax connectors are mounted in one 3 × 4-inch end, about 2 inches apart, and the switch is mounted in the opposite end, as shown in the photograph.

The switch is special, made up of a Centralab index kit P-121 and two ceramic sections, one having two-poles and five positions, while the other has a single pole and six positions. The two-pole section actually has six positions, one of which is "off," where the rotor contact is made. The index stop is adjusted to use this sixth position in the maximum-attenuation position. Hardware furnished with the index kit includes sufficient ½-inch spacers so that the two switch sections may be assembled on the index. Place the single-pole section next to the index and the double-pole section away from it. The sections used may be either types T and R (shorting) or X and RR (nonshorting).

Assembly of the resistor bundles shown in the photograph is best accomplished with the aid of the wooden jig illustrated in Fig. 2. In a small piece of 1-inch soft pine (actually about 13/16 inch thick), 1½ by 8 inches, drill ten 5/16-inch holes in a two-hole by five-hole pattern. Put the holes close enough together so that they touch, but do not overlap. Remove the wood left be-

Atten. (db.)	R_1, R_2		R_3	
	Cal.	*Actual*	*Cal.*	*Actual*
3	8.5	9	144	143.5
6	16.7	18	67	68.5
9	24	25.5	40.5	40.5
12	30	31.5	27	27
15	35	36.5	18.5	19.5

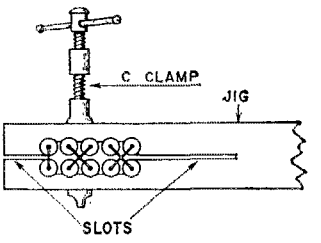
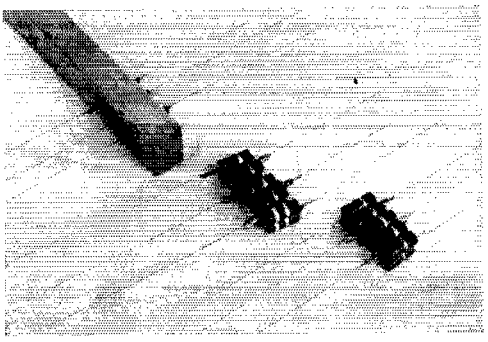


Fig. 2—Sketch showing wood jig and clamping arrangement for assembly of resistor bundles.



Wooden jig and "bundles" of resistors.

tween the holes, and saw a slot in each end of the hole pattern, between the two holes at the end. Insert the ten resistors making up the group designated R_1 in Fig. 1. Clamp the wooden jig on the resistors with a C clamp, so they will not slip. Cut off the long leads to about ½ inch, and bend into bundles of four leads, except for the end pairs, where the leads will be of two each. Into each bundle of four insert the end of a 6-inch length of No. 16 tinned wire and solder securely. Also solder 6-inch lengths of this wire to the paired leads at the end. Note the finished assemblies shown in the photograph, and make up similar bundles for groups R_2 and R_3.

Switch Assembly

The resistor bundles may now be soldered to the switch, and this can be done outside the box, if a little care is used to see that the result will not interfere with the box sides. The two bundles forming R_1 and R_2 will extend directly back of the switch, and be soldered to the two-pole, five- (or six-) position section. (The confusion as to identification of this section is because we are making use of an "off" position not considered as usable by the manufacturer.) The bundle of resistors making up R_3 is placed just above the switch, and soldered to the appropriate terminals of the single-pole, six-position section. A jumper connects the terminals of the R_1 and R_2 groups together, and the latter to the two rotor connections on the two-pole section and also to the rotor on the single-pole section. Then the whole assembly is inserted in the box and the switch secured with its nut. The two remaining terminals of R_1 and R_2 are soldered to the two coax jacks, and the remaining terminal of R_3 is grounded to a lug on one of the bolts securing one of these coax jacks. The circuitry calls for leads between the hot terminals of the two coax jacks and switch points, and these are added last.

Testing

The wiring may be checked by an ohmmeter. Put a 50-ohm resistor across one coax jack, and the ohmmeter across the other. Rotating the switch should show very little change in the ohmmeter reading at any switch position, and the reading should be just about 50 ohms. Checking with a Micro-Match and a good dummy load will show a barely perceptible increase in s.w.r. when the attenuator is added to the circuit. Placing the Micro-Match between the dummy load and the attenuator, the following output readings were obtained:

Step	10-Watt Input	100-Watt Input
0 db.	10 watts	100 watts
3 db.	5.5 watts	46 watts
6 db.	2.9 watts	21 watts
9 db.	1.5 watts	10 watts
12 db.	0.85 watt	5 watts
15 db.	0.5 watt	3 watts

The strict accuracy of these readings is somewhat doubtful because of the difficulty in reading the Micro-Match accurately. The scales vary considerably between the 100-watt and 10-watt levels, and the power level may vary considerably from the nominal value. The results obtained agree very well with calculated values, considering the fact that the resistors are not exactly what is needed, and are of ten-per-cent tolerance.

Using the Attenuator

In use, the attenuator does all that is required. The Pacemaker is tuned up with the attenuator in the zero db. position, but with the 50-ohm dummy load on the output, and the grid circuit of the Kilowatt detuned. When the Pacemaker is properly loaded, the grid circuit is tuned to resonance and enough attenuation introduced to prevent overloading in the Class C mode of operation (20-ma. grid current). The plate circuit is tuned to resonance and properly loaded for Class C operation. Then the mode switch is turned to s.s.b., which places the amplifier in Class AB_1, and the attenuator is set to the position where s.s.b. modulation peaks show only a slight indication of grid current on the final-amplifier grids. It is even handy for a.m. and c.w. work when the drive runs too high at a given setting of the 32V-1 output circuits. No trouble has been experienced with heating of the resistors, as long as the drive is not left on continuously over a minute or so. Try one; it works! QST

Strays

Here's some excellent philosophy from the Potomac Valley Radio Club, quoted from a recent bulletin having to do with contest operating tips.

"Above all, remember the Amateur's Code: An amateur is balanced. Do not become so obsessed with Sweepstakes operating that all other considerations are swept aside. Save something for the DX Contest!"

—...—

VK9VM worked JAØHA, and the two aren't very many miles apart. But in order to swap QSLs they had to get in touch with their stateside QSL managers, K2QXG and W2CTN.

A Two-Meter Converter with a Noise Figure Under 2 Db.

Optimum Performance in an Easily Duplicated Design

BY C. E. SCHEIDELER, W2AZL*

When the first work was done with meteor scatter on 144 Mc. some years ago, all four participants, W2UK, W1HHK, W2NLY and W2AZL, used similar converters. This design, the work of W2AZL, has since been duplicated widely, from instructions and drawings similar to those presented here. Today the "W2AZL Converter" is practically standard equipment for v.h.f. men who want the best obtainable sensitivity on 144 Mc. Converters of this type were in use at both ends of the record-breaking 144-Mc. QSO across the Pacific, made in 1957 by KH6UK and W6NLZ. If a signal can be heard on your antenna, you can hear it with this converter.

SOME ten years ago I became interested in investigating propagation at very high frequencies. In deciding which band to use, consideration was given to the availability of efficient high-power tubes for transmitters, the possibility of constructing a stable sensitive receiver, and the practicability of making a high-gain antenna of reasonable size, keeping in mind that it had to be erected in any average-sized back yard. The 144-Mc. band looked as if it would satisfy the requirements.

The first project was to build a stable low-noise converter to work into a communications receiver. A survey of low-noise amplifier circuits and tubes was made and it was decided to use the "Wallman Cascode" circuit in conjunction with 417A triodes. The 417A was designed for broad-band preamplifier service at 70 Mc. It has a transconductance of between 20,000 and 30,000 micromhos and is ideally suited to v.h.f. work.

A four-tube crystal-controlled cascode converter incorporating 417A tubes was designed and constructed. The original model had a noise figure of around 2.8 db., much better than anything else available at that time. In the process of making impedance measurements looking directly into the grid of the first 417A, it was found that the grid-to-ground impedance was only 300 ohms at 144 Mc. In an effort to find the reason for this low impedance it was discovered that decreasing the value of the cathode bypass capacitor (500 $\mu\mu$f. in the original model) increased the input impedance markedly. When the bypass capacitor was reduced to 30 $\mu\mu$f. the input impedance increased to 18,000 ohms but the amplifier was unstable. A compromise was then made between stability and high input impedance and a 50-$\mu\mu$f. ceramic was used for the bypass capacitor. After the above changes the input circuit was adjusted for best noise figure and it was found that noise figures under 1.5 db. could be obtained. This was quite an improvement over the original 2.8 db.

Circuit and Construction

When working at very high frequencies it is important to keep leads short and strays to a minimum. With this in mind, the detailed circuit and construction information given here should be followed as closely as possible. The model shown in the pictures was constructed working directly from the instructions that follow and it worked at once, with only a few minor adjustments needed to develop optimum performance.

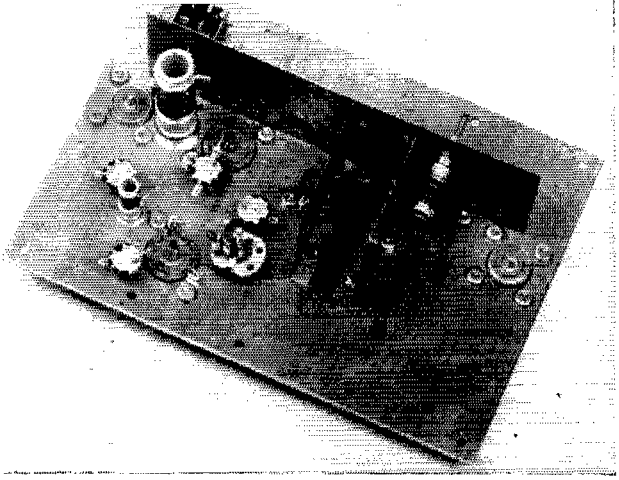
*727 Coolidge St., Plainfield, N. J.

A 417A neutralized triode is used in the first r.f. stage. The second r.f. stage is another 417A as grounded-grid amplifier. The plate of the first 417A is coupled to the cathode of the second through 500-$\mu\mu$f. button capacitors. The ground return for the cathode of the grounded-grid stage is made through the neutralizing coil and grid coil of the first stage. The plate of the grounded-grid stage is coupled to the grid of a 404A [1] mixer through a double-tuned circuit. This tends to improve skirt selectivity and reduce the feed-through at 14 to 18 Mc. The plate of the mixer is tuned to 16 Mc. and link-coupled to the communications receiver.

The oscillator and multiplier stages use a 2C51/396A [2] dual triode. A 32.5-Mc. crystal is used in series resonance between the cathodes of the dual triode. The first plate resonates at 32.5 Mc. and is capacity coupled to the second triode grid. The second plate is resonated at 130 Mc. and is inductively coupled to the mixer stage. The communications receiver is tuned between 14 and 18 Mc. to cover 144 to 148 Mc.

The converter is constructed on a flat 1/16-inch piece of brass or copper which covers the open side of a 5 × 7 × 2-inch chassis. This type of construction makes the converter convenient to work on. When the chassis and shield partitions have been punched, drilled and tapped, clamp the large partition in a vise by means of the small lip. Place the 500-$\mu\mu$f. button feed-through capacitors in the ⅜-inch holes, with the

[1,2] These are Western Electric types that may not be found in most radio distributors' stocks. A 6AK5 or 6CB6 can be substituted for the 404A. The 2C51 is similar to the 12AT7. These more commonly available types may be used with only minor changes such as pin connections.



The W2AZL converter before wiring, showing mounting positions of the button capacitors.

capacitors on the same side as the lip, and bend the tabs on the other side flat against the partition. Solder the tabs with a hot iron to ensure good joints. This is important because these capacitors and the r.f. chokes form decoupling networks and ground returns for the various stages in the converter.

Next, the parts should be mounted on the 5 × 7-inch plate as shown in the pictures. The first r.f. socket is mounted so that Pin 6 faces the coaxial input jack. The second r.f. socket has the same orientation. The mixer socket is mounted with Pin 1 facing the second r.f. stage. The oscillator socket has Pin 1 toward the left side of the chassis. Small lugs should be mounted under each screw holding the first r.f., second r.f., and oscillator sockets. Pin 2 on each of the r.f. sockets should be removed by squeezing with a pair of long-nose pliers and pushing out through the top. Remove Pins 2, 5 and 7 from the mixer socket. Pin 9 on each r.f. socket and the oscillator socket should be bent and soldered to the nearest lug. Pin 3 on the mixer and Pins 3 and 5 on the oscillator should also be grounded to the nearest lug.

Next, the large partition should be mounted and the small shield dividing the second stage should be bolted in place with a few 4-40 brass screws. Pins 4, 5, 7 and 8 should then be soldered to the partition along with the metal cylinder in the center of the socket. Next, the filament and plate chokes should be soldered in place as shown in the diagram and pictures. The rest of the wiring in the oscillator and mixer circuits should be completed, keeping the leads short and referring to the pictures where necessary.

The 130-Mc. multiplier coil, mixer grid coil and second r.f. plate coil are wound of No. 16 tinned copper wire, using a 5/16-inch drill for the oscillator and mixer coils and a ⅜-inch drill for the r.f. coil winding form. It is important that the coils be wound in the same direction.

First, the r.f. coil, L_3, should be soldered in place, between the B-plus bypass capacitor and Pin 1 on the second r.f. tube socket. Next, the mixer grid coil, L_4, should be soldered between Pin 1 on the mixer socket and the edge of the button capacitor, alongside the 3-15-$\mu\mu$f. variable capacitor. These coils should be lined up as shown in the picture, with about ⅓ diameter overlap and about ⅛ inch apart. Last, the 130-Mc. multiplier coil, L_8, should be soldered between the tab

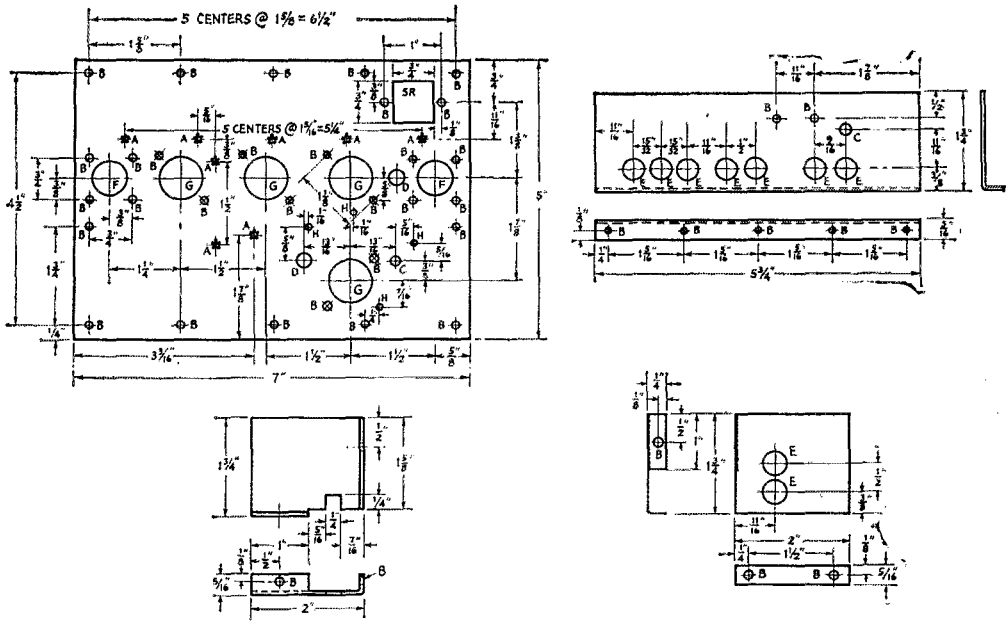
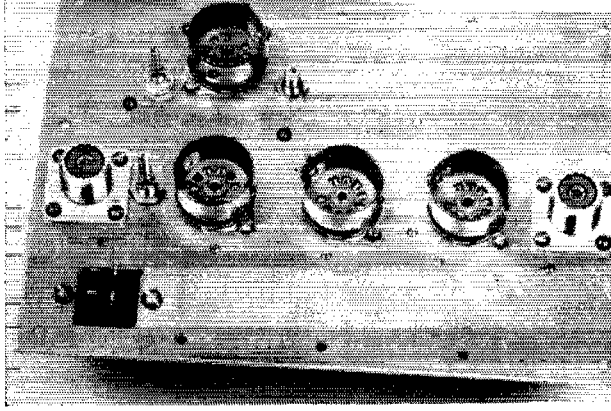


FIG. 1—Dimensions of the base plate (A) and shield parts (B, C, D) used in the W2AZL converter. Plate is 1/16-inch copper or brass. Shields are .015-inch copper or brass. Hole diameters in thousandths of an inch: A—112, tap 4-40, B—125, C—187, D—250, E—375, F—625, G—750, H—113.

on the B-plus bypass capacitor and the stator tab on the 3–15-$\mu\mu$f. variable capacitor. This coil is mounted directly in line with the mixer coil and about ¼ inch away from it. This completes the oscillator-mixer section of the converter.

To complete the second r.f. stage, one lead of a 91-ohm resistor is bent at right angles as close to the resistor as possible. The second lead is bent around against the resistor and bent again so that it runs parallel to the first lead about ¼ inch from it. A 500-$\mu\mu$f. feed-through button is slipped on the twice-bent lead as far as it will go without shorting. One of the tabs is soldered to the other lead and then the center is soldered in place. The lead soldered to the outside of the capacitor is clipped off close to the rim and another feed-through capacitor is slipped on the center lead and soldered in place about ⅛ inch from the first, with one of its tabs perpendicular to the plane of the resistor. This is the coupling capacitor between the first and second r.f. stages. The junction of the resistor and tab on the rim of the resistor bypass capacitor is soldered to Pin 6 on



Top view of the low-noise 2-meter converter. Three sockets in line are, right to left, the two r.f. amplifier stages and the mixer. The oscillator-quadrupler socket is at the rear.

the second r.f. socket, with the resistor parallel to the chassis and the center lead perpendicular to the long partition and pointing away from it. This assembly, not visible in the photographs, is

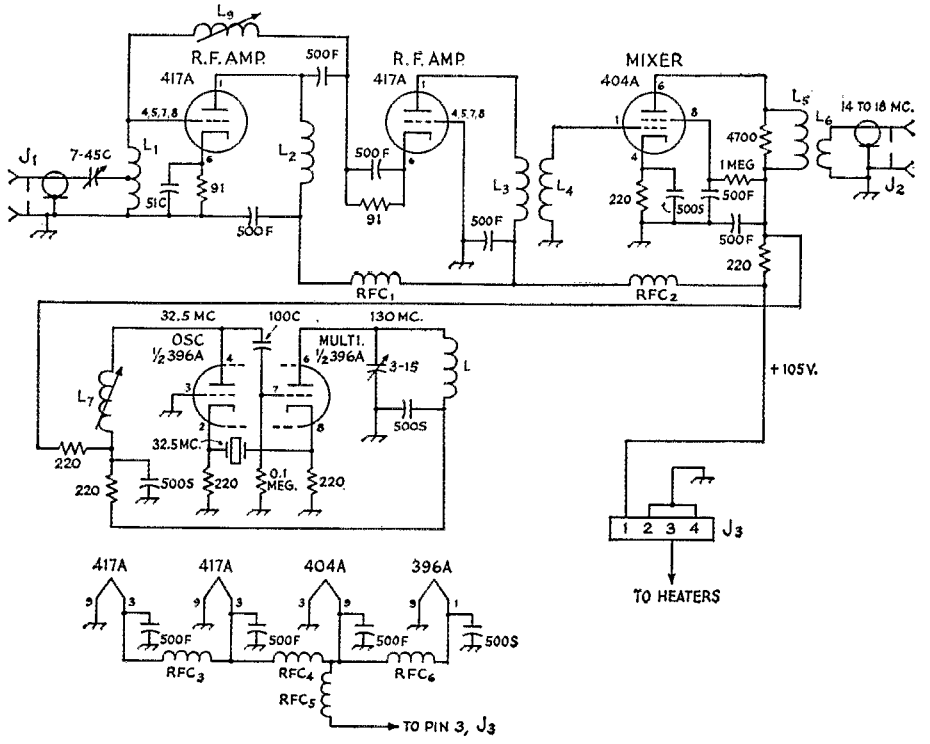
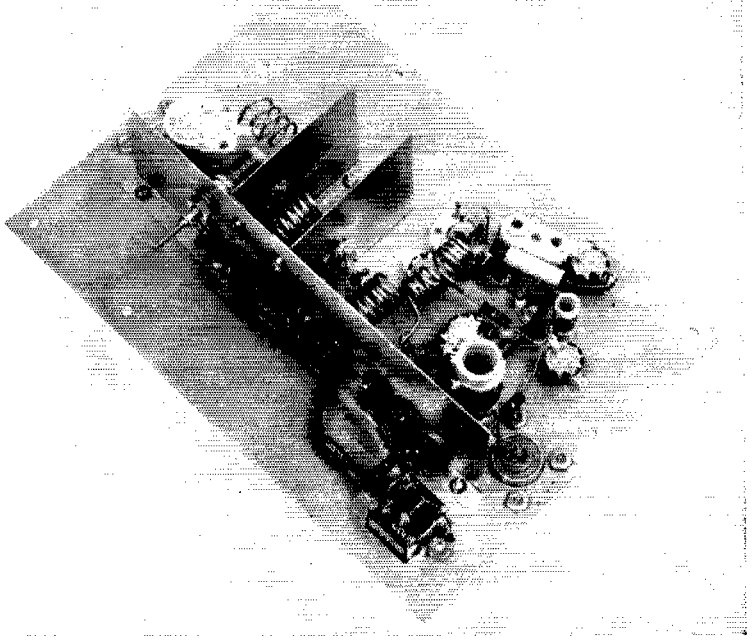


Fig. 2—Schematic diagram and parts information for the W2AZL 2-meter converter. Capacitor types are indicated by letter following value; C for ceramic, F for feed-through type button, and S for standoff type button. All resistors ½ watt.

J_1, J_2—Coaxial chassis fitting, SO-239.
J_3—4-pin power connector, male.
L_1—4 t. 5/16-inch diam., ½ inch long. Tap at center (see text).
L_2—5 t. ⅜-inch diam., ½ inch long.
L_3—7 t. ⅜-inch diam., ⅝ inch long.
L_4—4 t. 5/16-inch diam., ⅜ inch long. (L_1-$_4$ all No. 16 tinned.)
L_5—40 t. No. 26 enam., close-wound on ½-inch diam. iron-slug form 1¾ inches long.
L_6—5 t. No. 22 enam., wound over B-plus end of L_5.
L_7—23 t. No. 28 enam., close-wound on ¼-inch iron-slug form ⅞ inch long.
L_8—Similar to L_4.
L_9—12 t. No. 26 enam., ½ inch long on form similar to L_7.
RFC_1, RFC_2—No. 30 enam. Close-wound full length of 1-meg. ½-watt resistor.
RFC_3-RFC_6, incl.—6 turns No. 22 enam. on 1-meg, ½-watt resistor.



Looking at the low-noise converter from the one side, showing the decoupling chokes and feed-through capacitors in the power leads.

shown in Fig. 3. The shield partition separating the first and second r.f. stages is next fastened in place with a few 4-40 brass machine screws.

The first r.f. plate coil is wound on a ⅜-inch drill and is soldered in place between the center of the plate bypass capacitor and the tab on top of the coupling capacitor. From the tab it runs through the bottom hole in the shield partition to Pin 1 on the first r.f. socket. A lead is run from the center of the coupling capacitor up through the top hole in the shield partition to the end of the neutralizing coil. The first r.f. grid coil is wound on a 5, 16-inch drill and mounted as shown in the pictures. A lug is next mounted under the coaxial connector mounting screw nearest the long partition and first r.f. socket. The 50-$\mu\mu$f. ceramic capacitor is soldered between this lug and Pin 6 of the first r.f. socket with leads as short as possible. A 91-ohm resistor is soldered from Pin 6 to the same ground lug. The 7–45-$\mu\mu$f. ceramic trimmer is soldered between the center of the coaxial connector and the center of the first r.f. grid coil. This completes the wiring of the converter. The chassis lip is cut out adjacent to the coaxial connectors, power socket and oscillator socket, to allow the plate to seat flat against the chassis. Holes are drilled with a No. 42 drill in the lip of the chassis to match the holes in the plate, and tapped to take 4-40 machine screws.

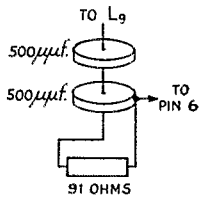


Fig. 3—Detail of the coupling and bypass capacitors and bias resistor wiring used between the two r.f. stages. This assembly does not show in the photographs.

Testing

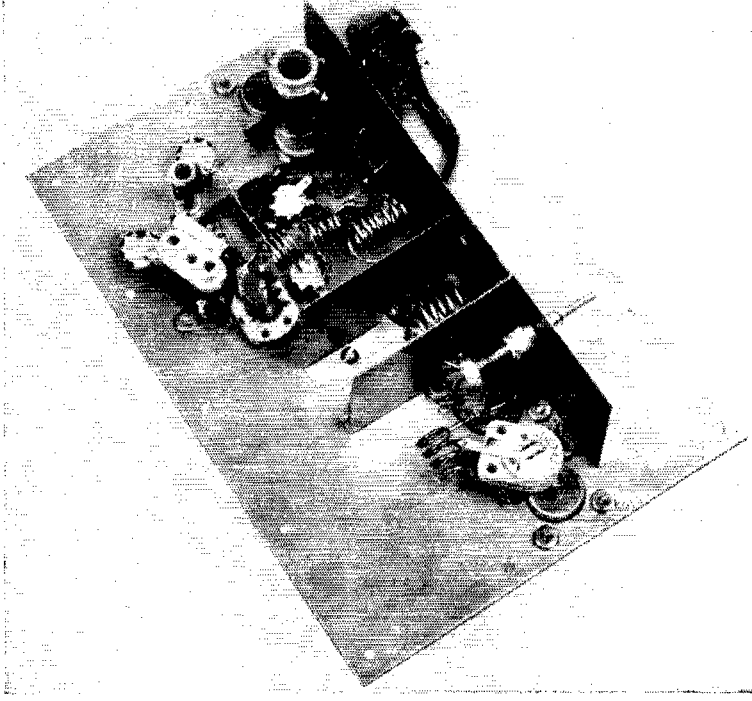
The power supply may be anything that will deliver 105 to 125 volts d.c. at 50 ma. and 6.3 volts a.c. at 1.2 amp. Desirable test equipment for converter alignment includes an oscilloscope, such as Dumont 208, a sweep oscillator with a good 50-ohm attenuator or an external attenuator, and a Z-50 (7-μh.) or equivalent choke. The sweep generator and scope system outlined below makes possible an accurate adjustment of all circuits for flat response across the band.

Remove the crystal and adjust the input ceramic trimmer to approximately ¾ of the way toward maximum capacity. Solder the Z-50 choke to Pin 4 of the mixer socket. The other end of the choke goes through a shielded lead to the vertical amplifier of the scope. Connect the sweep generator through the external attenuator (if used) to the input of the converter and connect the horizontal amplifier on the scope to the sync on the sweep generator. Set the sweep generator to sweep 140 to 152 Mc. The sweep generator is run at minimum level and the scope at maximum gain.

With the power turned on the inductance of the mixer grid and the second r.f. plate coils should be adjusted by compression or expansion of coils so that the band pass is nearly flat on the scope, with a small dip in the middle and slight peaks at 144 and 148 Mc. The skirts should fall off rapidly below 144 and above 148 Mc.

Next, disconnect the heater on the first 417A and increase the output of the sweep generator to maximum. Adjust the neutralizing coil until a dip centered on 146 Mc. appears on the scope. The heater is then reconnected and if necessary the second r.f. plate and mixer grid coils are readjusted to give the proper pass band.

The r.f. choke is removed from the mixer cathode and the 32.5-Mc. crystal plugged into its socket. The oscillator coil, L_7, should be



The other side of the completed converter. R.f. circuits are at the right, mixer and oscillator-multiplier at the left.

adjusted until oscillation is detected at 32.5 Mc. with the aid of a grid-dip meter or receiver.

Next, the converter should be connected to a good communications receiver set to tune the 14- to 18-Mc. range and a 50-ohm 144-Mc. antenna connected to the input jack of the converter. The trimmer tuning the 130-Mc. coil of the oscillator should be adjusted for highest noise level in the receiver, and then the coil in the plate of the mixer should be adjusted so the noise peaks evenly across 14 to 18 Mc. in the communications receiver. Tuning the communications receiver between 14 and 18 Mc. (144–148 Mc.) should now bring in 2-meter signals which, when the b.f.o. is turned on, sound stable and clean. The stability of the combination should be as good as that of the communications receiver alone.

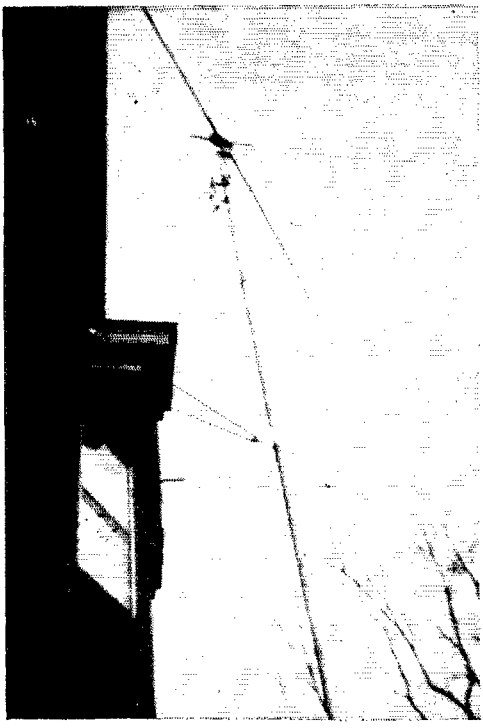
If one wants the maximum sensitivity the converter input circuit should be adjusted with a noise generator [3] for best noise figure, by squeezing or pulling the grid coil and adjusting the 7-45 ceramic trimmer. The position of the antenna tap may also be checked for lowest noise figure. For best adjustment it is suggested that the noise generator be coupled to the converter through a length of coax similar to that to be used on the antenna system. This assures the maximum transfer of energy from the antenna to the input of the converter. Best noise figure is obtained by adjusting the input circuit for a mismatch, when the generator is connected directly. With the coax cable added the best noise figure is obtained with an adjustment that includes the effect of line losses due to the mismatch. If it is desired to know the exact noise figure the loss of the cable may be subtracted from the noise figure reading with the cable in place.

If a sweep generator and scope are not available the converter may be aligned by adjusting the second r.f. plate coil and the mixer coil for even noise level when tuning the communications receiver across the 14- to 18-Mc. region. This should be done with the converter input circuit loaded with a 50-ohm resistor, not with the antenna connected. If the coils were constructed and mounted as shown in the pictures it will be found that little adjustment is necessary. The neutralizing adjustment may be accomplished by tuning in a local signal near the center of the band and disconnecting the first r.f. stage heater. The neutralizing coil is then adjusted until the signal disappears. The heater is then reconnected and the mixer grid and second r.f. plate coils are readjusted for flat band pass if necessary. The remaining adjustments are made as mentioned in the previous paragraphs. QST

[3] Tilton, "Noise Generators — Their Uses and Limitations," *QST*, July, 1953, p. 10.

Strays

Like to be an FCC engineer? There are a number of openings in the Federal Communications Commission both in Washington, D. C., and in the 31 field offices and 18 monitoring stations in the 50 states and in Puerto Rico. Starting pay is around $4500 to $6000, depending on education and experience. If you would be interested in this sort of a career, write to the Executive Secretary, Board of U. S. Civil Service Examiners, Federal Communications Commission, Washington 25, D. C. and request Announcement 187-B.



W3PMV's antenna hoisted into place.

A beam antenna can be expensive. It may also be inexpensive, as W3PMV demonstrates here. This one includes three-band operation and a support that can be lowered for antenna adjustment.

A Simple Tilt-Over System at Low Cost

BY FRANCIS J. McDONOUGH,* W3PMV

Two-Element Three-Band Beam and Mast for the Lean Purse

UNFORTUNATELY, all of us cannot afford tilt-over towers and the splendid multiband beam antennas to be found on the amateur market. However, the ham with a little ingenuity and elbow grease can sometimes come pretty close to duplicating the results, if not the appearance, of the fancier installations at a fraction of the cost.

The sketch of Fig. 1 shows a 35-foot antenna support that is inexpensive and easily made from readily-available materials. It can be raised and lowered at will by one man, eliminating the need for hazardous climbing. No digging or concrete mixing is required. The mast sits right on the surface of the ground.

The Mast

Two 13-foot sections of 1½ pipe are joined with a pipe coupling. A 9-foot length of 1-inch pipe is added at the top by means of a standard reduction coupling. The mast is easily raised and lowered by a block-and-tackle arrangement made up of three galvanized pulleys (40 cents each at the hardware store) and 120 feet of ⅜-inch manila rope (2½ cents per foot at Sears). The fixed pulleys are anchored to the side of the house in my case, but a tree would serve the purpose almost as well. The pulley anchors are large galvanized hooks screwed through the siding into studs. Two of these hooks are used at each pulley for added strength. The movable pulley is wired to the mast at about 20 feet up from the base. A few "dry runs" after the antenna has been mounted will show the optimum anchoring point, depending on the weight at the top end. At the same time, the lengths of the side guys can be adjusted for proper tension when the mast is up. If these guys are anchored in a line through the base of the mast, at right angles to the direction in which it will be lowered, the guys will remain in tension at all times. Even if the guys are anchored a little behind the mast on the side that it falls when lowered, there will be enough tension to prevent any serious side travel while the mast is being lowered. The mast, of course, cannot be lowered if the side guys are anchored on the house side of the base. The mast can be propped on an "X" frame or "scissors" to hold it off the ground while mounting the antenna.

Mast Mounting

The base mounting for the mast is shown in

* 1226 Clairhaven St., Pittsburgh 5, Penna.

Fig. 2A. The horizontal part rests on the ground, running at right angles to the direction of fall of the mast. The bottom end of the mast slips over the vertical part of the mounting. The mounting is held in place by driving lengths of pipe or stakes into the ground along both sides of the horizontal part. To keep the mast from turning on the mounting, a length of 2 × 4 is bolted to the mast near the bottom, as shown in Fig. 2B. Stakes are used to check the 2 × 4.

The Antenna

A simple light-weight beam for three bands is shown in the sketch of Fig. 3. The elements are of No. 14 wire. The arrangement provides two elements on 15 and 20 meters and three elements on 10 meters. The 10- and 15-meter driven elements are fed in parallel with a single 50-ohm coax line. The 20-meter elements are inductively loaded and the driven element has a separate 50-ohm feed line. Each of the four loading coils has 9 turns of No. 18 3 inches in diameter, with the turns spaced to make the coil length 3 inches.

The elements are supported on a framework formed by four 12-ft. bamboo poles clamped in sockets made of angle iron fastened to a wood block at the center. The major spread is adjusted to about 23½ ft. The minor spread is spanned by lengths of plastic clothesline which provide suspensions for some of the elements. The elements in each of the two groups of three are spaced 6 inches apart, and the groups are spaced to bring elements for corresponding bands 6 ft. 6 inches apart. This provides an element spacing of 0.2 wavelength at 10 meters, 0.15 wavelength at 15 meters, and 0.1 wavelength at 20 meters. The 10-meter director has a spacing of 0.1 wavelength (3.3 ft.). Note that maximum gain is toward the top of the page on 20, and in the opposite direction on 10 and 15.

It is probable that the mast could be carried to greater heights by adding more pulleys along the mast and fixed support. QST

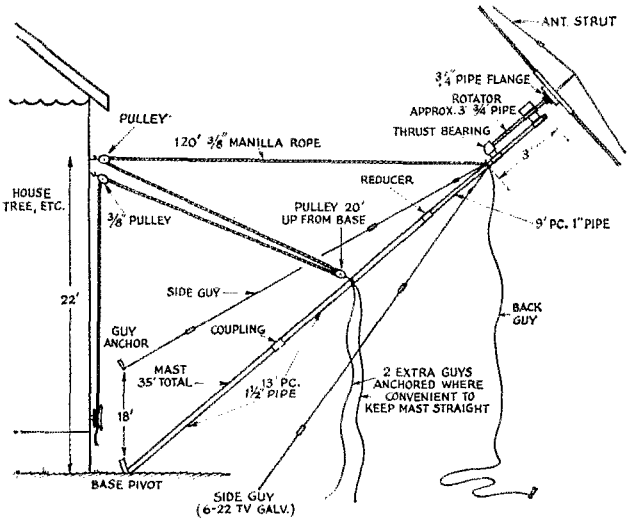


Fig. 1—This simple pipe mast can be raised and lowered by one man. Details of construction will be found in the text.

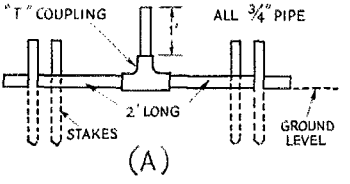
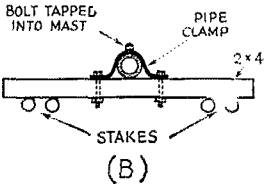


Fig. 2—Details of mast base mounting. The bottom section of the mast is slipped over the 1-foot vertical pipe in A. The 4-foot horizontal section rotates as the mast is lowered. The 2 × 4 in B is clamped to the mast near the bottom. Stakes driven into the ground keep the mast from turning.



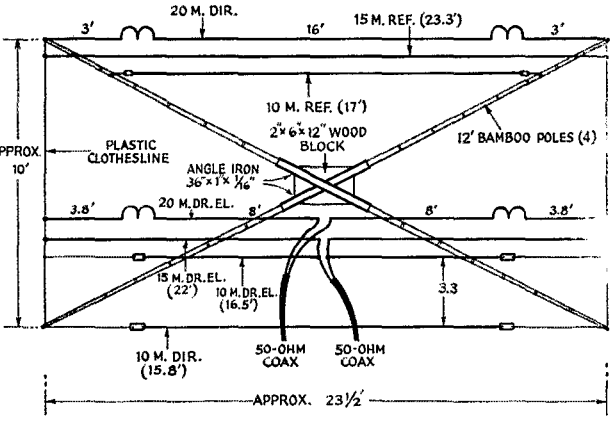


Fig. 3—Sketch of the light-weight three-band beam used at W3PMV. Elements are of No. 14 wire and the 20-meter elements are loaded inductively. Details not shown will be found in the text.

BY EDWARD A. STANLEY,*
W4QDZ

This article doesn't tell you how to design a tower, but it does discuss some of the things you should look for if you're in the market for a support for your beam.

Some Considerations in the Selection of an Antenna Tower

In recent years, the trend away from long-wire antennas and toward the rotating type of directional radiator has been phenomenal. So also has been the general migration of dwellers from the noise and turmoil of the cities to the peace and quiet of newly developed suburban areas. Many of these areas have been planned from the moment of their conception for the ultimate in "gracious" living. To assure that the level of standards set initially will be maintained, duly appointed and legally equipped planning and zoning boards have been established with power to decide, among other things, what sizes and types of structures will be permitted, from the consideration of not only safety but appearance as well. As a result, it is becoming more the rule than the exception that a permit must be secured before the amateur may install a tower to support his beam.

Working hand and glove with the planning and licensing committees are engineering consultants, and quite often the ham who wants to erect a tower will be called upon to furnish engineering data in addition to sketches or pictures of the proposed installation.

Many factors bear strongly on the selection of the right tower to do the job at hand. Towers may be resolved into three general classifications:

Self-supporting towers (free-standing).
Guyed towers.
Mechanically actuated towers, guyed and self-supporting.

Structural Considerations

Primarily, the tower must be able to support the static weight of its own structure, and that of the antenna, mast and rotator. Also, it must support incidental ice, sleet and snow which may form radially about its members. In addition to the foregoing, it must be sufficiently strong to support all of the static weight plus the pressures placed upon its surface areas by winds which will be encountered, all taking into consideration the height at which the ham desires to place his beam. Thus, we see, the prospective ham-tower erector has a multitude of things to consider before he makes a sizable investment in this new piece of highly important equipment for his station. He will begin to run into new terms such as "windload," "L/r," "maximum compression," and "moment." He will peruse specifications which will describe towers in terms of "so many pounds" or "so many miles per hour." This is bound to be confusing to him, and it is well to go into some of these things in order to assist him in evaluating the actual tower he will need. It is far from the intention of this article to go into complex analysis and integration of loads, but it is the opinion of the author that a little knowledge will be more helpful than dangerous and will materially assist the prospective ham-tower user in his selection of a proper structure.

Determination of Structural Capacity

Since our main concern is to know whether or not a given tower will stay up with the beam and rotator we place on it, we should consider the forces which act upon the tower. They are:

Wind pressure
Static weight
Torsion.

Of course there are other factors, but from the standpoint of the amateur user, these will be the most important to consider. Most amateurs do not even begin to realize the tremendous forces which build up within a tower structure when winds begin to work on it. We may well take the time to consider some of these effects in order to approach a basic understanding of the essential ingredients of a workable tower structure. Let us first take up the problem of pressure as applied by a wind. The formula for pressure is:

$$P = 0.0032V^2,$$

where P is the pressure in pounds per square foot,

and

V is the velocity of the wind in miles per hour.

Therefore,

$$V = \sqrt{\frac{P}{0.0032}}$$

Example: Given a tower rated as a "50-pound" tower. Determine the velocity of wind for which

* Emergency Coordinator, Hillsborough County, 3006 Fair Oaks Ave., Tampa, Florida.

this tower is rated.

$$V = \sqrt{\frac{50}{0.0032}}$$

$$= 125 \text{ miles per hour.}$$

One important thing to remember is that we are working against squared velocities and therefore a wind of 100 miles per hour will exert 4 times as much pressure as a wind of 50 miles per hour.

A few simple computations will illustrate the order of the strain which a tower must withstand under high wind velocities. The formula for obtaining the surface areas when calculating the pressure per square foot exposed to the wind is as follows for tubular members:

$$A = \frac{0.666LD}{144}$$

where

A is the area in square feet
L is the length of the member in inches
D is the width of the member in inches (in this case the outside diameter of the tubing).

The correction factor of 0.666 is applied to tubular surfaces. Where flat surfaces are involved, this factor should not be applied.

Example: Given a beam with the following dimensions:

Boom — 2 inches o.d., 16 feet long
Element No. 1 — 1 inch o.d., 33 feet long
Element No. 2 — 1 inch o.d., 32 feet long
Element No. 3 — 1 inch o.d., 31 feet long

Determine the maximum surface area which will be exposed to the wind.

Since $A = \frac{0.666LD}{144}$

then A (El. 1) = 1.831 square feet
A (El. 2) = 1.776 square feet
A (El. 3) = 1.720 square feet

for a total of 5.33 square feet.

Since it is obvious that the elements of the array will present the greater face to the wind, the area of the boom need not be calculated in this case.

Now, let us see how much windload would be developed by this array if it were mounted atop a tower, say, 40 feet in height, and placed in a wind of 100 miles per hour velocity. Using $P = 0.0032V^2$, we find that the pressure in pounds per square foot at this velocity is 32. Multiplying this by the area, 5.33, we find that the total pressure will be 170.56 pounds. To go further, multiply this figure by 40 (the height of the tower), and we find that there is transmitted, due to wind pressure on the *antenna alone*, a force of over 6000 foot pounds which will result in that much compression on one leg of the tower, or that much tension on the other two legs, assuming it is a triangular structure. Already, it does not take long for a ham with a curious disposition to begin to envision the terrific forces which begin to develop in his tower when the winds start tugging at it and its associated equipment.

Suppose, just for the purposes of practice, we set up a hypothetical tower and try to get a rough idea of what happens to it when subjected to the above beam, a rotator, mast and wind. We will select a wind velocity of 85 miles per hour, since this is a figure often used in the description of a tower. Let us use material with a rather heavy-gauge wall in this hypothetical tower, retaining an outside diameter of 1¼ inches for the legs and braces, and keeping the wall thickness at 10 gauge rather than 16 or 14. Our tower would be specified like this:

Legs — To be of 1¼-inch o.d. steel tube, with 10 ga. (0.134-inch) wall.
Braces — Same as legs.
Windload — 23.12 pounds per square foot (85 m.p.h.).
Structure — Triangular, 40 feet tall, 12-inch spacing between legs, braces located on 12-inch centers, totaling 40 in all. Tower to be free standing and topped with beam, rotator and mast with a total of 6 square feet of exposed area and a static weight of 100 pounds. Static weight of the tower is 400 pounds.

To compute: The area of the tower exposed to the wind.

Using the basis formula for determining the surface area of tubular members, we compute the area of one face,

2 legs × 1¼ inches o.d. × 480 inches height = 1200 square inches

40 braces × 1¼ inches o.d. × 12 inches length = 600 square inches

for a total of 1800 square inches, or 12.5 square feet. Apply the correction factor for tubular members, 12.5 × 0.666 = 8.33 square feet.

Since the tower is triangular, we apply a corrector of 1.5 to the above figure, making the total again 12.5 square feet. The area of the exposed face of the tower is 12.5 square feet and the pressure per square foot is 23.12 pounds at a velocity of 85 miles per hour. If we take the product of the two (12.5 × 23.12) and divide by the length of the tower in feet, we find that the tower has a windload of 7.2 pounds per lineal foot.

We now have the necessary figures to determine roughly what happens to our tower at the stated wind velocity. Refer to Fig. 1, which shows the general layout of the structure. To keep things simple, we will take a little license in our computations and make them on the basis of ten-foot increments, applying the wind force against the center of each increment. The block at the top of the tower represents the combined areas of antenna, rotator and mast. The tower sections are labeled A, B, C, and D from the top to the ground. Keeping in mind that we are computing force at a wind velocity of 85 miles per hour blowing against the exposed faces of the tower and the beam, mast, and rotator, let us total up the

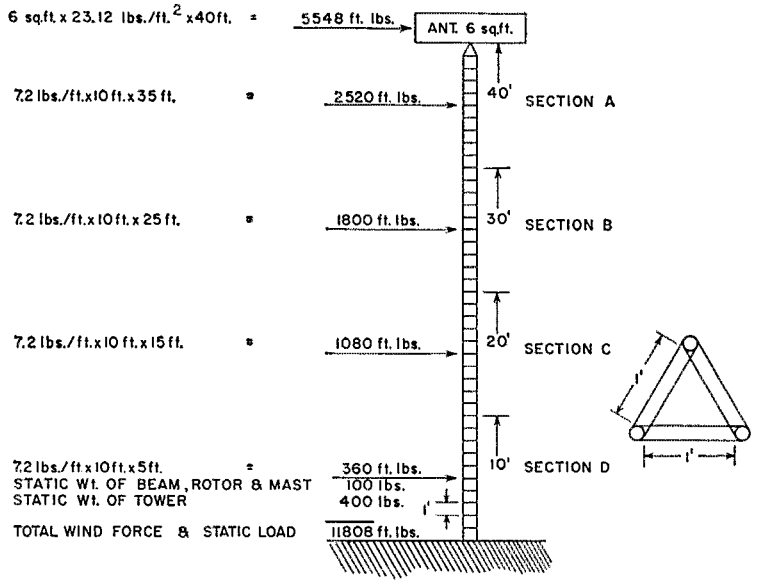


Fig. 1—Sketch showing loading on a 40-ft. triangular tower at a wind velocity of 85 m.p.h.

number of foot-pounds which are being transmitted down to the base of the tower:

At the top of the tower:
6 sq. ft. × 23.12 lbs. × 40 ft. = 5548 ft. lbs.
At the mid-point of Section A:
7.2 lbs. × 10 ft. × 35 ft. = 2520 ft. lbs.
At the mid-point of Section B:
7.2 lbs. × 10 ft. × 25 ft. = 1800 ft. lbs.
At the mid-point of Section C:
7.2 lbs. × 10 ft. × 15 ft. = 1080 ft. lbs.
At the mid-point of Section D:
7.2 lbs. × 10 ft. × 5 ft. = 360 ft. lbs.

Static weight of beam and tower = 500 ft. lbs.
Total transmitted force = 11,808 ft. lbs.

This means that there is a force of roughly 12,000 ft. lbs. or *six tons* being transmitted to the base of the tower. It means that one leg may be put under a compression of 12,000 lbs. while the other two legs are under a tension of 6000 lbs. each.

According to the official yardstick of the tower industry, EIA Standard TR116, this is much in excess of the proper permissible compression considering the amount of steel available to do the job. The 1¼-inch o.d. tubing with the 10-gauge wall which we used has a cross-sectional area of steel of approximately 0.470 square inch. It is upon this cross-sectional area that we place a lot of our dependence when designing a steel tower. According to the standard, one square inch of steel of a certain grade and under certain conditions, will be permitted a maximum compression load of 17,000 lbs. Using this as a figure, our 0.470 square inch will only handle approximately 8000 pounds of allowable compression. This means that according to good engineering we have overloaded our tower 50 per cent.

It will be noticed that the support of the steel provided by the braces has not been considered in this computation. We have made our computations on the basis of the worst situation in this regard. Standard TR116 has been adopted in the public interest and is designed to eliminate misunderstandings between the manufacturer and the purchaser, and to assist the purchaser in selecting and obtaining without delay the proper product for his needs. This standard sets forth the basic requirements for the structural requirements for radio transmitting towers and towers for radio transmitting antennas. Copies may be obtained from EIA, 777 14th St. N.W., Washington 5, D. C. for 25 cents each. Incidentally, the above referenced standard makes no note of any material other than steel.

Torsional Stability

One thing which should always be considered in any tower topped with a rotating-beam antenna is the torsional stability, or ability to resist twisting. A directional array, during its rotation, builds up a considerable amount of kinetic energy. When rotation is stopped suddenly this energy is transmitted directly to the tower and tends to twist the section. It has been observed that the starting and stopping of a rotary beam quite often places more torsion on a tower than it might receive during a 100-mile-per-hour wind. To withstand this frequent impact of forces, it is necessary that diagonal bracing be employed. The proper tower for a large beam equipped with a positively locking rotor brake must be well designed in order to take these forces.

Special Types

From the standpoint of appearance, a self-

supporting unit with a small base area is usually considered best. Unsightly bulk is avoided and also the need for guy wires and a large base area. A special type of self-supporting tower is the type that can be cranked up and down and tilted over. Towers of this type have many advantages. They are easy to erect. The antenna can be mounted from the ground, eliminating the dangers involved in climbing. They can be easily lowered during exceptionally strong winds or when heavy icing occurs which might damage the antenna. However, the installation of these towers does require some special consideration. Positive locking devices are essential. There must be provision to prevent the tower from telescoping should a cable fail, and also to remove the weight of the telescoping sections from the cable when the tower is extended. Winches should have removable handles so that the tower may be left unattended with no danger to children or unthinking adults who may be tempted to tamper with the mechanism.

There has been considerable discussion about the feasibility of using a ground post for mounting tilt-over towers. The author has had considerable experience with one such mounting. This post is mounted in Florida sand and supports a 40-foot tower topped with a full-sized tri-band beam, rotator and heavy-duty 10-meter groundplane antenna. Radial fins project out in four directions from both the bottom of the post and that portion just under the surface. It is set into about five feet of sand, the last two and a half of which is watery. In fact, after reaching a depth of three feet it was necessary to bail continuously in order to complete the hole. The post shows no "budge" even when the tower is tilted horizontally across it with all weight on the ground post. Mounting the ground post in sand or earth, rather than in concrete, definitely helps to prevent shear at the ground line, since the soil will tend to compress under force of the post. Radial fins such as described will withstand a pressure of 4000 lbs. per square foot at a depth of five feet in normal soil. At six inches below the surface, the figure of 1750 lbs. per square foot would be approximate. Also, the ground post itself will withstand considerable pressure in the soil. A 5½-inch o.d. ground post set five feet into the soil will withstand a pressure of 1150 pounds per lineal foot averaged along its five-foot length underground. This particular tower was recently moved from one QTH to another in a matter of three hours, with three willing hands working on the project.

Tower Protection

Towers are often finished off in a traditional aluminum color. An often neglected and expensive mistake is that of not determining the proper finish for the area where the tower is to be used. In areas which have a high incidence of atmospheric corrosion, it is advisable that the tower be hot-dip galvanized by total immersion after fabrication. This will protect all surfaces, including the internal surfaces of the tubing. On the other hand, if the corrosive action in the atmosphere is low, a painted tower will, with care, give lifetime service.

The serious amateur radio station owner will do well to give much careful consideration when he selects a supporting tower for his rotary beam. It is a commodity which must last for years and not become obsolete. But, it must be able to do a man-sized job. QST

25 Years Ago *this month*

December 1934

. . . We note in the editorial of twenty-five years ago that *QST* had been taken to task because of a large amount of material relating to the ultra-high frequencies (we'd call them very-high frequencies today). It seems that some correspondents felt that these frequencies were good for nothing but local communications and we shouldn t waste space on them. That viewpoint is well refuted in "The World Above 50 Mc." this month.

. . . Technical articles included information on a transportable 10-watt public address system, increased sensitivity with the regenerative detector, band switching for the transmitter, practice *vs.* theory in antenna performance, quartz crystal fundamentals, and low-loss transmitting coils. There were, in addition, the usual collection of hints and kinks for the experimenter, station descriptions, and notes on v.h.f. experiments.

. . . The Japanese Amateur Radio League was welcomed as a new member of the International Amateur Radio Union.

. . . The National Company announced that shipments of the new HRO receiver would be made shortly. (Incidentally, there's a chap here at ARRL Hq. that still has one of those early model HROs.

Silent Keys

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

W1BX, Albert E. Weymouth, sr., Belfast, Maine
W2AGD, Thaddeus F. Rudnicki, sr., Dumont, N. J.
ex-2ANG, Eugene T. Turney, Brewster, N. Y.
WA2FRZ, Floyd Rue, jr., Plainfield, N. J.
W3ALE, Richard M. Krauss, Abington, Pa.
W5BSC, George Lynn, Crawford, Texas
K5JFN, Emmet K. Carson, San Antonio, Texas
K5ORG, Dorman D. Taylor, Albuquerque, N. Mex.
W5VLV, Chester W. Thomas, jr., Houston, Texas
W6CZ, Raleigh W. Whiston, Los Angeles, Calif.
K6HP, George N. Hawley, Glendale, Calif.
K6YRC, Kenneth H. Doolittle, Los Angeles, Calif.
W8HOY, Randolph L. Saffen, Warren, Ohio
W8RTQ, Frederick M. Holbrook, Jackson, Mich.
W9FUM, Horace P. Stuart, Anderson, Ind.
W9HGV, Charles C. Walker, Seymour, Ind.
WØFCF, Charles H. Clock, Kansas City, Mo.
CX6AD, Aurelio Flores, Montevideo, Uruguay
DL8AZ, Fritz Meyer-Buchhardt, Saarbruecken Saarland, Germany
FY7YB, Hermann Ravin, Cayenne, French Guinea
VE3CEZ, George Cornish, Kingston, Ontario
VK7AJ, Athol W. Johnson, S. Hobart, Tasmania

Transistorized V.F.O. for Mobile S.S.B./D.S.B.

Factors Influencing Stability

BY HARRY B. DUNLAP,* W6ZNM

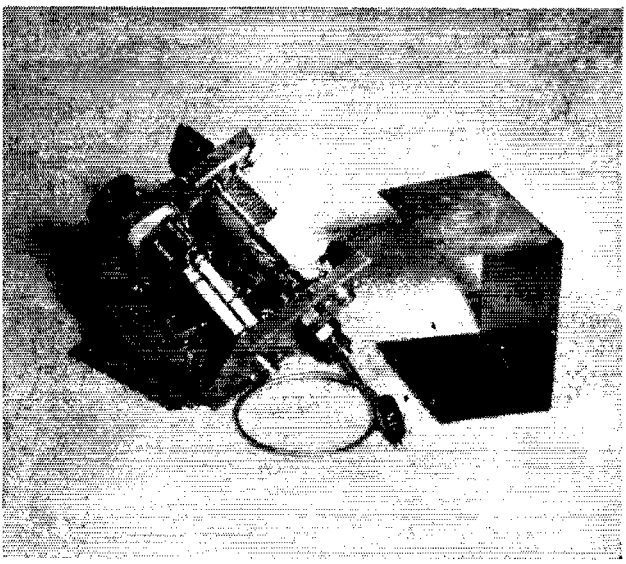
The frequency sensitivity of the transistor v.f.o. with respect to electrode voltages has been a deterrent to its application to amateur transmitters, particularly in s.s.b. operation. Investigation by W6ZNM has led to a simple method of getting good frequency stability over the range of battery-voltage change normally encountered in mobile installations.

SEVERAL years ago after a cross-country tour mobiling on a.m., I decided to increase the effectiveness of my 75-meter installation by transistorizing, and by converting to suppressed-carrier operation. The design and construction of a transistorized d.s.b. exciter and subsequently a filter-type s.s.b. exciter were much less serious problems than that of stabilizing the v.f.o. It was found that transistor oscillators constructed in accordance with published circuitry could not be operated directly from the car battery. The ordinary transistor oscillator required a collector bias voltage control of the order of 6 millivolts for a frequency stability of 20 cycles. Regulation of the car voltage to this degree could not be considered.

The powering of a transistorized v.f.o. directly by the car battery requires that the transistor static operating point and the natural frequency of the tank circuit be maintained nearly constant with respect to supply-voltage variation. The stabilization of the operating point is not too difficult to achieve and may be satisfied by the selection of bias-resistor values for constant emitter-base bias at the operating point based on the manufacturer's operating data. The maintenance of the natural frequency of the tank circuit, which is more difficult to obtain, may be aided by the partial isolation of the tank circuit from the maintaining circuit by (1) inserting a reactance in the transistor collector-to-tank lead, and (2) by tapping the collector connection down from the top of the tank coil.

Incorporating a potentiometer into a breadboard circuit for base-bias control in lieu of fixed resistors proved to be most significant. The supply voltage was varied for each setting of the potentiometer in the range of constant emitter-base bias while observing the change in output frequency. It was soon discovered that the minimum change in the output frequency of the oscillator occurred for a small arc of potentiometer settings coincident with constant emitter-base bias. This amounted to a reduction in the

*93 Sequoia Way, San Francisco 27, Calif.



Left-side view of the transistor mobile v.f.o., showing the tank coil and fixed tank capacitors.

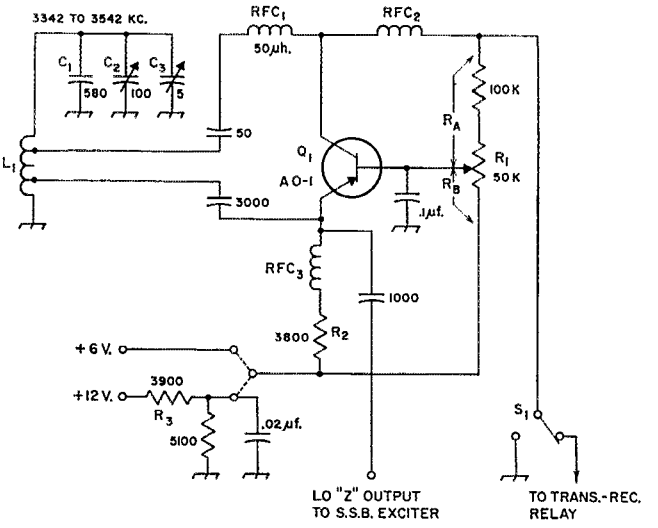


Fig. 1—Circuit of the mobile transistor v.f.o. Unless indicated otherwise, capacitances are in $\mu\mu$f. and resistances are in ohms; fixed capacitors are ceramic, and fixed resistors are ½ watt. R.f. chokes are 50-ma. type.

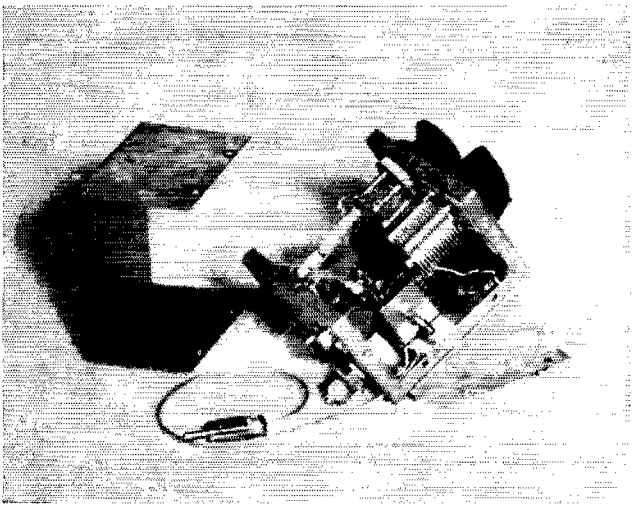
C_1—580-$\mu\mu$f. total (500 $\mu\mu$f. NP0 and 80-$\mu\mu$f. N750K in parallel).
C_2—100-$\mu\mu$f. midget variable.
C_3—5-$\mu\mu$f. miniature variable (Hammarlund MAC-5).
L_1—11 turns No. 28 enam., close-wound on ¾-inch form, collector tap at 4 turns from top end, emitter tap at 2 turns from ground end.
Q_1—AO-1 transistor (Philco).
R_1—50,000-ohm potentiometer.
RFC_1—50-μh. r.f. choke (National R-33).
RFC_2, RFC_3—1-mh. r.f. choke (National R-50).
S_1—S.p.d.t. toggle.

variable effects of the maintaining circuit upon the natural frequency of the tank circuit.

The final v.f.o. circuit resulting is shown in Fig. 1. The transistor is the inexpensive surface-barrier-type Philco AO-1. A combination of "coarse" (C_2) and "fine" (C_3) tuning is employed in setting the v.f.o. to frequency by heterodyning in the product detector of the mobile receiving system. I have found this system to my liking — eyes for the road only. RFC_1 is the stabilizing reactor in the collector lead.[1] I found a value of 3800 ohms for R_2 to be best for this circuit. RFC_3 is used to eliminate car-system noise modulation of the oscillator. A connection is shown for either 6- or 12-volt operation. The voltage at the v.f.o. input should be approximately 6.1 volts for a 12-volt input to R_3.

Fig. 2 shows the relative independence of the v.f.o. output frequency with a variable power supply. I have been using this type v.f.o. in my 1950 Buick (6-volt system) since 1957, and I found that potentiometer settings between 2 and 3 provided adequate stability. The peak output voltage into a high-impedance load (grounded-

[1] There is some question as to what effect RFC_1 may have on isolation in this instance, since RFC_1 and the 50-$\mu\mu$f. capacitor are series-resonant at 3300 kc. — *Ed.*



Right-side view of the transistorized v.f.o., showing the transistor mounting.

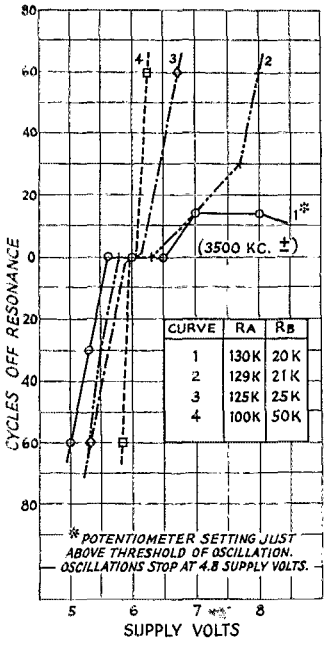


Fig. 2—Curves showing v.f.o. frequency *vs.* supply voltage for different settings of the base-biasing potentiometer. A setting somewhere between 2 and 3 is optimum.

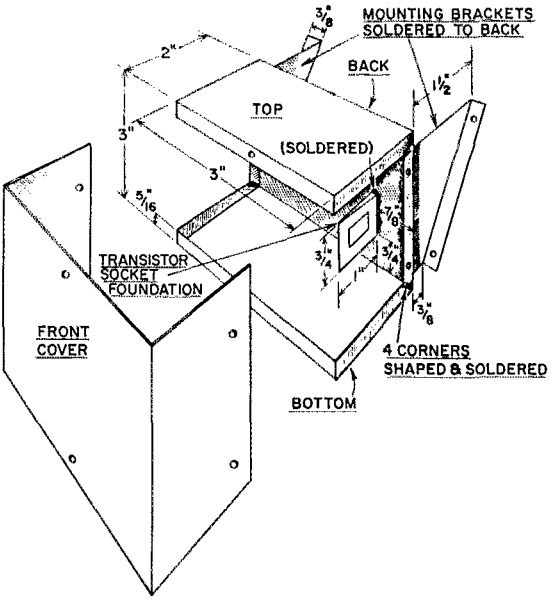


Fig. 3—Sketch showing the essential dimensions of the v.f.o. enclosure. The author made his of 22-gauge galvanized sheet steel. The transistor-socket mounting has triangular bracing wings bent back to provide rigidity.

collector amplifier) at setting 2 is 0.1 volt, and 0.2 volt at setting 3. Additional amplification is provided by a grounded-base amplifier in the s.s.b. exciter, just ahead of the balanced mixer.

The construction of the v.f.o. is shown in the photographs. The chassis box, sketched in Fig. 3, was shaped to fit my installation. The v.f.o. was put together in one week end, utilizing parts available in the junk box. Consequently some component compromise was made. The unit has worked so well that I have been reluctant to "clean up" my original work. All of the capacitors in the tank circuit have their ground ends fastened directly to the chassis. Thus each is equally exposed to external temperature variations. The v.f.o. was subjected to a 25-degree F. temperature rise from an ambient 70 degrees and cooling back to ambient. The average frequency deviation from resonance (3500 kc.) over the temperature cycling was 44 cycles with a maximum excursion of 120 cycles.

The odd frequency range of the v.f.o. resulted from moving 458 kc. down from the 75-meter band. I had been using the v.f.o. on 3.8 to 4.0 Mc. for d.s.b. and, when changing over to s.s.b., found it easier to move down in frequency by adding 150 $\mu\mu$f. to the tank circuit. The original tuning range can be restored by reducing C_1 by 150 $\mu\mu$f.

The easiest way to observe the v.f.o. frequency variation while setting up the potentiometer is to heterodyne the output in a receiver with a stable b.f.o. or an external oscillator. The frequency deviation from resonance (zero beat) can be measured by Lissajous figures or can be roughly checked by audible beat tones. I used a Heathkit Model 0-11 oscilloscope with commercial 60 cycles as the reference frequency. QST

Strays

The brother of K2PTI received the call WV2ITP. Sort of backwards, you see.

—···—

K6HJN started a tour of visits to some of his Mexican ham friends, but was the victim of a hit-and-run, and ended up in the CQ Hospital in Mexico City.

—···—

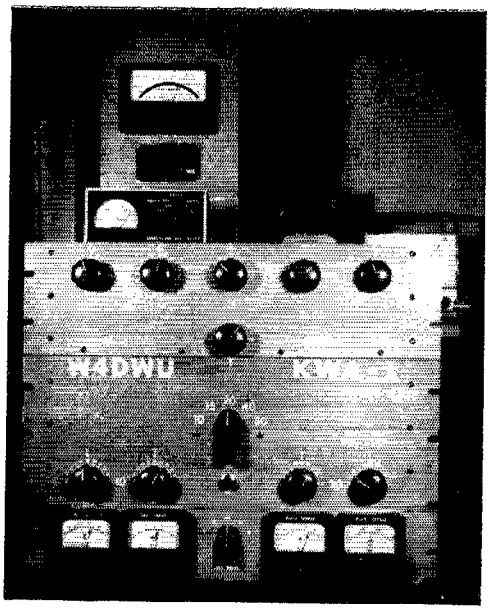
Anyone within 29.1 Mc. range of Chicago might listen between 1700 and 1800 CST for code practice being sent by K9BBC, of the SCEDS (Illinois) Radio Club.

—···—

K8KPJ reports that the University of Detroit recently had a one-half hour show on amateur radio over education TV channel 56.

—···—

The Oakland Radio Club has recently awarded its Worked All California Counties certificate to W6MGN. This is only the 27th award — a toughie!



Using four 811As in parallel, this amplifier runs a kilowatt peak-envelope power input on s.s.b. and up to a kilowatt on c.w. A feature of the design is the use of a completely separate pi-network tank circuit for each band, making for quick band change to pretuned frequencies. The lower panel, 10½ by 19 inches, is on the main amplifier chassis, which also contains the 14- and 28-Mc. tanks. The other three tanks are behind the upper panel, 5¼ by 19 inches.

The author argues himself — and maybe you, too — into a "kilowatt" that is comparatively inexpensive to build. The band-switching scheme, although possibly not entirely new, has had little application in amateur gear; it provides the convenience of separate finals in much less space and at lower cost.

The "Medium Power" Kilowatt

A Fresh Approach to the High-Power Question

BY B. B. BLACKBURN,* W4DWU

THERE are a good many articles floating around these days on r.f. power amplifiers, linear and otherwise. Most of them give a little bit of philosophy as to how the particular design was evolved, plus considerable information on how to put the thing together and get it operating. There is also plenty of discussion of high versus low power, but there seems to have been a disproportionately small amount of agitation for the medium-power class of operation. No doubt others are mulling the "ideal rig" problem over, and perhaps some of them would like to know that they have company.

Let's assume to start with that you have a home-grown or commercial c.w./s.s.b. exciter, preferably an "all-band" job covering 80 through 10 meters with output in the order of 70 to 100 watts (input 100 to 150 watts). Such a rig is quite adequate for everyday home-station use, as thousands of satisfied operators of transmitters in this power class will confirm. Sooner or later, though, comes the urge for higher — or even HIGH — power. Where do we go from here?

I think it generally will be agreed that if we are presently running around 100 watts final input power we should go to at least 500 watts input to make the change really worthwhile. As may be seen from Fig. 1, this should lift the other fellow's S meter an additional 7 db., or about 1⅙ S points. If 500 watts are better than 100 watts, then 1000 watts must be better than 500 — right? Well, maybe. We'll see.

As long as we are cooking up a new final, it might as well be the *ne plus ultra*. Quite possibly you have gotten tired of twisting all the knobs on that all-band exciter of yours when changing bands . . . personally, I am not about to rassle an equal number of knobs on an all-band high-power pi-net final, what with roller or tapped coils, vacuum capacitors, loading switches and controls, and the like. Even with preset readings

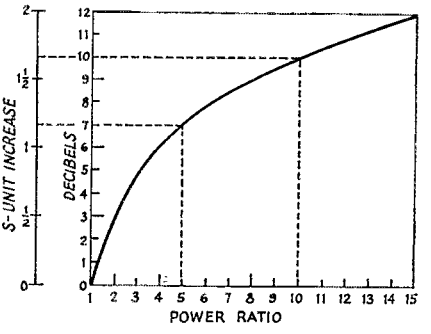


Fig. 1—Increase in signal strength to be expected with increased transmitter power, at 6 db. per S unit.

* Attache, American Embassy, APO 928, San Francisco, Calif.

it's a pain. Ah-ha, you say, separate finals for each band . . . that's the answer. Again, maybe — along with an optimized antenna for each band.

Now before deciding on a separate kilowatt final for each band and five acres in the suburbs, let's sort things out a bit more. You take your hobby seriously and figure that a full gallon would give you that extra edge on the competition. You are ready to take the big step up into the big league and join THE KW. GANG whom you have always secretly envied. My advice: *don't do it!* (or at least not until near the end of this article — *Ed.*). *Quit worrying about the almighty* input watt and concentrate instead on real operating convenience, amplifier efficiency, and good antennas.

A few more brief observations on the kw. subject: Have you tried asking the ham who owns one? If he is honest, he will tell you that he receives many rude shocks of the non-electric variety. He often gets less than S9 reports, especially when he has not had a chance to slip in his "RUNNING KW HR OM" before the other fellow gives him his report. It is also somewhat unsettling for the proud kw. owner to call a rare DX station in Upper Remotia, only to have said rare DX station come back to the Novice in the next county running 75 watts to a good beam. Believe me, these things do happen. Sure, the more watts the better; but having jumped from 100 watts input to 500, going from 500 watts to 1000 isn't going to wrap S-meter needles around pins all over the world.

High Power Defined

Before someone accuses me of reversing myself later on in this discussion, let's define high power in today's terms.

Point 1: A c.w. kilowatt is 1000 watts input, as computed by multiplying the key-down final amplifier d.c. plate voltage by the d.c. plate current.

Point 2: Power input on s.s.b. per FCC definition is the final amplifier plate voltage times the plate-current meter reading on speech peaks. For average voices, a final capable of talking up to a full kilowatt input on voice peaks, as indicated by meter swing, will run close to 2000 watts input on a sustained whistle (this is p.e.p. input). I consider this to be a "high power" rig.

Bandswitching Methods

Where does all this leave us? Well, let's get back to that separate-final-for-each-band idea. A nice 750-watt-input/500-watt-output grounded-grid final using three 811A tubes in parallel can be put together for about $50, exclusive of meters. I contend that five such finals that can be selected at the flip of a switch will give a lot more in operating pleasure and convenience than will an all-band kilowatt final requiring retuning with each band change. The separate-final approach makes even more sense if you operate on only two or three bands. Total cost of parts for five such finals with one power supply is about $350, versus around $125 for an all-band pi-net kilowatt final with power supply.

On the other hand, $350 is still a lot of money, and $5 \times 3 = 15$ are a lot of 811As to have plugged in around the house. Even with separate finals it is still necessary to operate a control to select finals, so how about designing separate tank circuits for each band, and then switching these tanks — which are pretuned and connected to separate, or switched antennas — with a band switch? Bandswitching in the plate lead on the cold (for d.c.) side of the plate blocking capacitor is better than shorting turns in the tank inductance itself, where the switch contacts have to carry a circulating current of Q times the r.f. plate current. Only one set of tubes and one filament supply are now needed. True, this bandswitching system is about as new as the coherer detector, but who cares? It works fine.

Interim Design

Having saved all those 811As just now, let's put a few of them back to work. I started out by trying three 811As in parallel grounded-grid on 14 Mc. Input power on s.s.b. (p.e.p.) or c.w. was 750 watts, and the measured output power into a 51.5-ohm dummy load was 500 watts with a driving power of 40 watts. The 811A is rated at 170 watts output, which for three tubes would be 510 watts; however, this is output at the tube plates, and tank circuit losses decrease this figure somewhat. It happens that in the grounded-grid circuit the fed-through driving power helps compensate for plate circuit losses; of the 40 watts driving power used in the three-tube amplifier roughly 10 watts are burned up in the form of grid driving power and grid-circuit losses, while the balance of 30 watts is fed through to appear in the output.

Should eyebrows be raised at squeezing this amount of power out of three 811As, reference might be made to the "Lazy Linear" article in *GE Ham News*[1] in which c.w. and s.s.b. p.e.p. outputs of 400 watts for *two* tubes are cited. C.w. operation at these inputs is recommended under intermittent keying conditions only. With admittedly morbid curiosity, I held the key closed for two minutes while the final ran at the 750-watt input/500-watt output level. The tubes actually ran fairly cool, showing only the slightest trace of color on the plates.

Ultimate Design

By now you have probably guessed it — the temptation to add a fourth 811A and run a real live kw. input was too much to resist. The gounded-grid circuit was retained because of its simplicity and the availability of adequate drive. Despite a few earlier jibes at the pi-network I use this type of output circuit to provide a convenient loading adjustment. Separate tank circuits permit optimizing the L/C ratios on each band and eliminate retuning when changing bands. The input impedance of the amplifier is in the order of

[1] "Lazy Linear," *GE Ham News*, July-Aug., 1949.

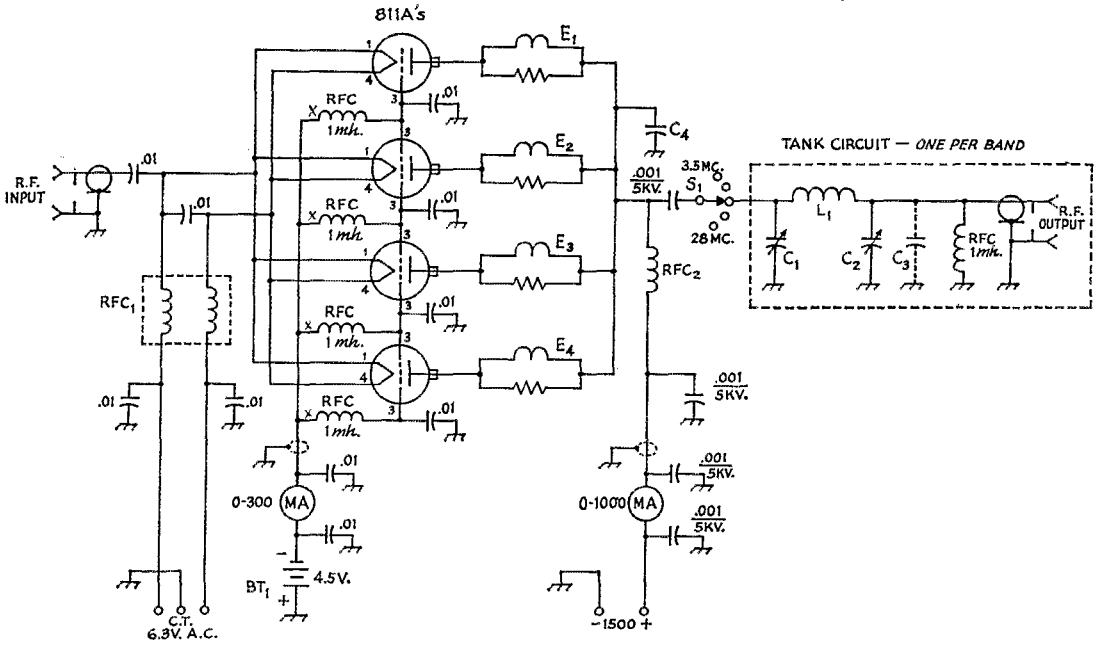


Fig. 2—Circuit of the "Medium-Power Kilowatt" grounded-grid amplifier using four 811As in parallel. Capacitances are in μf; capacitors are disk ceramic, 1000-volt d.c. working, except as indicated. For reading individual grid currents, the grid milliammeter may be switched across 47-ohm resistors inserted in grid leads at points marked X.

BT_1—Flashlight cells.
C_1, C_2, C_3—See Table III.
C_4—Coaxial capacitor for TV harmonic suppression, if required; 3-inch (active) length of RG-59/U.
E_1–E_4, inc.—Parasitic suppressor; 4 turns No. 18 on 47-ohm 2-watt composition resistor.
L_1—See Table III.
RFC_1—Filament-choke assembly (B & W FC-15).
RFC_2—Solenoid r.f. choke, app. 90 μh.; 4⅜-inch winding of No. 26, 40 t.p.i., on ¾" dia. ceramic form. (B & W 800).
S_1—Single-pole 5-position ceramic, to handle 1-amp. r.f., 2000-volt insulation.

70 ohms,[2] while the output tank circuits are designed to match 52-ohm coaxial line. The design borrows previously published ideas and exemplifies the usual ham approach of adapting and adding to such ideas. Fig. 2 gives the circuit diagram.

The "Medium-Power" Kilowatt

This amplifier using four 811As will take the maximum legal power input of one kilowatt on c.w., and will deliver an honest 700 watts of r.f. output at 7 Mc. (See Table I for driving power and output power on various bands.) So any time you feel the urge to run a kilowatt, go ahead. I normally restrain myself and run a conservative 750 watts input on c.w., using a Variac in the plate transformer to adjust input power. On s.s.b. the p.e.p. input is also 1000 watts. The rig will talk up to better than 333 ma. on voice peaks, as indicated by plate meter swing, without distortion showing up on the output monitor scope, thus giving an FCC s.s.b. input power of 500 watts at 1500 volts d.c. on the plates. The s.s.b. p.e.p. input power is about 1000 watts, and the p.e.p. output power is 700 watts on 7 Mc. and about the same on 14 Mc.

[2] Technical Topics, "Input Impedance and Fed-Through Power in Grounded-Grid Amplifiers," *QST*, Dec., 1958.

Power Supply

A well-regulated power supply furnishing 1500 volts d.c. under load is required for the final. Key-down plate current on c.w. (or single-tone p.e.p. input on s.s.b.) will run around 666 ma. for a kilowatt input. This is a lot of plate current, but look at the savings on filter capacitors and plate tank tuning capacitors. The same plate spacing in the tuning capacitor can be used at 1 kw. input with four tubes in parallel as would be used at 250 watts input with a single tube.

TABLE I

Freq. (Mc.)	*Watts Drive*	*Watts Output* *
3.5	80	750
7	80	710
14	75	690
21	90	580
28	50	500

* At 1-kw. input

If you can't find a power supply to handle four tubes, you can build up the final as shown, but only plug in two or three 811As. Modify the tank-circuit constants for the actual value of plate load

impedance resulting, as shown in Table II, by referring to some of the available pi-network design charts.[3] The power supply need not be rated for continuous operation at the full current drain since the s.s.b. or keying load is intermittent. Naturally, a lower plate voltage than 1500 may be used at a corresponding reduction in power output.

TABLE II

Input Impedance and Plate Load Impedance for from One to Four Parallel 811As

No. of Tubes	Input Z	Plate Load R_L
1	284	6200
2	142	3100
3	95	2067
4	71	1550

(Z and R_L in ohms.)

Components

Several notes now on components, since the paralleling of four 811As pushes filament and plate currents up considerably. The filament requirement of 6.3 volts at 16 amperes can best be met by using two 10-ampere transformers connected in parallel; the extra current margin results in a slight increase in available filament voltage which is helpful in offsetting the 0.2-volt drop in the broad-band filament choke.

Sixteen amperes of filament current through the FC-15 filament choke (rated at 15 amperes) cause it to run barely warm; this constitutes a negligible overload by ham standards, as I am sure Messrs. Barker and Williamson will agree. Since plate current flows intermittently with voice or keying impulses, a plate r.f. choke rated at 500 ma. will suffice. The filament and plate r.f. chokes can be wound in the ham shack [4,5], as was done here for the three-tube version of the rig; this can save you about ten dollars.

Since the circulating tank current is high, the tank coils must be wound with heavy wire or tubing. The coils (Table III) wound with $\frac{3}{16}$-inch copper tubing run cool. The 3.5-Mc. coil wound with No. 12 wire runs slightly warm, and larger wire or tubing would be better here.

The band switch is a very important item, so get the best one you can find; a good one may cost eight or ten dollars new, although I managed to locate a suitable surplus switch for eighty cents. It is not necessary to ground the tank circuits which are not in use — the floating resonances are well-removed from the amateur bands, and the tank coils are oriented for minimum interaction.

TABLE III

Pi-Network Tank-Circuit Data for Four Parallel 811A Tubes

Band (Mc.)	C_1, $\mu\mu$f.	L_1, μh.	$C_2 + C_3$, $\mu\mu$f.
3.5	325	6.5	1800
7	145	3.2	900
14	55	1.6	450
21	25	1.08	300
28	21	0.64	275

Based on 1500-ohm load for four tubes with 52-ohm output load on network, with Q = 12, except on 28 Mc., where Q = 15 to allow a practical value of tuning capacitance at C_1. "In-use" tuning capacitance, C_1, shown above is approximately 35 $\mu\mu$f. lower than the required design valve of input capacitance because of tube output capacitance (22 $\mu\mu$f. for four tubes) and strays. C_2 is 500-$\mu\mu$f. variable plus fixed capacitance, C_3, as needed to total the value given.

Coil Data

3.5 Mc. — 12 turns No. 12, 2½-inch diam., length 2¼ inches (B & W 3905-1).
7.0 Mc. — 10 turns $\frac{3}{16}$-inch copper tubing, 2½-inch diam., length 3½ inches.
14 Mc. — 9 turns $\frac{3}{16}$-inch copper tubing, 1¾-inch diam., length 3 inches.
21 Mc. — 5½ turns $\frac{3}{16}$-inch copper tubing, 1¾-inch diam., length 2 inches.
28 Mc. — 4 turns $\frac{3}{16}$-inch copper tubing, 1¾-inch diam., length 2 inches.
Note: Diameters measured center to center. Turns of copper tubing coils spaced evenly to length given.

The four-tube amplifier as built here cost $125. A suitable power supply will run $75 or so. Access to a well-stocked junk box can reduce even these figures.

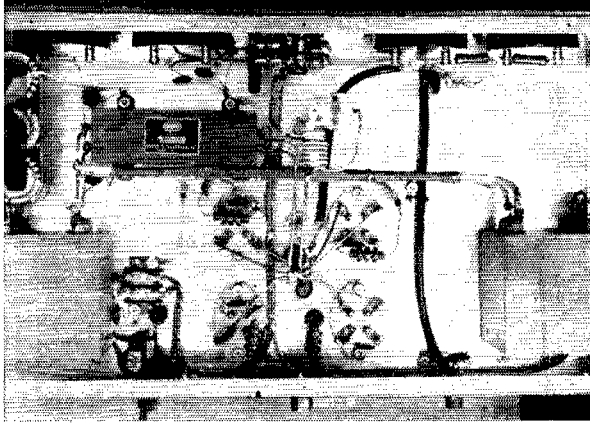
Variations

If you are mainly interested in two particular bands, such as 10 and 20 meters, only the basic deck need be constructed. The "roof" can be built up later and the remaining three tank circuits then connected to the band switch. Locate the 10-, 15-, and 20-meter tanks for shortest leads to the band switch. Of course, if you *like* to twist knobs, a very compact kilowatt final can be built on the main chassis by substituting an all-band pi-net output circuit [6] for the five separate tank circuits. This was suggested by W6COU in describing his plug-in coil half-gallon linear using a pair of 811As.[7]

Tune-Up

In adjusting the tank circuits for proper operating Q, follow any of the recommended procedures such as W3GEG's.[8] Or wind the coils exactly as shown; the tank (plus stray) capacitances, when adjusted to resonance, will give the desired Q if you have the design value of load resistance connected. Do not exceed 200 ma. total grid current, or 50 ma. per tube. A grid

[3] Wulf, "Pi-Network Tank Design," *QST*, Sept., 1958; *ARRL Handbook* or *Radio Handbook*.
[4] Wilson, "A Filament Choke for Grounded Grids," *CQ*, Nov., 1957.
[5] Chambers, "R.F. Chokes for High-Power Parallel Feed," *QST*, May, 1954.
[6] Gonset is now manufacturing such an amplifier — W4DWU.
[7] Smith, "An Economical Half-Gallon Linear," *CQ*, March, 1958.
[8] McLaughlin, "Pi-Net Tuning," *CQ*, April, 1957.



This bottom view shows the filament wiring of the four tubes and the two 6.3-volt 10-ampere transformers used for heating the filaments. The neutralizing circuit shown in Fig. 3 is in the upper center. The switch at the top center (not shown in the circuit diagram) is for shifting the grid meter to read individual grid currents. The three-cell bias battery is at the upper left.

meter switch will permit reading the total or individual grid currents. Do not apply full drive unless the plate voltage is on, because excessive grid current will flow.

Output Measurement

When you have finished the amplifier and are ready to give it the smoke test, see if you can promote the use of a really good dummy load and r.f. wattmeter. Some excellent units are available commercially, but these are a trifle expensive. If you use one of the less-expensive versions, calibrate it at some school or technical laboratory if possible. The Collins Directional Coupler and Wattmeter Type 302-C1 used here is a very good instrument, having 100/1000-watt scales for forward and reflected power. This unit is useful for both loading and matching operations, and its power output readings checked within a few watts with readings made on a much more expensive laboratory instrument.

Neutralization

What? Neutralize a grounded-grid amplifier? Sad but true, this may be necessary on 28 Mc. Self-oscillation can take place via the plate-to-filament capacitance of the tube, especially at high frequencies when tubes are paralleled. The circuit can be neutralized by using an extra winding on the filament r.f. choke to furnish the neutralizing voltage to the cathode, but since a suitable choke was not at hand, the makeshift scheme shown in Fig. 3 was devised. Installing this in the filament circuit external to the filament r.f. choke eliminated a trace of oscillation on 28 Mc. when the amplifier was unloaded. The series filament coil L_1 is electrically large enough to provide anti-feedback voltage, while being physically constituted so as to make the filament voltage drop across it negligible. Neutralization may not be necessary if 28-Mc. operation is not desired, and can probably be omitted even on 28 Mc. if fewer than four tubes are paralleled.

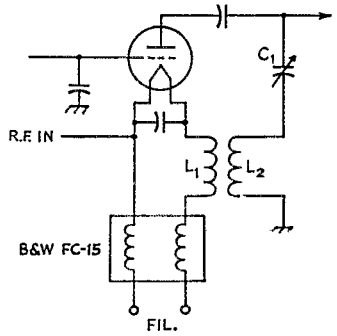


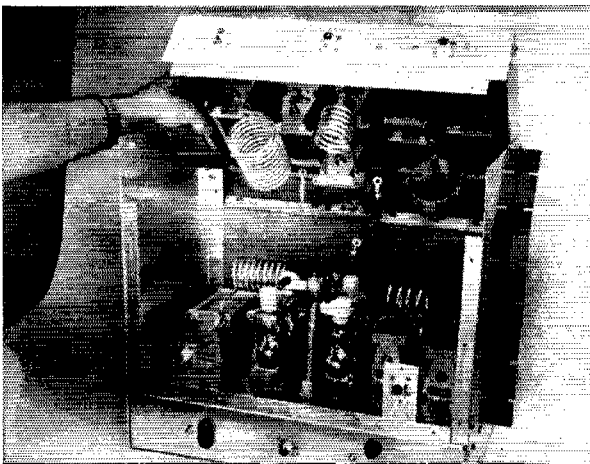
Fig. 3—"Field-expedient" neutralizing circuit.

C_1—6-$\mu\mu$f. variable, 2000 volts (app. 0.045" plate spacing).
L_1—6 turns No. 12, ½-inch diam.
L_2—6 turns insulated wire wound over L_1.
Note: Reverse connections to L_2 if neutralization cannot be achieved at first try.

Parasitics?

No amplifier article is complete without a statement that "while no parasitics were encountered, suppressor chokes were included everywhere as a precautionary measure." I can practically guarantee that v.h.f. parasitics will crop up with-

(*Continued on page 194*)



Three tank circuits are mounted in an inverted chassis the same size as the main chassis, 17 × 10 × 3 inches. The strap leads from the band switch, part of which is visible behind the tubes, are detached from the tank tuning capacitors in this view with the tank assembly swung up. The tuning capacitors are Johnson type E, 3000-volt rating, selected to provide the capacitance called for in the table of tank-circuit data. Output variable capacitors are Johnson 500E20, shunted by fixed units (2500-volt mica satisfactory) as required to make up the capacitance values given in Table III.

• *Beginner and Novice —*

Choosing a Transmission Line

Some Information on Lines, Antennas, and S.W.R.

In Two Parts — Part I

BY LEWIS G. McCOY,* W1ICP

The beginner frequently is bewildered by the variety of transmission lines mentioned in amateur publications, available from suppliers, and discussed on the air. Some of the information he gets, especially the kind picked up by listening in, often does no more than add to the confusion. Here's the story, in elementary language.

WHAT kind of transmission line should I use? This is a question that every amateur asks himself at one time or another. Actually, the choice of line to use with any given antenna depends on many factors. In this article the pros and cons of various type lines will be discussed with the end purpose of helping the reader select the best type for his particular installation.

First, let's get one point clear: It is *possible* to use any type of transmission line with any antenna *as long as the proper methods are used to couple the two together*. Many amateurs are led to believe (usually by other hams who don't know better) that a certain type of antenna requires a certain type of line. This is not true. It is sometimes more convenient to use a particular type of line but there are no hard and fast rules that say it *must* be used.

What is a transmission line supposed to do? Well, the answer is quite simple: Its purpose is to provide a path over which the r.f. energy will travel from the transmitter to the antenna, and to do it as efficiently as possible.

It would be nice to be able to say that you merely pick out any type of transmission line, connect it to an antenna, and that's all there is to the problem. Unfortunately, it isn't quite that simple. However, before discussing feed lines it is important to have some knowledge of antennas and their feed-point characteristics.

Antenna Feed-Point Characteristics

The place where the transmission line is attached to the antenna is called the *feed point*. At this point the antenna exhibits certain characteristics that represent the principal factor in determining the best choice of line. When energy is fed to an antenna it is dissipated in two ways, as heat in the resistance of the antenna wire and in nearby dielectrics, and as radio waves. The energy lost in heat is lost in a real resistance while power dissipated as radio waves is used in an assumed resistance which, if it were actually present, would consume exactly the amount of power radiated by the antenna. The actual resistance in the wire and its equivalent in the dielectrics is called the *ohmic resistance*, while the fictitious resistance is called the *radiation resistance*.

Thus at the feed point the antenna has a certain *impedance*, and when the antenna is operated at its resonant frequency the impedance is a simple resistance and equal to the sum of the ohmic and radiation resistances. The ohmic resistance of most types of antennas represents only a very small part of the total resistance, so very little power is lost in heat. But in the case of antennas having quite low radiation resistance — say, 10 ohms or less — the ohmic resistance starts to become a considerable factor.

At frequencies other than resonance, the antenna impedance will have reactance along with resistance. Reactance can be defined as the opposition (expressed in ohms) offered to the flow of r.f. current either by inductive or capacitive effects in the antenna circuit. These effects become appreciable when the antenna is driven at other than its resonant frequency.

The feed-point impedance depends on many factors — too many, in fact, to cover in a single article — the principal one being the type of antenna you use. It can be as low as a few ohms or as high as several thousand ohms. A little later on we'll discuss some typical antennas and how to determine their impedances, together with the problems involved in using different types of feed lines.

Feeder Characteristics

Two types of line are in common use in ham stations. One type has two similar conductors running side by side with constant separation between them. This is called *parallel-conductor line*, or *two-wire line*. The other type consists, in its most familiar form, of a tube-shaped braided

* Technical Assistant, *QST*.

conductor enclosing another conductor of smaller diameter, usually a solid or stranded wire, which is centered in the tube and insulated from it by flexible solid low-loss insulating material. This is called a *coaxial line*. Examples of both types are shown in Fig. 1.

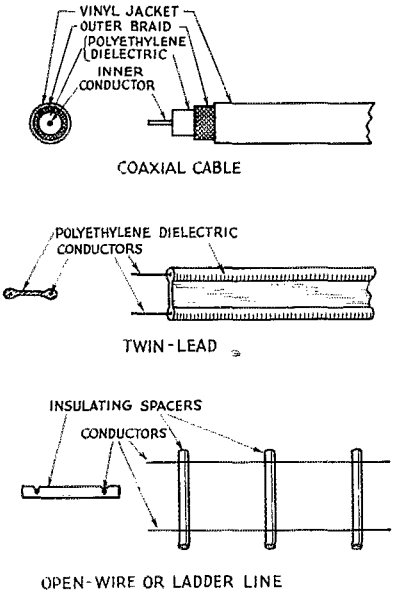


Fig. 1—Three examples of transmission lines commonly used by amateurs.

Any line, whether parallel or coaxial, has a certain amount of capacitance and inductance per unit length which, when r.f. energy is applied, establishes a definite relationship between voltage and current. This results in a property which is commonly referred to as the *characteristic impedance* of the line. The characteristic impedance of any line will depend on the conductor size, shape and spacing, and on the dielectric material used to separate the two conductors. The symbol ordinarily used to express characteristic impedance is Z_0.

Table I lists some of the electrical characteristics of different types of lines. Let's look at an example of coaxial line, RG-58/U. This particular type is less than ¼ inch in diameter and is capable of handling several hundred watts of r.f. It is also the lowest priced of the different types of coaxial line, hence is quite popular. Looking across Table I we find that RG-58/U has a characteristic impedance of 53.5 ohms, will handle 430 watts up to 30 Mc., and has an attenuation factor, or power loss, of 0.78 decibels per hundred feet at 3.5 Mc.

Let's consider the attenuation figures. If a transmission line were perfect it would have no resistance and dielectric losses and therefore no power would be lost as the r.f. traveled from the transmitter to the antenna. However, it is impossible to make a perfect line, and all transmission lines have a certain amount of loss. In rating lines for loss or attenuation it is customary to give the figures in terms of decibels loss per hundred feet of line because the total loss in decibels is directly proportional to the line length. The decibel, abbreviated db., is a unit used for measuring power ratios; Fig. 2 is a chart showing power *vs.* decibels gain or loss. For example, a power gain of 3 db. is a power ratio of 2 to 1.

Suppose you have a transmitter capable of 100 watts output (not input), and you are using 100

TABLE I

Type	Z_0 Ohms	Attenuation in db./100 feet							Power Rating in Watts	
		3.5 Mc.	7 Mc.	14 Mc.	21 Mc.	28 Mc.	50 Mc.	144 Mc.	30 Mc.	200 Mc.
RG-58/U	53.5	0.78	1.1	1.7	2.2	2.5	3.5	6.3	430	140
RG-8/U	52	0.30	0.45	0.66	0.83	0.98	1.35	2.5	2000	560
RG-11/U	75	0.35	0.55	0.80	0.98	1.15	1.5	2.3	1400	400
RG-59/U	73	0.60	0.90	1.3	1.6	1.9	2.7	4.8	680	208
Twin-Lead, Receiving	300	0.19	0.28	0.41	0.52	0.60	0.85	1.5		
Twin-Lead, Transmitting	300	0.10	0.15	0.24	0.31	0.37	0.52	1.0		
Twin-Lead, Tubular, Receiving	300	0.19	0.28	0.41	0.52	0.60	0.85	1.5		
Twin-Lead, Tubular, Transmitting	300	0.14	0.22	0.33	0.41	0.48	0.68	1.25		
Open-Wire*	——	0.03	0.05	0.07	0.08	0.1	0.13	0.25		

* Attenuation figures are based on No. 12 conductors, with no allowance for dielectric or radiation loss. "Ladder-type" TV line has somewhat higher losses because of numerous spacers and smaller conductors.
Note: Data on attenuation and power-handling capacity of coaxial cables based on information contained in Amphenol Catalogs B5 and W1.

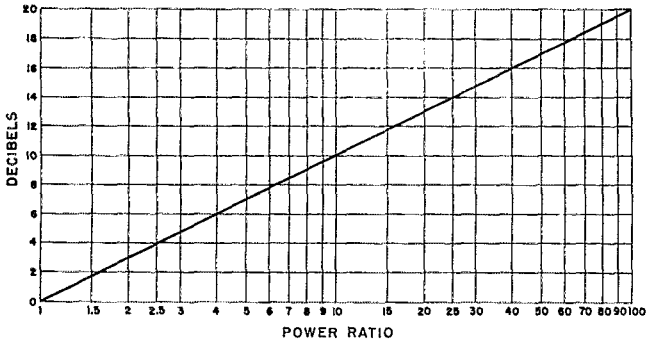


Fig. 2—Chart showing ratios for decibels vs. power. For example, four decibels is equal to a power ratio of 2.5 to 1.

feet of RG-58/U to feed an antenna on 50 Mc. Table I shows that you will have a power loss of 3.5 db. in the feed line. Since a power loss of 3.5 db. corresponds to a power ratio of about 2.3 to 1 (Fig. 2), this means that of the 100 watts output from the transmitter, less than 45 watts reach the antenna to be radiated! Furthermore, this loss figure assumes that the feed line is matched at the antenna by a load that is of the same value as the characteristic impedance of the line. (This question of "matching" will be taken up a little later.) If there is a mismatch the losses can be even greater. All attenuation figures given in Table I are based on the assumption that the line is terminated at its output end in a power-absorbing load (such as an antenna) that matches the line's characteristic impedance.

Looking again at Table I, notice that the higher the frequency the greater the losses. As another example, at 144 Mc. 100 feet of RG-58/U has a loss of 6.3 db. With 100 watts output this amounts to radiating 23 watts from the antenna and using 77 watts to heat the line! Also observe that the power rating of the cable decreases as the frequency increases. Power ratings also are given for matched conditions; in other words, for a cable terminated in a load equal to its characteristic impedance.

But after looking at the figures for RG-58/U don't jump to the conclusion that this line is not for you. In many cases the line is quite suitable, as we shall see. The data on the other types of coaxial lines show the differences in power ratings, characteristic impedance, and losses of the various types.

Parallel-Conductor Lines

Next, examine the ratings on open-wire line, which is a parallel-conductor type having insulating spacers at intervals instead of a continuous solid dielectric. The insulation is thus mostly air. No figure for characteristic impedance is given for this type line because the impedance will depend on the size and spacing of the conductors. Amateurs can make their own open-wire lines or can buy any of the several different commercial varieties, manufactured primarily for u.h.f. TV use. The commercial types usually have a characteristic impedance of 450 ohms and are capable of handling power at any amateur level.

Note in Table I that the resistance loss of open-wire feeders made of No. 12 wire is only 0.03 db. per 100 feet at 3.5 Mc. and only 0.25 db. at 144 Mc. The resistance loss is the principal loss at the lower frequencies, where dielectric losses in the spacers are small. The resistance loss increases when smaller wire is used, and also increases at higher frequencies. The dielectric losses become important at v.h.f., and increase with the number of spacers used. For these reasons the "ladder" lines sold for TV reception have greater attenuation than is indicated for open-wire line in Table I, but the loss is always considerably smaller than the loss in the coax cables listed, at the same frequency, so it is quite safe to say that of all the different types of lines available to amateurs, open-wire line has the least loss.

Another common type of parallel-conductor line is 300-ohm Twin-Lead,[1] available in both receiving and transmitting types. The receiving variety is used by many amateurs for transmitting purposes since it is capable of handling several hundred watts and is available everywhere. The receiving type usually consists of two conductors each made of seven strands of No. 28 or No. 26 wire, spaced about 3/8 inch apart, and imbedded in a flat web of polyethylene. Two No. 16 solid conductors are used in the transmitting type, with wider spacing, but in general the construction is similar to that of the receiving type.

There is also available a tubular-type Twin-Lead, again in both receiving and transmitting types. As compared with the flat type, the tubular form helps to make the line less susceptible to moisture effects; the flat kind, when wet, will not maintain its rated characteristic impedance and will show increased loss. For this reason the tubular line is preferred by many amateurs.

Standing-Wave Ratio

In deciding on the type of transmission line to use, it is necessary to give consideration to the problem of standing waves. Remember that the loss figures for transmission lines are based on the line's being terminated in a load that is the same value as its characteristic impedance. When the feed-point impedance of an antenna is the same

[1] "Twin-Lead" and "Ladder Line" are trade names for particular makes of line, but are such well-known names that they are used for general identification regardless of actual brand.

as the characteristic impedance of the line, the line is said to be *matched*. Under such conditions, the power that reaches the antenna end of the line is completely absorbed from the line and, except for the resistance loss mentioned earlier, is all radiated by the antenna.

On the other hand, when the impedance of the antenna differs from that of the line there is a *mismatch*. When this condition exists, some of the power reaching the antenna is reflected back along the line toward the transmitter. Thus both *forward* and *reflected* power are present all along the line. The actual voltage at any point along the line is the sum of the forward and reflected voltages at that point, and the same is true for the current. The forward and reflected voltages combine in such a way that the resultant voltage along the line changes in amplitude with distance from the antenna. If you could measure the voltage with a voltmeter which you moved along the line, you would find that the readings would vary smoothly between a high and a low limit, and that the positions on the line at which these high and low readings occurred would be at intervals of equal length. The variation in current along the line would follow the same pattern, although a low-current point would coincide with a high-voltage point, and vice versa. The *standing-wave ratio* is the ratio of the maximum voltage to minimum voltage on the line, or the ratio of maximum to minimum current. This ratio is the same as the ratio of the antenna's feed-point impedance to the characteristic impedance of the line, if the antenna is operated at its resonant frequency. When the antenna matches the line this impedance ratio, and also the standing-wave ratio, is 1 to 1, and there is no variation in either current or voltage with distance along the line starting from the antenna.

Line Losses and S.W.R.

If you've done much listening to the conversations that go on in the ham bands, you've probably heard that the losses in a line increase when the standing-wave ratio is greater than 1 to 1, so probably the first conclusion you'll reach is that the line always should be matched in order to keep the standing-wave ratio as low as possible. Don't jump to such a conclusion too quickly! A low standing-wave ratio may or may not be important.

Let's first consider coax line. Take RG-58/U as an example, and consider its characteristics at 21 Mc. From Table I it can be seen that the loss per 100 feet at 21 Mc. is 2.2 db. when the line is matched. Assume that this length of line is used to feed a resonant antenna that has an impedance of 530 ohms. Since the impedance ratio is 530/53, or 10 to 1, the standing-wave ratio is also 10 to 1. In addition to the inherent 2.2-db. loss of the 100-foot length of line, the s.w.r. of 10 to 1 will cause an *additional* loss, as shown in Fig. 3, of 3.6 db., making the total line loss 5.8 db. If you don't think this is appreciable, look at the power ratio corresponding to 5.8 db. in Fig. 2. The power ratio is slightly less than

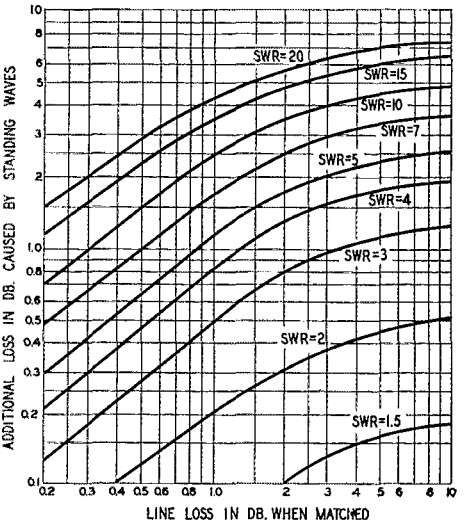


Fig. 3—Chart showing increases in feed-line losses because of standing waves. To use the chart, first determine the line loss when the line is matched by the load, as given in Table I. Locate this point on the horizontal axis and then move up the chart to the curve that corresponds to the standing-wave ratio on the line. The additional loss in decibels is found on the vertical column on the left-hand side of the chart. For example, a line that has a loss of one decibel, when matched, will have an additional loss of 2.5 db. when the s.w.r. is 10 to 1.

4 to 1, which means that little more than a quarter of your power will reach the antenna to be radiated.

Another thing to think about is the effect a high s.w.r. has on the power-handling capabilities of coax line. All lines have voltage and current limitations and in coax, because of the comparatively close spacing of the conductors plus the use of a solid dielectric material to keep the conductors evenly spaced, these limitations are rather definite. The amount of power that a line can handle safely is inversely proportional to the standing-wave ratio. This means that although 100 feet of RG-58/U can handle 430 watts at 21 Mc. when it is matched, an s.w.r. of 10 to 1 will reduce the safe power-handling capacity of the line to 43 watts.

As you can see from studying Table I and Fig. 3, it is important to keep the standing-wave ratio low when using coax at high frequencies. However, if coax line is reasonably well matched by the antenna impedance, the inherent losses are insignificant on the lower frequency bands. In such a case line losses needn't influence your choice of a type of line. However, at higher frequencies, and particularly at v.h.f., length of line and inherent losses should be given considerable thought before deciding on which type of line to use. A high standing-wave ratio is relatively unimportant when using a low-loss line such as the open-wire type. Power-handling capabilities will depend on the size and spacing of conductors, but even TV type open-wire line will

(Continued on page 194)

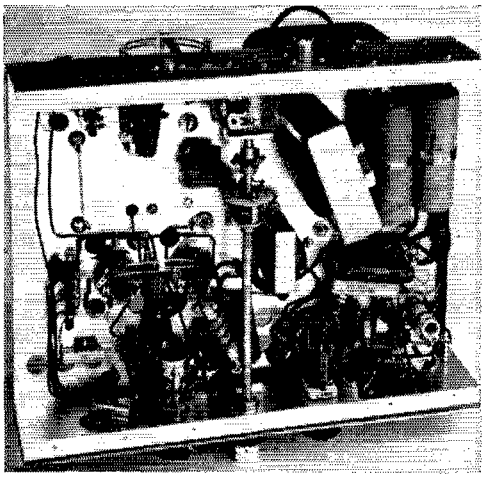
• Recent Equipment —

The Johnson Viking Challenger Transmitter

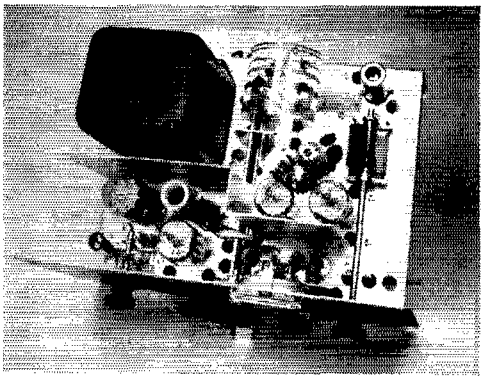
THE E. F. Johnson Company's Viking Challenger is a crystal-controlled bandswitching transmitter which covers the amateur bands from 80 through 6 meters and provides both phone and c.w. operation. It is rated at 120 watts input on c.w. and 70 watts on phone, with input restricted to 85 watts on 6 meters. Loading can be reduced so that the input is restricted to the 75-watt maximum for Novice use.

The Viking Challenger is housed in a 9 by 10 by 13 inch cabinet, weighing some 22 pounds, with the usual Johnson styling. The front panel has the band switch, a socket for crystal or v.f.o., the several tuning and loading controls, an operate switch, a power indicator lamp, and a meter which can be switched to read either final plate current or final grid current. Across the back of the chassis are the microphone jack, the key jack, the r.f. output coax fitting, and the line cord.

As shown in the block diagram of Fig. 1, the Challenger uses a 6AU6 as a crystal oscillator, a 6DQ6A as an r.f. buffer/driver, and a pair of 6DQ6As in parallel in the final. A 12AX7 is used as a two-stage speech amplifier to drive a 6AQ5 clamp-tube modulator. This same 6AQ5 is used on c.w. to clamp the final screens and thus limit key-up plate dissipation. The transmitter is keyed in the cathodes of both the 6AU6 oscillator and the 6DQ6A buffer, with the keyed wave being shaped by means of a 2-henry choke and a 2-μf. capacitor.



Underneath the chassis the miscellaneous small components in the r.f. circuits are grouped around the tube for each stage. The two electrolytics at the upper right are 80-μf. capacitors connected in series for power-supply filtering. The shaft that runs from the center of the panel to the switch and the variable capacitor at the rear is a concentric job; one shaft controls the coarse loading by progressively switching three 680-$\mu\mu$f. fixed capacitors in or out of the circuit, and the other controls the fine loading by means of a 700-$\mu\mu$f. variable capacitor.



In this top view of the Viking Challenger the crystal oscillator tube can be seen at the far left, just back of the panel. The 6DQ6A driver is to its right. The 5U4-GB rectifier is in front of the baffle shield that separates the power transformer and final amplifier from the oscillator and driver components. The 12AX7 speech amplifier is at the right rear of the chassis. The 6AQ5 clamp tube is partially hidden just below the meter.

The crystal socket on the front panel accepts crystals with standard FT-243 pin spacing. 160- or 80-meter crystals are used for 80-meter operation, and 40-meter crystals are used for 40-, 20-, 15-, and 10-meter operation. For 6-meter work, crystals in the 8-Mc. range are used. On 6 meters, the crystal frequency is doubled in the oscillator, tripled in the buffer, and the final works straight through. A v.f.o. can be plugged into the same socket that is used for the crystals, in which case power is fed to the v.f.o. and the v.f.o. r.f. output is fed back into the Challenger. The 6AU6 then serves as an r.f. amplifier for the v.f.o.

The OPERATE switch has five positions, allowing

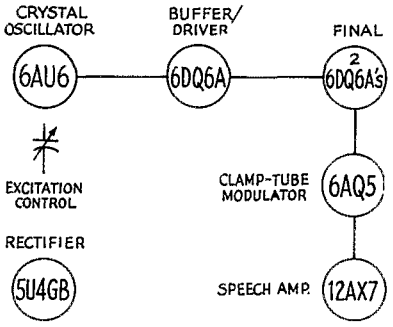


Fig. 1—Block diagram of the Challenger.

the choice of TUNING, STANDBY, PHONE, and C.W. operation. The EXCITATION CONTROL is a variable capacitor in the plate circuit of the 6AU6 oscillator, and is adjusted for proper drive at the final grid. The DRIVER CONTROL tunes the plate tank circuit of the driver, and is adjusted with the meter in the GRID position. Both the driver and the final, incidentally, are neutralized.

High voltage (about 650 volts) for the transmitter is supplied by a husky power supply using a 5U4-GB rectifier through a single-section filter which has 40 μf. of capacitance and a 5-henry choke. Fuses are in the power plug. Power consumption of the transmitter is about 115 watts in the standby position and 250 watts when on c.w.

— *R. L. B*

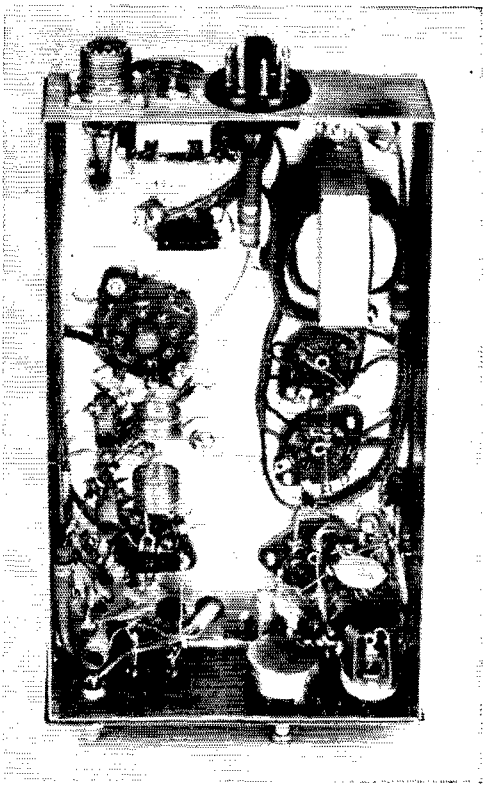
The Deluxe LW-51 50-Mc. Transmitter

HERE is a 50-watt 50-Mc. transmitter, complete with audio equipment and full metering facilities, in a package 5 by 6 by 9 inches in size. Circuitwise and in appearance it bears a family resemblance to earlier LW v.h.f. transmitters, but several new features have been added. Two models are available. One is assembled on a chassis only; the other, a deluxe version, is housed in a case of perforated metal. The latter has all its controls brought out to the front panel and includes metering of the various stages, the r.f. output and the modulation percentage.

A 6U8 overtone oscillator-doubler drives a 6146 amplifier, in a circuit quite similar to that employed in the simple 50-Mc. transmitter in the 1959 *Handbook*. The modulator uses a 6U8 speech amplifier, with provision for crystal or carbon microphone, driving a pair of 6CZ5s as modulators. The LW-72 power supply, a similarly packaged unit, delivers 225 or 450 volts, selectable with a front-panel switch, allowing the transmitter to be run conveniently on low power whenever the maximum capability of 50 watts input is not needed. Any other power supply capable of delivering 450 volts at 250 ma. may be used, provided that a simple voltage divider system consisting of two 0A2 regulator tubes and a 3000-ohm 10-watt resistor is added. The equipment may also be run from a single 300-volt 150-ma. supply for mobile or low-power home-station service.

An appearance of extreme simplicity is achieved in the LW r.f. units through the use of wafer sockets. All socket lugs that are to be grounded are soldered directly to the cadmium-plated chassis, a procedure that also pays dividends in stability, through the elimination of r.f. ground leads.

Connection between the r.f. assembly and the power supply is made through a cable with 8-pin plugs and chassis fittings. The amplifier may be keyed for c.w. work by inserting a keying adapter between the transmitter and the power cable. Keying should be done with a relay, as the screen circuit is broken, and the high voltage appears across the contacts.



Bottom view of the deluxe LW-51. Doubler plate and amplifier grid coils are near the lower middle of the photograph. Note use of wafer sockets for effective grounding and wiring simplicity.

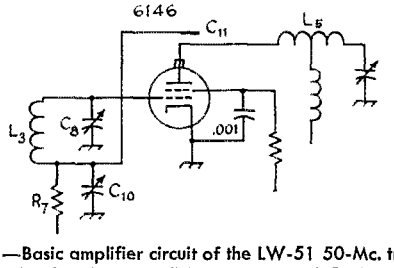
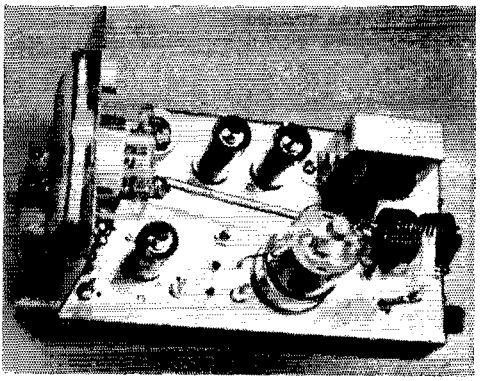


Fig. 1—Basic amplifier circuit of the LW-51 50-Mc. transmitter, showing the neutralizing system used. Designations are those of the manufacturer. A high-capacitance mica padder, C_{10}, is used in place of the usual fixed capacitor.

The method of neutralizing the 6146 amplifier may be of interest to those who have had trouble taming tetrodes at 50 Mc. The circuit is shown in Fig. 1. It will be seen that it is a variation of the familiar capacity-bridge system, in that both capacitive elements are variable. C_{11} is merely a stiff wire lead brought up through the chassis and run vertically for about a half inch, close to the envelope of the 6146. C_{10} is a high-capacitance mica padder, adjustable from either the bottom

or top of the chassis. Making the larger of the two capacitors in the bridge system variable gives a smooth control over the feedback introduced for neutralization. The method more commonly employed is to use a fixed capacitor for C_{10}, usually about 250 $\mu\mu$f. at 50 Mc., and then adjust the neutralizing capacitance. As the range with a neutralizing wire or other small capacitance is very limited, it is often necessary to do some cut-and-try work with the value of the bypass (C_{10}) when a fixed capacitor is used there.

The LW-51 50-Mc. transmitter is sold in kit form or completely wired and tested, and it may be purchased with or without tubes and crystal. The companion power supply, LW-72, is also sold in kit form or ready for use. Chassis soldering is done in all LW kits. LW Electronic Laboratory, Route 2, Jackson, Mich. — *E. P. T.*



The deluxe LW-51 50-Mc. transmitter with cover removed. Audio tubes appear in the upper portion of the picture.

Strays

Sound-N-Sight Code Course

For many years the radiotelegraph code has been taught by means of a system which is described in the ARRL publication *Learning the Radiotelegraph Code*. Basically, this system calls for the student to learn that a given sound represents a certain letter. For example, "di dah" is the letter "a". At no point in this method of training is one supposed to memorize the notation "dot dash". This system calls for the student to learn the sounds that represent the different letters of the alphabet, and the numbers, and then practice copying these sounds at gradually increasing speeds.

A new course published by the John F. Rider Company and called "Sound-N-Sight" goes at this task of learning the code in a rather different method. The procedure is this. The student first listens to some records which transmit various code characters. Three seconds after each character is sent a voice announces the verbal equivalent, as "didididit." This is aimed at helping the student distinguish between a dit and a dah, and may even weed out those who are unable to make such a distinction. Following this, the student puts the records aside and picks up a set of flash cards. This part of the course is really unique. Each flash card carries a letter of the alphabet on one side and its dot-dash equivalent on the other. Thus, on one side of the first card is the capital letter A; and . — is on the other side. After shuffling the cards, the student (who up to this point is not supposed to have any idea of what dot-dash combinations stand for what letters) looks at the dot-dash side of each card and *guesses* what letter it might represent. Having guessed, he turns the card over and determines whether his guess is correct. If it is, the card goes in one pile; if not, into another pile. And so on through the entire alphabet. (The same procedure is subsequently followed for numerals and punctuation marks, but we'll restrict our description of this course to the alphabet portion.) Then, the cards are gone through again and again until all are "guessed" correctly in a single run. The theory apparently is that as the student looks at each card after he has guessed what letter its symbols represent, learning takes place. According to the publisher, this is "reinforced learning."

So the student has listened to dits and dahs and has learned to distinguish between them, and then he has learned what the printed dot and dash equivalent for each symbol is. Now he goes back to the records and listens. A code character is sent at a slow speed, and three seconds later the announcer gives the dit-dah equivalent and the phonetic name of the letter. (The new military phonetic alphabet is used, so that R comes out Romeo.) After the student is able to go through this a couple of times without error, he begins copying from the records at three w.p.m. The announcer no longer speaks; instead, after each run of 80 characters the student checks back in the instruction manual and corrects his own copy. Again, after the student is able to go through each run with only a couple of errors, he is told to proceed to the next higher speed. However, speed jumps are in multiples of one w.p.m., and the student is cautioned against increasing speed more than once per day. This is said to do away with the learning plateaus that most of us have experienced in learning the code. The Sound-N-Sight course comes in two parts. The Novice portion takes the student up to 8 w.p.m., while the Advanced portion goes on up to 20 w.p.m. It is manufactured for use on 33 r.p.m. turntables, but can also be used on 45 r.p.m. tables with a corresponding increase in speed.

The Sound-N-Sight course, in an expanded version, has also been tried out by the Army's Signal Corps, and faster learning has been reported. It will be interesting to see what the experience of would-be amateurs is. QST

September V.H.F. Party Results

THOUGH it was not the intention of the originators of our June and September V.H.F. Parties, these affairs are becoming more like v.h.f. field days every year. Looking over the logs for the September V.H.F. Party, the week end of the 19th and 20th, we find that 20 per cent of the entries are for portable stations. The stay-at-homes would not have it otherwise, for there is nothing like a few strategically located portable stations for building up section multipliers and QSO totals for all of us.

V.h.f. men long ago found out that location is not everything. A high elevation far from city noise is fine, but it is only one factor in a winning combination. Unless the best possible equipment and capable operators are available, the highest spot in the country will not pay off in contest awards. Working from the high spots is fun, however you do it, and plenty of v.h.f. enthusiasts "go portable" during a contest just for the pleasure to be derived from it. Others make it a serious business, and the stations they set up for a v.h.f. party week end rival the best Field Day efforts. Transmitters running 500 watts or more are common. Nothing but the best converters and biggest beams will do. Then shifts of operators engage in simultaneous operation on several bands, making hundreds of contacts and running scores into 5 figures.

It was this kind of operation that produced the country's top multioperator score in the September V.H.F. Party. Eight members of the Copperhead V.h.f. Associates of the Washington area set up W3JZY/3 in the Foxville Fire Tower, not far from the presidential retreat at Camp David, Md. The last 150 feet of elevation to the fire tower can be made only on foot, but some 3000 pounds of gear were hand-carried up the hill. The 50-Mc. transmitter had a pair of 4X-250Bs in the final, modulated by 203Zs. A Tapetone converter ran into a Super-Pro. These were hitched to a 5-element beam installed on a 50-foot crankup tower. Another pair of 4X250Bs served on 144 Mc., with another Tapetone converter working into a 75A-4. The array was an 8-element job atop the fire tower. A single 4X250B in a coaxial tank was the final 220-Mc. stage. This had a 416B converter and a 51J-4 receiver for company. The array, an 11-element Yagi, was at the 50-foot level on the fire tower. The 432-Mc. setup had a 5894 final, a Centimeg converter and 51J-4 receiver, and an 11-element Yagi at 40 feet above ground.

Second place in scoring, nationwide, was achieved by W1BJ/1, Mt. Kearsarge, N. H., operated by W1PZA, W1RMH, W1AZK and W1JDF. Here W1PZA is working at the 220–420 position.

This array of gear was furnished by W3MUO, W3SFY and K3AKK. With it, and last year's experience to profit by, W3JZY/3 racked up 560 contacts, the country's highest total. With a section multiplier of 47, this netted 28,482 points.

Another group of old hands at mountain-topping made up the crew of W1BJ/1, Mt. Kearsarge, N. H. With W1PZA, W1RMH, W1JDF and W1AZK on the job, W1BJ/1 ran up 420 contacts on 4 bands, for 25,960 points. Their section total, 55, was the largest reported.

With no pronounced band openings to build up section multipliers, scores were naturally higher in the areas where the ARRL Sections are geographically small. There is the reason, of course, that no national awards are made in our contests; there is no fair basis for scoring on a nationwide basis. A switch in propagation to favor another section of the country, and these

It was cold on top of Mt. Hamilton, in the Santa Clara Valley Section, but K6TJL/6 was hot. The Southern Peninsula Old Timers Society made 274 contacts on 4 bands for the West's top score, 6304 points. Operators shown are W6CBE, K6SKU, W6GGV and K6IOM.

Easterners might have been snowed under by similar group efforts in other areas. Typical of Western portable ventures was the effort of the Southern Peninsula Old Timers Society, K6TJL/6, operating from Mt. Hamilton, a 4300-foot elevation 65 miles southeast of San Francisco. Bad weather held down the portable activity in Northern California, but K6TJL/6 worked 274 stations on 4 bands, for 6304 points. Highlight was a 144-Mc. QSO with W6NLZ, some 300 miles away. He was also heard on 220 Mc., though no contact could be made on that band.

W5MVL surveys the view at sunset from Ranger Peak, El Paso, Texas, scene of operations for W5MVL/5 in the September Party. Mountain top is reached only by aerial tramway.

At the opposite end of the scale as far as scores go, but certainly with one of the most spectacular locations, was W5MVL/5, atop Ranger Peak, El Paso, Texas. The site is 1900 feet above downtown El Paso, but only 3 miles distant. Access is by 2300-foot aerial tramway only. A TV station is under construction there, but this will not rule out v.h.f. work there in the future. Chief Engineer of the new layout is W5MCI. The transmitter supervisor is W5ESZ. W5VYD is program director, and W5MVL is the studio engineering supervisor. The owner is a former ham. Adequate provision for amateur radio is being made in the building plans!

Leading home station, and winner of the Eastern Massachusetts Section award was W1OOP, Needham, Mass. Hank and K2CBA, Troy, N. Y., shared top section honors, with 37 each. Both worked 4 bands. W1OOP ran up 6253 points on 145 contacts. W8WEN, Alliance, Ohio, worked almost twice as many stations, but with two bands and a lower section potential he finished second to W1OOP, with 5796 points and the Ohio Section award. Top one-band total was made on 144 Mc. by K1CRQ, Bethlehem, Conn. Stu worked 298 stations (largest contact total by a single operator) in 18 sections, for 5328 points and the Connecticut Section award. W9ROS, Roselle, Ill., used 50 and 220 Mc. effectively in taking Illinois Section honors with 273 contacts and 3731 points. K9KLU, Tinley Park, Ill., was the top 50-Mc. station, with 281 contacts for 2810 points.

The countrywide v.h.f. boom is reflected in

K2JWT at the operating position of W2YKQ/2, station of the Lake Success Radio Club, atop Jane Hill, Huntington, L. I., highest spot on the Island. 308 stations were worked on 50, 144 and 220 Mc., for 10,948 points.

scores almost everywhere. K4OSF/4, Sharps Ridge Park, Knoxville, Tenn., had no breaks in the form of DX openings, yet worked 140 stations on 50 and 144 Mc. K5WPD says that there was very little activity in the North Texas Section, but he worked 92 stations on 50 Mc.

Our contest report would not be complete without a little story from W2WZR, Syracuse, N. Y. Jim has an "aurora location," what amounts to a 3-sided well, open to the north. He operates only on c.w. — which is the hard way to run up a big total under average conditions. He is not a needed section under ordinary conditions, and most of the phone-only operators give him little attention. His moment of glory came when aurora burst forth Sunday night. It didn't last long, but it gave W2WZR a chance to be "wanted" for a few minutes. Result: 15 contacts in 10 different sections, after almost no results in the first 18 hours of operating.

Crew of W2LW1/2, third-ranking multioperator station. Front, K2UKE, W2KGC. Rear, K2GCH, K2OZT, W2YPM and W2LWI. Operating from Overlook Mountain in the Catskills, W2LWI/2 worked 380 stations on 4 bands. Section multiplier of 51 gave them 21,624 points.

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

W3FEY
5040-134-30-ABCDE
W3OLV/3
4524-165-26-ABC
W3ARW..3450- 83-30-BCDE
W3LXM/3
3151-137-23-AB
W3WJC..1976-104-19-AB
W3AZE..1104- 92-12-AB
W3TDF...570- 30-19-AB
W3OSA...560- 56-10-AB
W3GFN[1]..468- 52- 9-A
K3IUV....425- 47- 9-A
KN3HBU..312- 52- 6-B
W3MMV...190- 38- 5-B
K3CHF....175- 25-7-AB
W3LDA.....44- 11- 4-A
W3FJV.....36- 12- 3-B
W3KX,[3] (8 oprs)
18,737-427-41-ABC
W3OI (6 oprs.)
12,090-390-31-AB
W3ZIN (5 oprs.)
5928-225-26-ABC
W3SNM (7 oprs.)
4598-209-22-AB
K3BUZ/3 (K3s BPH BUZ)
2560-128-20-AB
K3GMM/3 (K3s GMM GOX
1496-136-11-A
K3IPM/3 (K3s IPM BSX
AUH)....62- 31- 2-A

Md.-Del.-D. C.

W3LCC..2420-106-20-ABC
W3CGV..1771- 67-23-ABCD
K3DQA[1]...364- 52- 7-AB
W3GKP...364- 26-14-B
K3CPJ....245- 35- 7-AB
K3AZH....209- 37- 7-A
W3CQH....180- 35- 4-A
W3MNE....140- 35- 4-A
W3LMC....110- 22- 5-B
K3BYB....105- 35- 3-A
W3IWJ.....24- 8- 3-AB
W3JZY/3[2] (8 oprs.)
28,482-560-47-ABCD
K3DLB (3 oprs.)
1936-121-16-AB
W3CVL (3 oprs.)
140- 28- 5-B

S. New Jersey

W2BLV..4692-127-34-ABD
K2MPV..1140-180-23-AB
W2NSF..2071-109-19-AB
K2YIB...1524-127-12-B
W2ESX...462- 42-11-AB
WV2GLL...68- 17- 4-B
WA2FFC/2 (WA2S AGJ
FFC).....12- 6- 2-A

Western New York

W2UTH..1890-126-15-AB
K2DBB..1568-112-14-AB
K2GUG..1008- 78-12-ABC
W2QMK..672- 48-14-B
K2SQB[1]...560- 80- 7-A
W2KIJ....348- 58- 6-A
WA2EIX...272- 68- 4-A
W2RXG...189- 21- 9-B
WA2EZD..180- 60- 3-B
W2MTA...160- 40- 4-A
W2WZR....150- 15-10-B
W2EXY....141- 47- 3-B
W2SSC.....86- 43- 2-B
WV2GEK[3]..84- 42- 2-B
WV2GJL.....56- 14- 4-B
K2PKK.....56- 28- 2-A
WV2HEM...38- 19- 2-B
WA2CUZ...36- 18- 2-B
WV2CWR....7- 7- 1-B
W2JGJ/2[2] (5 oprs.)
8604-232-36-ABC
K2IXJ, 2 (K2s IXJ SZJ)
5301-171-31-AB
K2RRM (6 oprs.)
4208-263-16-A
K2ZER/2 (10 oprs.)
4011-191-21-AB
K2DUR/2 (K2s DUR VKR,
W2OZE)
1078- 77-14-AB

Western Pennsylvania

W3RUE..2625- 96-25-ABC
W3OMY..1904-112-17-A
W3MSR..3.258- 43- 6-B
W3GQT...245- 49- 5-B
K3GCT/3..184- 46- 4-A
W3KWH[2] (4 oprs.)
1071-119- 9-AB
W3TIF (W3s TIF ZMP, K3-
DNS)....649- 56-11-ABC
W3WPZ/3 (W3s SYY WPZ,
K3AKR)
550- 55-10-AB

CENTRAL DIVISION

Illinois

W9ROS..3731-273-13-AC
K9KLU..2810-281-10-A
K9LTC...2367-263- 9-A
W9ESQC...880- 59-11-BC
K9DTB....546- 78- 7-AB
W9DJ.....343- 49- 7-AB
KN9RBE..256- 64- 4-B
KN9QAM..105- 35- 3-B
W9OFY....115- 31- 5-B
K9KWY.....44- 22- 2-A
K9GJO.....28- 14- 2-A

Indiana

K9GFQ..2130-213-10-A
K9PED..2115-141-15-AB
W9MHP...880- 80-11-AB
K9MZV...498- 83- 6-AB
K9IXD....317- 79- 4-A
K9HYV....180- 45- 4-A

Wisconsin

K9OXY....765- 85- 9-AB
W9TQ.....585- 65- 9-AB
K9PJB....132- 44- 3-A

DAKOTA DIVISION

Minnesota

K9AKJ....315- 45- 7-AB
W9AUS....228- 76- 6-A
K9DTA[1]...78- 26- 3-AB
K9LAV.....50- 25- 2-A
K9OST.....11- 11- 1-A

DELTA DIVISION

Arkansas

K5IPL....132- 22- 6-AB

Louisiana

W5FYZ....72- 18- 4-B

Tennessee

W4HHK...468- 34-13-ABCD
K4PZJ.....72- 24- 3-A
K4UXL.....60- 20- 3-A
K4OSF/4 (K4s OSF YOF)
1806-129-14-AB

GREAT LAKES DIVISION

Kentucky

W4GSH...640- 80- 8-AB
K4BPY (2 oprs.)
160- 32- 5-A

Michigan

K8ACC..1032-129- 8-AB
K8BGZ...888- 74-12-AB
W8PPT....825- 38-15-BC
W8NOH...512- 58-14-AB
K8DKR...702-117- 6-A
K8KIX....588- 98- 6-A
W8YAN....435- 87- 5-A
W8UJC....376- 94- 4-A
K8GKX....144- 36- 4-A
W8VRH....140- 35- 4-B
W8PYQ....105- 20- 5-ABC
W8EMD....69- 23- 3-B
K8OMS.....60- 15- 4-A
K8BTH.....9- 9- 1-B

Ohio

W8WEN..5796-276-21-AB
W8AQ....1782- 81-22-AB
W8GGH..1649- 97-17-B
K8KTX0..1200- 75-15-ABC
W8COZ...1053-117- 9-AB
W8DAU...984- 78-12-ABD
W8BAX...780- 60-12-ABCD
W8LCA...416- 52- 8-AB
K8CRF....150- 50- 3-A
KN8QAC...44- 22- 2-B
K8NMD (7 oprs.)
1650-165-10-AB
K8LME/8 (4 oprs.)
560- 70- 8-A

HUDSON DIVISION

Eastern New York

K2CBA...5402-127-37-ABCD
W2LKP...1152- 58-18-BC
K2CVG....780- 65-12-A
WA2EKE..476- 68- 7-B
K2YAZ....416- 52- 8-B
K2JYG....396- 36-11-B
WV2GQV/2[3]
297- 33- 9-B
WV2HAQ..204- 34- 6-B
K2KEQ/2..135- 27- 5-A
WV2HAW...28- 7- 4-B
W2TMM....24- 12- 2-A
W2LWI/2[2] (6 oprs.)
31,624-380-51-ABCD
W2HBC/2 (W2s HBC NDR)
14,025-400-33-ABC
W2AF/2 (6 oprs.)
8064-252-32-AB
W2SZ (4 oprs.)
4725-189-25-AB

N.Y.C.-L.I.

K2IEJ/2..5088-159-32-AB
K2TGR[1]..3438-191-18-AB
K2VIX....2774-146-19-AB
W2AOC...2002- 64-22-BC
K2UOY...1342-122-11-B
K2LEG...1008- 84-12-B
K2UTN....909-101- 9-A
WV2FBA..288- 48- 6-B
W2IN.....160- 32- 5-B
W2EZL....140- 28- 5-A
WA2BOY..128- 32- 4-A
K2IRS....120- 30- 4-B
W2LRJ....80- 8- 5-C
W2BYN....60- 10- 6-B
K2QJQ....48- 6- 4-C
W2OTA....20- 5- 2-D
W2YKQ/2[2] (K2s DB JWT,
W2YHP)
10,948-308-34-ABC
K2LIO (K2s LIO QEP YQL)
4431-211-21-AB
K2LQL (K2s LQL QLY)
380- 76- 5-B
W2TUK (W2TUK, W4JQG)
88- 22- 4-B

Northern New Jersey

W2DZA..3213- 97-27-ABCD
K2KIB...1860- 83-20-ABC
K2GTO[1]..1212-101-12-A
W2GKR...784- 98- 8-A
W2QJY....588- 84- 7-B
K2AEU....560- 70- 8-A
WV2HZF..546- 78- 7-B
K2SHY....539- 77- 7-B
K2JPD....306- 51- 6-AB
K2DIG....252- 21- 7-AC
W2CBB....238- 17- 14-B
WV2DEC..176- 44- 4-B
W2PEZ/2[2] (8 oprs.)
20,670-485-39-ABC
K2OPI/2 (8 oprs.)
6966-251-27-ABC
K2LYU (K2s GWR LYU)
2955-197-15-AB
K2YEW/2 (K2s UKT YEW
YYR)..1782- 99-18-AB
WA2CCF/2 (K2s GHY PNK,
WA2CCF)
1771-161-11-AB
WA2AJS (K2LXL WA2AJS)
1562-142-11-A
WA2DNI/2 (10 oprs.)
1250-125-10-B
K2KUS (K2KUS, WA2FWG)
1078- 98-11-AB
W2CVW/2 (WV2CHN, W2-
CVW)...165- 33- 5-B
K2PGK (WA2AYA, K2PGK)
68- 17- 4-A

MIDWEST DIVISION

Kansas

KØITF....260- 52- 5-AB
WØHAJ....63- 21- 3-A
KØGIA....21- 21- 1-B
KØGIC....21- 21- 1-B
KØVQY....20- 20- 1-B
WØSPF....16- 16- 1-B
WØJFG....10- 10- 1-B

Missouri

KØRMQ...490- 98- 5-AB
KØTCB....48- 16- 3-B
KNØVSD....3- 3- 1-B
KØLLC/Ø (10 oprs.)
721- 98- 7-ABD

NEW ENGLAND DIVISION

Connecticut

K1CRQ..5328-296-18-B
W1HDQ[4]..3456-106-27-AB
W1QVF...3381-146-21-AC
W1YDS...1296- 67-18-ABC
W1RFJ....495- 45- 9-AB
K1AFR....465- 31-15-B
W1VNO[1]..460- 46-10-AB
W1HDF....448- 19-14-ABCD
K1IWY/1..400- 40-10-B
W1WHL...360- 40- 9-A
W1FVV....270- 30- 9-AB
KN1IWM..180- 45- 4-B
K1CAV....105- 21- 5-B
W1AMJ.....48- 16- 3-B
W1NLM....32- 8- 4-B
W1DZA.....30- 10- 3-B
W1LAS[2] (4 oprs.)
690- 41-15-ABC
W1AW[4] (K1LVW, W1WPR)
166- 22- 8-AB
K1BCI (KN1s KRY LHZ)
24- 12- 2-B

Maine

W1ZEN/1..120- 20- 6-AB
W1PLX/1...90- 15- 6-AB
W1EHF/1 (W1EHF, K1AIC)
3234-154-21-BCD

Eastern Massachusetts

W1OOP...6253-145-37-ABCD
W1AQE...2652-156-17-AB
KN1IRR..1884-157-12-B
W1JSM...1746- 97-18-AB
W1LMZ...1001- 77-13-AB
W1NKA....610- 61-10-AB
W1DBH....385- 55- 7-B
K1MHC....371- 53- 7-B
W1LUW....224- 32- 7-AB
W1KBN[2] (K1AIO, W1GUJ)
6180-199-30-ABC
W1WNJ/1 (8 oprs.)
6006-273-22-AB
W1ZBE (W1s BZZ ZBG)
4956-182-25-ABCD
K1AII/1 (8 oprs.)
4347-180-23-ABC
K1DIR (K1s DIR HVV)
4290-195-22-AB
K1CMU/1 (multiple-opera-
tor)....2025-135-15-AB
KN1KZV (2 oprs.)
525- 75- 7-B

Western Massachusetts

K2ABE/1
4991-210-23-ABC
W1RFU..1890- 65-27-ABC
W1HDQ/1[4]
175- 25- 7-B
W1UCB....90- 15- 6-A
W1BRF/1 (multiple-operator)
7852-302-26-AB
W1GLA/1 (W1s ZWJ ZWL)
1728-108-16-AB

New Hampshire

W1HQD....60- 10- 5-ABC
W1BJ/1[2] (5 oprs.)
25,960-420-55-ABCD
W1HPM (6 oprs.)
3920-170-20-ABC
W1YQH/1 (W1s TNO YQH)
2130-142-15-AB

Rhode Island

K1CRN..2826-157-18-B
K1JSG....840- 70-12-B
K1DFU....189- 27- 7-A

Vermont

W1SPX/1
2178- 99-22-AB
K1BKK/1..825- 55-15-B
W1EXZ....120- 15- 8-A
W1BJN/1 (4 oprs.)
3740-168-22-ABC
W1IPJ/1 (7 oprs.)
3718-169-22-AB

NORTHWESTERN DIVISION

Oregon

K7HNW...276- 69- 4-AB
W7HBH...136- 34- 4-AB

Washington

W7RT....500-100- 5-AB
K7BBO[1]...160- 80- 2-A
W7LHL....155- 31- 5-AB
W7JAX....110- 55- 2-A
K7BKZ....90- 45- 2-A
K7BJV.....65- 65- 1-A
K7EHZ....45- 45- 1-A
KN7GZB...24- 12- 2-B
W7VXR/7 (W7s AXN PVZ
VXR)...564- 94- 6-AB

(Continued on page 192)

[1] Technician Award Winner; [2] Multiple operator Award Winner; [3] Novice Award Winner; [4] Hq. Staff, not eligible for Award; [5] W4YHD opr.; [6] WØIJR.

Hints and Kinks For the Experimenter

ADJUSTABLE POWER SUPPLY

FIG. 1 shows a power supply with d.c. output adjustable over about a 3-to-1 range. Although not a regulated supply, it does tend to compensate for a.c. line fluctuations and changing d.c. load. The diagram shows a 6N7 dual triode used as a rectifier, but triode-connected pentodes such as the 6L6 can also be used. Surprisingly enough, the normal 5-volt winding intended for a conventional rectifier tube will usually power the 6.3-volt heater satisfactorily for the triode or pentode rectifiers. If this arrangement bothers the constructor, the rectifier heaters may be powered from the 6.3-volt heater winding. However, this winding should not be grounded or used to power any other tube heaters since the heater-to-cathode insulation will probably break down unless it is rated to take the full d.c. supply voltage.

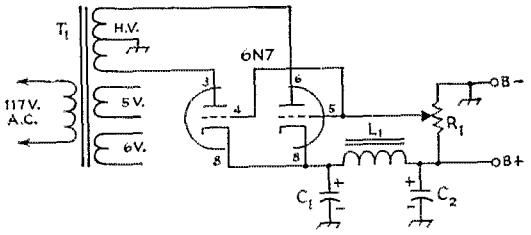


Fig. 1—Adjustable power supply. $L_1C_1C_2$ is a conventional filter section.

R_1—See text.

T_1—Power transformer. When using a 6N7, the transformer voltage should not be over 300 volts each side of center tap. The load should not exceed 70 ma.

Variable resistor R_1 can be any type of potentiometer but one with a linear taper is preferred. Resistance should be in the order of 100,000 to 500,000 ohms in most cases.

An added feature of the circuit is the fact that the potentiometer acts as a bleeder and will discharge the filter capacitors when the supply is turned off. — *F. T. Swift, W6CMQ*

MOUNTING POWER TRANSISTORS

IF circuitry requires that power transistors be electrically insulated from their heat sink, anodized aluminum washers will make good insulators. Small sheets of anodized aluminum are available from almost any radio-supply house in the form of dial plates used for identifying controls on audio amplifiers. After drilling the anodized plates, be sure to clean and deburr the holes.

— *Melvin Leibowitz, W3KET*

DEMAGNETIZING TOOLS

ANYONE who owns a soldering gun can use it as a demagnetizing apparatus. Pass the magnetized tool through the arch at the tip of the gun and pull the trigger. Slowly remove the tool from the gun area. The tool will now be free of its former magnetic qualities.

— *Luis Cuneo Macchiavello, CE2DA*

APACHE SPOTTING SWITCH

AS pointed out in the recent report on the Heath Apache in *QST*, March 1959, page 44, a minor inconvenience exists in using the Apache for c.w. break-in operation. The difficulty lies in the use of a push-button "spotting" switch which is in shunt with the key so that in c.w. operation it is necessary to throw the plate switch off in order to zero beat. This requires two switching actions and means wasted motion.

The situation can be remedied by disconnecting the push-button spotting switch and substituting a normally closed push-button switch in another part of the circuit. Fig. 2 shows where the new spotting switch is connected. When the switch is in its normally-closed position, the v.f.o. and buffer tubes are cut off by the −120-volt bias supplied at point *K*. When the spotting switch is opened, the bias is removed from the v.f.o. tube which then supplies a v.f.o. signal.

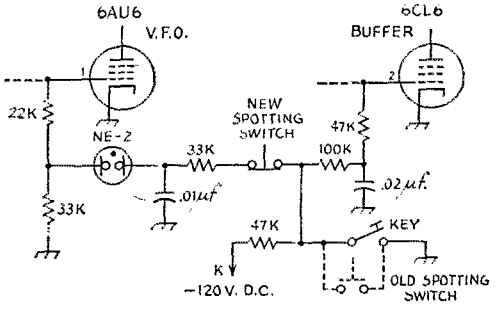


Fig. 2—Diagram showing a new spotting switch for the Apache transmitter.

To make the change, disconnect the yellow wire running from the wiring harness to the spotting switch. Tape the wire end and fold it out of the way. Splice two leads in the circuit at the junction of the 33,000-, 100,000-, and 47,000-ohm resistors (see Fig. 2) and connect the leads to the normally-closed push-button switch. While you are at it, bring out another pair of leads and connect them in parallel with the switch and install a connector at the rear panel of the Apache so that a remote spotting switch can be installed. — *Gary Lindstrom, K2UZJ*

PANEL BUSHING FROM POTENTIOMETERS

DON'T discard those old burned-out potentiometers. Throw away the carbon element and case but save the shaft and threaded bushing. It can be used as panel feedthrough bushing for ¼-inch shafts.

— *Ira L. Simpson, W3LKS*

91-MEGOHM RESISTOR

THE "Hint & Kink" in *QST*, October, 1958, page 75, concerning a modification to the a.v.c. system of the Communicator III, mentioned the addition of a 91-megohm resistor to the circuit. For those interested, this resistor's Motorola part number is 6K538716.

— *Richard M. Stevens, W1SUZ*

CRYSTAL FREQUENCY COMPARATOR

WHEN working with high-frequency crystal filters, a means of measuring the relative frequency of the crystals is necessary. The method described here allows accurate measurement of frequency difference down to a few cycles. The diagram for the required unit is shown in Fig. 3. The circuit consists of two identical crystal oscillators, V_{1A} and V_{2A}, with cathode followers, V_{1B} and V_{2B}, for isolation, and a mixer (V_3). The sum frequency from the mixer is filtered out in the filter network, L_1C_1, while the difference frequency (which is usually an audio frequency) is fed to the vertical plates of an oscilloscope. An external calibrated audio oscillator is fed to the horizontal plates of the scope and adjusted until the trace shows a single loop figure. The difference frequency is indicated by the frequency of the audio-frequency generator.

When constructing the unit, place the oscillators at opposite ends of the chassis with the mixer located in the chassis center. To make certain of electrical similarity between the two crystal oscillators, transpose the crystals. If the oscillators are identical, the scope pattern should be the same.

— *Warren H. Clark, W6COK*

TUBE TESTING HINT

THE number of do-it-yourself tube testers appearing in the supermarkets and drugstores these days can prove a blessing to the amateur whose personal tube tester is outdated. These self-service testers cover all the latest TV and radio tubes, and are quite accurate if one knows how to interpret their readings.

I tested an old 5U4 rectifier that someone had discarded and left at a tube-testing machine and found that it checked "no good" even though the filament lighted up. I took the tube home and checked it on my personal tube tester, and found that the tube tested "O.K.", except that the filament emission was down about 50 per cent. Suspecting that the store tester was biased to exaggerate the condition of the tubes, I tested several tubes I had around the shack and compared the readings on the self-service tester with those on my home tester. Results showed that the U-test-em machines are biased to give a "no good" reading on a tube that is about 50 per cent down on emission, but on the other hand is quite accurate on tubes that are up to snuff. This action of the store tester will sometimes eliminate a tube that really isn't completely useless.

— *Harry K. Long, W7CQK*

TRANSISTOR PROTECTION

TO prevent burning out of transistors because of incorrect power-supply polarity, place an ordinary crystal diode in series with one of the power leads so that current will flow only in the proper direction. If the power supply is accidentally connected backwards, the diode will protect the transistors. Of course, the diode should be capable of carrying the total circuit current.

— *Charles Curran, K2DQD*

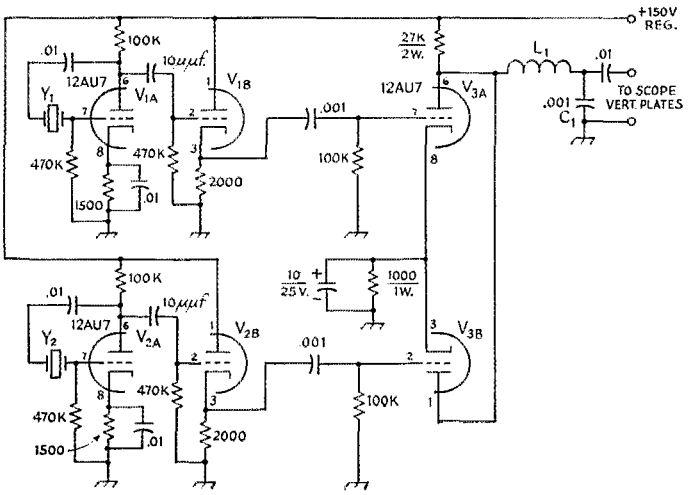


Fig. 3—Circuit diagram of the crystal comparator. Capacitances are in μf., resistors are ½ watt, unless indicated otherwise.

C1—.001-μf. ceramic capacitor.
L1—5-mh. r.f. choke.
V1, V2, V3—12AU7 tubes.
Y1, Y2—Crystals to be compared.

13th V.H.F. Sweepstakes, Jan. 9 and 10

Certificates to ARRL Section, Novice, Technician Winners; Gavel to Top-Scoring Club

FRIEND, do you have aching bones, falling arches, failing eyesight, greying hair, and loose teeth? Are you in a general run-down condition? Can you no longer do the hundred yard dash in less than twenty minutes, or swim underwater, or hit a baseball out of the infield? Friend, you are in bad shape. May I suggest Mother Fletcher's Cure-all Formula Nine guaranteed to make you straighten up and fly right. The prescription? *Get with it in the Thirteenth ARRL V.H.F. Sweepstakes.* The details? Read on.

To get started just call "CQ Sweepstakes" or answer such a call, and exchange information as shown in this announcement. The preamble follows along the lines of a standard message preamble. You can work a station once per band, so versatility is the thing.

The rules are the same as last year. Contacts count only as long as the contest period is in progress at both ends of the QSO. To clarify, suppose Western Mass.'s W1RFU starts right out at the beginning of the contest, 2:00 P.M. (1400) local standard time. For the first hour, Bill can work only other stations in the eastern time belt. During the second hour he can then begin working W9s and others on CST, as the contest has now begun there. By the fourth hour he can work the far west, as the contest will have just begun there.

The scoring is exactly as last year. The multiplier consists of the number of sections worked, *plus ten.* K6TYW, for example, could make 100 contacts in 17 different sections, with the following resultant score:

100 QSOs
×2 (if all SS data exchanged in both directions)
200 (QSO points)
×27 (17 sections plus 10)
5400 (claimed score)

The top-scorer in each section will receive a certificate award. Also, a certificate will be given to the top Novice and Technician in each section where at least three such licensees submit valid logs.

Club competition will again highlight the activity. The club with the highest aggregate score will receive a cocobolo gavel with a sterling-silver band engraved with the name of the winning club.

Write ARRL for contest forms now. If you don't use these log sheets, *please follow the log arrangement shown in this announcement.*

This is the opportunity for you to show what

SUMMARY OF A.R.R.L. 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.	9	3	W1RJA	47	Conn.	4:18 P.M.	9	1	2
50	2		43		4:35 P.M.	9	7	W1PHR	59	Conn.	4:40 P.M.	9	..	2
50	3		58		9:09 P.M.	9	6	W1WTR	359	R. I.	9:11 P.M.	9	2	2
144	4		49		9:30 P.M.	9	32	W1OOP	58	E. Mass.	9:36 P.M.	9	3	2
144	5		57		9:50 P.M.	9	15	KN1HAC	58	Conn.	9:46 P.M.	9	..	2
50	6		54		11:30 P.M.	9	11	W2YHP	48	N. Y. C.-L. I.	11:32 P.M.	9	4	2
420	7		58		11:35 P.M.	9	36	W1RJA	57	Conn.	11:35 P.M.	9	..	2
144	8		57		11:45 P.M.	9	21	W3CGV	59	Md.-Del.-D. C.	11:56 P.M.	9	5	2
144	..	....	...	...	.....	..	18	W9WOK	449	Ill.	12:34 A.M.	10	6	1
144	9	W1AW	34	Conn.	8:50 A.M.	10	7	W1RFU	59	W. Mass.	8:47 A.M.	10	7	2
50	10		479		9:18 A.M.	10	12	W6AJF	379x	S. F.	6:20 A.M.	10	8	2
50	11		589		10:16 P.M.	10	20	VE3AIB	569	Ontario	10:35 P.M.	10	9	2

Claimed score: 23 points × 19 (9 + 10) = 137. Bands Used: 50, 144 and 420 Mc. 9 sections worked

Names and calls of operators having 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.

Equipment..... *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	QSO NR tells how you are doing	Identification	RS or RST report	See page six for section list	Time and date must fall in contest period	
Sample	NR 1	W1AW	58	CONN	1812	JAN 9

your station can do. Novices and Technicians are urged to submit their logs so that the top scorer in each section can qualify for a certificate. Club members are urged to do likewise, as getting your club at the top of the heap may hinge on *your* log entry.

That's the Mother Fletcher prescription; now just straighten up and fly right into the ARRL V.H.F. Sweepstakes.

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. 9, 1960, and ends at midnight, Sunday, Jan. 10, 1960. Contacts between stations in different time zones can be counted only when the contest period is in progress in both of the zones concerned.

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 sum of different ARRL sections worked (the number in each of which at least one SS point has been credited) plus 10.

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 and 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, nor can special memberships granted for contest purposes 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 Jan. 27, 1960, to be considered for awards.

Strays

Celebrating its tenth anniversary, the Braille Technical Press announces that its publication will now be available on *Talking Books*. Two hours of information will be available each month, recorded at 16⅔ r.p.m. on 10-inch unbreakable vinylite records. The subscription price (purchase, not rental) is $10 per year. If you are looking for an appropriate gift for a blind ham or electronics enthusiast, contact the Braille Technical Press at 984 Waring Ave., New York 69, N. Y.

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Here are the December schedules for the various MARS technical nets.

First Army MARS

(Wednesday evenings, 2100 EST, 4030 kc. upper sideband)

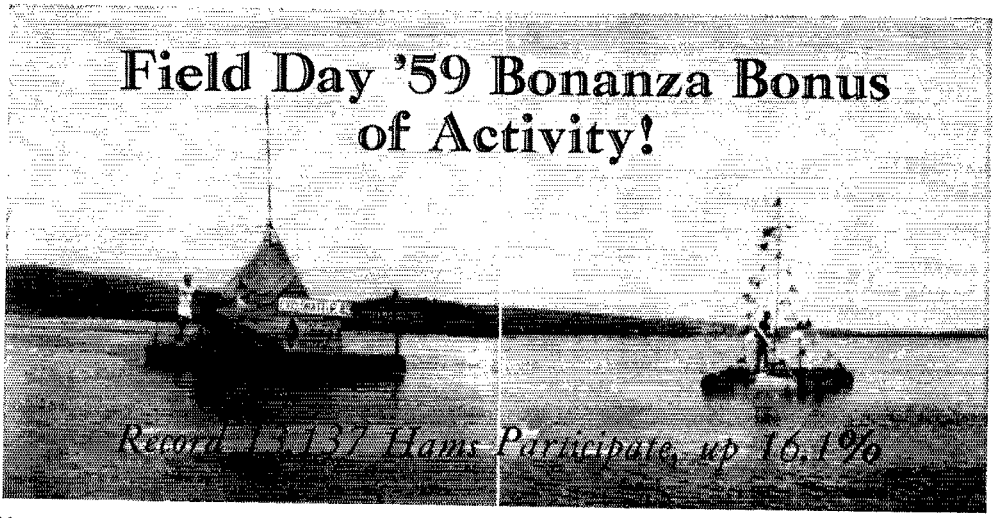
Dec. 2 — Technical Aspects of Satellite Communications.
Dec. 9 — The Transatlantic Submarine Telephone Cable.
Dec. 16 — Determination of Percent Success Expectable in High Frequency Radio Transmissions.
Dec. 23 — F. M. Forward Scatter Tropospheric Communications Systems.
Dec. 30 — Coaxial Cable.

AF-MARS Eastern

(Sundays 1400 EST; 3295, 7540 and 15,715 kc.)

Dec. 6 — U.H.F. Air-Sea Rescue Communications.
Dec. 13 — Underwater Sound Detection.
Dec. 20 — Reinforced Plastics.
Dec. 27 and Jan. 3 — Recess dates.

Field Day '59 Bonanza Bonus of Activity!



Never fails. Someone always goes FD on a raft. This year it was VE2AWD shown in both pictures. The rig is on the raft on the left, while the other raft supports the other end of the 80 meter half-wave doublet.

BY JOHN F. LINDHOLM,* W1DGL

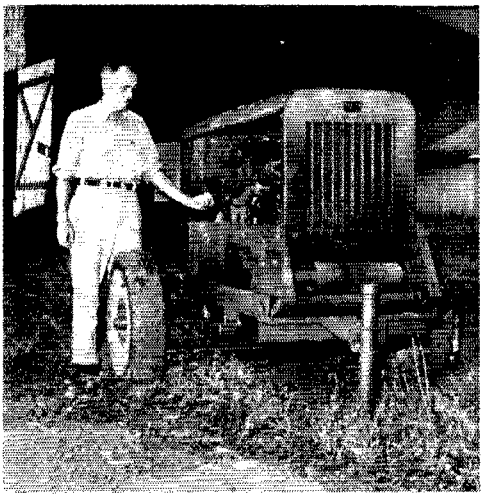
THE following excerpt is from a note which crossed my desk recently. It is submitted by none other than VE9NG, one of the more active contest enthusiasts of late. Prescott thusly relates:

> Let me refer you to an afternoon I chanced to find myself in the shack. The sun was shining brightly outside, with light gusts of wind blowing occasionally. It was what I would call a typical summer day on Baffled Island. I chanced upon tuning the 20 meter c.w. band in search of a possible DX contact. I must confess the band was rather dead except for a few W/VE stations tuning up and testing. However in the matter of an instant (I thought perhaps an r.f. tube may have been reactivated in the inhaler) the entire band was a complete jam of signals, every one of which was calling "CQ FD." I had not worked this prefix as yet, so I proceeded to listen for him. Unable to hear the FD station (my Call Book said French Togoland), I chanced to consult my trusty *QST* and proceeded to discover that FD was an operating activity, namely, Field Day. Gads, how could I have missed this one? However, I promptly set up my FD station in the reindeer shed and herewith submit my entry. 73.

Well, we at ARRL can't figure out how *anybody* could have bypassed Field Day. For what other activity is a camping trip, picnic, hamfest, contest, and emergency preparedness test, all rolled into one? But judging from the logs that hit 38 LaSalle Boulevard, it appears that nobody did miss it, for following the trend of previous years, records were again shattered. A new Field Day record of 13,137 dyed-in-the-wool hams made their way to fields, mountain tops, deserts, islands, waterways, backyards, parks, outdoor theaters, athletic stadiums — anyplace to combat the elements and set up Field Day stations. And the elements were mean in certain parts of the country. Big winds hampered many a FD installation, with rain and fog in other localities. But that is what Field Day is for — to get out in the elements to see what you can do. That's just what many thousands of hams did. Without a doubt Field Day is the granddady activity of them all!

As the smoke cleared, we found King Arthur gathering together his nobles of varying rank, squires, dukes, counts, and monarchs of every description. Atop the "Class Kings," running 12 transmitters, was the Tri County Radio Assn., W2LI/2, who racked up 22,851 points, slightly below last year's top effort. Using 3.5 through 220 Mc. payed off with 2539 QSOs, with the best band 15-meter phone, where 392 contacts were

* Communications Assistant, ARRL.



Some had husky, rugged, dependable type generators (left), whereas others had to rely on a cruder type of power house (right). W4KJP cranks up the 7 kw. job on the left for the W4KJP/4 gang, while the stunt on the right is the brain child of the Door County Amateur Radio Club, W9AIQ/9.

logged. Special compact portable Field Day rigs were used. Seated next to the above group at the royal table was the San Antonio Radio Club, W5SC/5, with 20,376 points to lead 11A groups.

Thumbing down the list of "Class Kings" according to the number of transmitters, we find the 1A groups led by W8CEA/8. S.s.b., separate rigs per band, beams, and ten operators did the trick. Best band was 40-meter c.w. where 146 contacts were tabulated. The 2A's really turned in some nifty scores. A record of 10,863 was scored by the Hughes Amateur Radio Club, K6QEH/6.

CLASS KINGS *

Class	*Call*	*Club Name*
1A	W8CEA/8	(nonclub group)
2A	K6QEH/6	Hughes ARC
3A	W4FU/8	Ohio Valley AR Assn.
4A	W6HS/6	Crescenta Valley RC
5A	W2OYH/2	Morris RC
6A	K2AA/2	South Jersey R Assn.
7A	W7HZ/7	Valley ARC
8A	K2SOQ/2	Fordham RC
9A	K4DTV/4	Huntsville ARC
10A	W7DK/7	RC of Tacoma
11A	W5SC/5	San Antonio RC
12A	W2LI/2	Tri County R Assn.
14A	K2YCJ/2	Comm. Club of New Rochelle

* Leaders in each transmitter class.

Ground planes and beams highlighted the installation. A tremendous place effort was made by the Frankford Radio Club, W3JNQ/3. Class 3A was again led by the Ohio Valley Amateur Radio Assn., W4FU/8, scoring 12,096 points and employing a 6AU6-5763-6L6 rig on each band. SX-101s and 75A-4s highlighted the receiving setup at W6HS/6, Crescenta Valley Radio Club, where that group paced the 4A division with 10,305. The 13A classification drew a blank this year, but two clubs were able to put 14 rigs on the air — a major accomplishment in itself. The Communications Club of New Rochelle, K2-YCJ/2 emerged atop with 5178 points. For other class leaders, consult the ajoining "Class Kings" box.

The unit or individual outfits, or the "Class B Barons," were also present in regal splendor. K5DG1/5 with able assistant K5ESW turned in a record performance in the 2B category with 10,894 points. Wes passed along the following hints for the benefit of other would-be Class B entrants: "(1) Use s.s.b.; (2) Operate full time at each rig, with a minimum of sleeping by either operator. (3) If possible put up antenna system before Saturday; clubs can have other people than the operators do the job. Fatigue is an important factor. (4) Pray for good weather and no

Pulling the old coathanger stunt are W1AMJ (left) and K1EKC (right) at the Waterbury Amateur Radio Club installation, W1LAS/1.

CLASS B BARONS [1]

K5DGI/5 [2]	10,854	W9UA/9	2988
W2FBA/2	6272	K5DRC/5	2826
K6SXA/6	5256	W6UF/6 [2]	2640
K6QIK/6	3659	K5TEL/5 [2]	2580
W9DO/9	3492	K6GOT/6	2578

[1] Top ten class B scorers. [2] 2 rigs.

solar storms!" In the one transmitter Class B setup, W2FBA/2 teamed up with W2JBQ for their 17th consecutive Field Day combo, having teamed up together for each FD since 1938. Exchanges with 445 stations for 6272 points accounted for the score. Other top scorers in Class B are listed in the box.

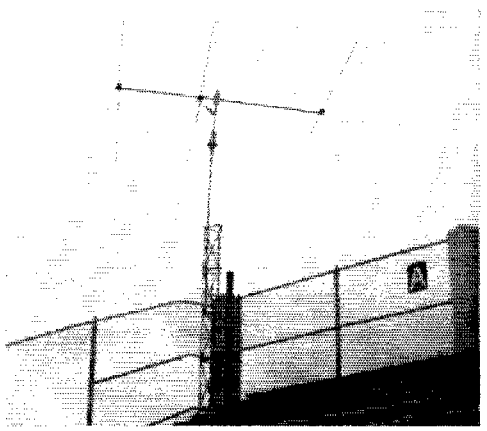
The mobiles were again led by W8PVC/8 with 7989 points, which also contributed to the Club Aggregate Mobile totals of the West Park Radiops. They again topped other clubs with 80,225 points. Their tremendous turnout of 35 mobiles and handling of hundreds of messages did the trick. Other mobiles topping 2500 were K6EPC/6, W8GHO/8, and W2MIU/2.

MOBILE MONARCHS *

West Park Radiops	80,225
Phil-Mont Mobile Radio Club (Penna.)	30,234
Radio Amateur Mobile Society (Calif.)	18,827
Mobile Amateur Radio Club of South Bend	10,415
Associated Radio Amateurs of Long Beach	5172
Richmond Radio Club	3443
Clifton CD-DC Communications Section	2525
Hughes Amateur Radio Club (Calif.)	2195
Dayton Amateur Radio Assn.	918
Coffee Dunkers of Detroit	256
Heath Amateur Radio Club	216
Skywide Amateur Radio Club (Ont.)	55

* Club aggregate mobile scores.

Thus Field Day took place — records broken, some aurora, varying weather conditions, and a bundle of fun. The real picture of what transpired Field Day, however, is painted in the very quotes of the groups themselves. These we are very pleased to present.



The Adams Heights Radio Club, K5PZZ/5 has this teaser for you. What's missing?

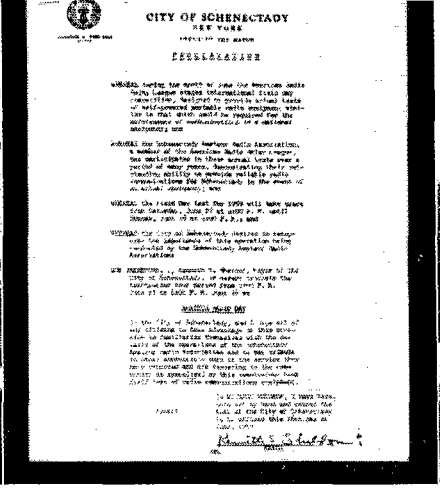
Quotes

"Use of the club's new 15-meter beam was a great improvement over previous 'non-beam' years." — *Aiken ARC, K4JIY/4.* . . . "The club secured a Hornet tri-band beam. After FD the beam was raffled off to club members, with the net return practically paying all FD expenses. The beam was ideal for FD, as a light TV rotator will handle." — *Oklahoma City ARC, W5GU/5.* . . . "Good weather, good site, good fishing, good picnicking, good swimming, and, oh yes, good hamming. Used beams on bands above 40. Also made a 15/20-meter quad on the spot, and it worked fine despite the fact that forgot to solder the coax. Minor troubles with receivers and v.f.o.'s held our score down, but this was our highest score yet." — *Harrisburg RAC, W3ZEK/3.* . . . "Home built beams FB." — *Marathon ARC, K2LNK/2.* . . . "We spliced together three 16-foot two-by-fours to put our four antennas up in the air over forty feet. Conditions were perfect and the food committee did a wonderful job. We were either eating, sleeping, eating, operating, or eating." — *Marietta Amateur Radio Club, W8HH/8.* . . . "Wind sufficient to operate windmill, which provided drinking water and coolant for power plant which ran hot and out of gas three times." — *Boot Hill ARC, W0PMW/0.* . . . "$27 worth of neckties were used to mark guy wires, but they should have been luminous." — *Mount Diablo ARC, W6CX/6.* . . . "At 2058 Saturday our 75-meter position handled an emergency message regarding a man lost on Seymour Mountain. As a result we were able to contact a Vancouver station and relayed the message for additional personnel to be sent out to assist in search for the lost person. Once again Amateur Radio scored as it obviated the time and effort needed to send a man from the search area to a telephone." — *North and West Vancouver ARC, VE7APL/7.* . . . "The KWM-1 was a big hit; an ideal contest rig. Despite this operating convenience, the e.w. boys outdid the s.s.b. gang by about 2 to 1 in contacts made." — *ARC of the Ohio State University, W8LT/8.* . . . "Used a down-spout vertical with very good results. One operator was so excited and in such a hurry to arrive at the FD site that he used Colgate tooth paste for his hair oil." — *RF ARC, W0WAS/0.* . . . "This is a brand new club. The license arrived a couple of days before FD and we then went into high gear making up antennas etc." — *Free State ARC, K3IVO/3.* . . . "First time in six years that we were not really 'roughing' it on Buxton Mountain, which would have been impossible to reach because of heavy rains this year. This year we lived the 'life of Riley' with a newly constructed building on Bull Mountain with almost 5000 square feet in which to lay out our antennas for maximum efficiency." — *Oregon Tualatin Valley ARC, W7OTV/7.* . . . "Some difficulty was experienced in getting antennas up, because of 40 m.p.h. constant wind." — *W0DEP/0.* . . . "Only odd feature was that just one of the 124 contacts was with a W9 station." — *W1AW.* . . . "Burned out two transmitters before finding our generator was putting out 155 volts." — *Western Illinois RC, W9AWE/9.* . . . "We resisted that impulse to select a high, rocky, windy and cold mountain top for Field Day this year, and chose instead a lake shore in the flatlands where the horizon is under seven degrees elevation in all directions. We worked under the premise that, except for v.h.f. line-of-sight, propagation should be as good or better than from extremely rough mountainous terrain." — *Nevada ARA, W7YN/7.* . . . "We used a 300-foot No. 22 wire antenna from the lake shore to an island. Despite breakdown or improper operation of T-R switch, v.f.o., transmitter, two receivers, and the thunderstorm and uncomfortable operating positions, we

ZONAL CZARS *

W1OC/1	13,941	KL7AIR/KL7	675
W2LI/2	22,851	KP4FAC/KP4	4668
W3RCN/3	15,495	KZ5AF/KZ5	5445
K4CYP/4	7845	VE1JV/1	2430
W5SC/5	20,376	VE2BY/2	3837
W6FNE/6	12,501	VE3NAR/3	8916
W7HZ/7	18,027	VE4JW/4	396
W4FU/8	12,096	VE5AA/5	873
W9RK/9	12,609	VE6NQ/6	2595
W0OUI	5733	VE7ARV/7	4482
KH6RS/KH6	5202	VO2HA/2	1509

* Class A call area leaders.



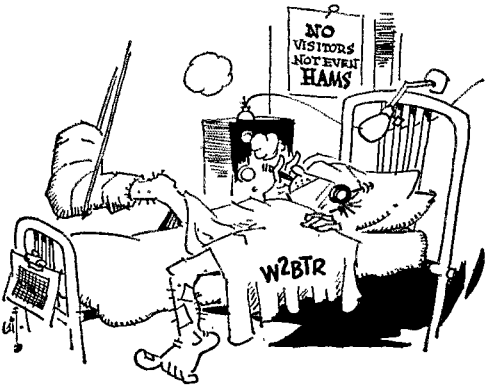
Grade A publicity for hamdom can be the outcome of FD. *Newspapers throughout the country carried stories and pictures* of FD 1959. Left shows cameraman for newscast shooting WØVDY of the Denver Radio Club, WØOUI/Ø. Center shows the proclamation of Amateur Radio Day for the city of Schenectady, N. Y. in view of the operations of the Schenectady Amateur Radio Assn., W2EFU/2. Right shows publicity at the site itself with neat sign of the IMO VHF Club, W9QWW/9.

slightly bettered last year's score." — *K2MBU/2.* . . . "Our first club activity found us only about 200 feet from the Delaware River. A thunderstorm forced our early shutdown." — *Philadelphia Electric Co. Employees Assn RC, W3EQA/3.* . . . "Our tower for the beam consisted of two extension ladders tied together at the top and spread at the bottom; guys were used at the sides." — *Huron Valley ARA, W8KGG/8.* . . . "That suggestion to get samples of handwriting of loggers certainly is to the point. Both stations were constructed so that equipment used at home stations could be torn down, moved, and reassembled in 20 minutes at each end." — *Winter Haven ARA, K4CK/4.* . . . "Antennas were cut for 80 meters full length and then broken for other bands with insulators. An alligator clip was used for jumper across insulators for operation on lower frequencies." — *Mid-Mo ARC, KØOYM/Ø.* . . . "The rig is a portable job built into a suitcase. I built a vibrator power supply and hauled everything into the field. This was my first FD and it just went to prove that I am right — Ham Radio is great." — *KN3INE/3.* . . . "Tried to put up a vertical with a big balloon, but bottled gas is heavier than air, hi; consequently antenna was poor. Water got into the breather hole in the putt-putt and also in the gas cans." — *W2WZQ/2.* . . . "First contest in which nothing went wrong." — *K2IRS/2.* . . . "The first year we operated, we were plagued with inexperience. Last year we were plagued with generator trouble. This year we were plagued with our girl friends, but what a nice plague." — *K9CAH/9.* . . . "Best FD conditions and weather we ever had. The boys who operated A3 this year are not proud of their score; they say it will be e.w. for them next year." — *W3YZD/3.* . . . "The biggest thrill was to have a pile up calling K1BAB. Signing Vermont, it was a pleasure to know we helped several make WAS; incidently K1BAB still needs Vermont." — *K1BAB/1.* . . . "Have you ever called CQ FD without the mike connected or put water in the oil case of the generator?" — *K4ZYI/4.* . . . "Had enough food for fifty people; fourteen finished it in less than twelve hours." — *Short Skip RC, K3DVS/3.* . . . "Had good emergency power unit. First year that we had no noise on receivers. Had rousin' good time complete with club family picnic on Saturday." — *Flint Hills ARC, WØECD/Ø.* . . . "This marks our sixth consecutive FD entry and by far our worst. We have had no trouble with more than ten rented generators. But this year our new pride and joy, our own generator, blew all our plans sky high at 2200 Saturday night." — *Alexander Hamilton High School RC, K6CXI/6.* . . . "A real FB Field Day enjoyed by all including the chiggers." — *Ventura County ARC, K6CST/6.* . . . "Help! Rush mosquito disintegrator gun." — *South East ARC, K8EMY/8.* . . . "Found that higher power really helps in making contacts, but also helps in losing multipliers; still don't know which is best." — *K2TJM/2.* . . . "K2OTP locked in truck of K2DZA's car with key." — *Central Queens RC, K2DZA/2.* . . . "We had an unusual experience on Field Day which could easily have been a tragedy. A runaway airplane crashed into the hanger where we were operating. No one was hurt but the runaway plane and the one it crashed into were severely damaged. If it had veered just a little to the left, it would have crashed into our Field Day station and would have undoubtedly killed the three operators who were present. If it had swung a little to the right, it would have clobbered our emergency power plant. In either case it would have been the end of our Field Day. The accident occurred three hours after we began operation and from then on there were a great many spectators." — *Harlo RC, W7TRU/7.* . . . "We didn't ground the xmtr for eight hours of operation and when we did we noticed a decided difference in our signal reports." — *Bayshore RC, W5DGJ/5.* . . . "We took advantage of the 1000 ft. circle; it really helps eliminate local QRM. Only thing is that it's a long walk from station to station. We needed a jeep, hi." — *Seneca RC, W8ID/8.* . . . "We used a 50-ft. tower with three separate half-waves on 80 going at 45

"This group decided to try a 'beercan vertical.' Everything was O.K. except we experienced difficulty erecting said antenna. A good all-around solder job is needed. Wound up soldering two ten-foot sections, then guying them; then proceeded to solder a few cans at a time until the desired length was reached. By the way, it took 74 beer cans to make 33 feet of antenna."—*Pan Am Beer Canners, K6ZOP/6* (Rather than carry the old joke any further, we won't ask who had the pleasure.—*Ed.*).

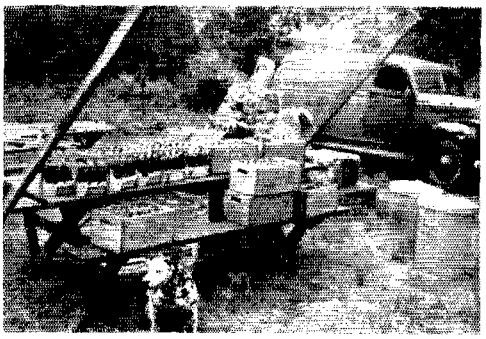
Some talked big (left), while others actually racked (right). Left shows K5CDH President of the Denton County Amateur Radio Club, K5AEX/5, telling about the one that got away. Right shows the running up-to-the-minute totals of the Kinston Amateur Radio Society, W4OIX/4.

degree angles to extension ladders which we guyed, and used a triangle-type open-wire feeder to a Johnson Matchbox. We could then choose whichever two wires best suited our needs." — *The Radio Amateurs of Greater Syracuse, W2WS/2.* . . . "Operated half the time with no antennas. My t.r. switch failed on me and it took me a while to figure out what was wrong." — *KØLAX/Ø.* . . . "This year we used a transceiver. Next year we hope to have two or more; they're wonderful for contests." — *W3ATV/3.* . . . "Our first FD attempt was complicated by very bad weather, but there was no trouble as far as radio went. Because the woods were so wet, we had more trouble getting a fire to cook breakgast than keeping the rig going." — *Lexington High School RC, K1JMQ/1.* . . . "We were sabotaged by vandals. Eggs were thrown and pepper thrown in drinking water around 0400. No one watching food area. One antenna tower almost fell, because of broken guy wire. Next year we will be on the alert with spot lights." — *Raritan Bay Radio Amateurs, K2OML/2.* . . . "Everything worked well except the operators. It was too hot!" — *W9OHU/8.* . . . "Why don't all participants read the rules? Had several heated arguments about the necessity of giving one's section. I had to quote *QST* to one lad, where it states section *or* location may be used. A real swell FD." — *W6CIS/6.* . . . "The only unusual experience during the hours I was on occurred around 2145. I had knocked my cup of water over and as I set it back on the table, columns of grey smoke were billowing forth from my transmitter. Thus endeth my Field Day operations. Murphy's Law strikes again." — *W4IFT/4.* . . . "Actually, the group brought along four transmitters and six receivers. We were dumbfounded as we watched them fail in operation, one by one." — *K3-DSQ/3.* . . . "We relayed messages to the forest ranger for a woman whose husband and son had become lost in the brush near our site. I might add, all turned out happily. ' — *Club 13, VE7SE/7.* . . . "A ten-inch fan was placed on the operating table to blow away the bugs and it did a fine job. Suggest that other groups try it next year. The red ants hit camp about 1400 and ate us alive. Cure?" — *USNR Div 8-35 Ruston, K5NBD/5.* . . . "We had our two rigs side by side and we QRMed each other almost as much as we got QRMed on the air. We woke up the loggers at 1600 to tell them FD was finally over." — *Mississippi Valley RC, K9OBO/9* . . . "We had a real ball. Because of the fine showing of the six-meter rig, interest in v.h.f. has increased and many members are planning rigs for six and two meters. The six meter station worked 25 states." — *Ft. Meyers ARC, W4LX/4.* . . . "Maybe we didn't come out on top this year, but perhaps next year we'll have so many transmitters we'll be in a class by ourselves. Then we'll have to come out on top. Unfortunately, we'll also be on the bottom. By the way, somebody brought along a 1500-watt 110-volt *d.c.* generator." — *Fisherman's Net, W3ZIG/3.* . . . "We need some incentive to use 14, 21, and 28 Mc. Contacts come too easily on 3.5 and 7 Mc., and it becomes harder to milk either of these bands each year." — *Candelwood ARA, WIVB/1.* . . . "Our 11th club FD turned out to be one of the best yet. Both operating positions were in an unused chicken house on a 200-acre farm. Careful planning, and checking of the gear beforehand, resulted in 24 hours of continuous operation without failure." — *Keystone ARC, W3PSH/3.* . . . "Talk of problems, we had them all! On June 25 we found out that we could not use the car we had planned to use in category 3C. That put us in class 1A which called for entirely different plans. Saturday afternoon we found that the place where we had reserved a generator was closed. After we located another, we found our antennas did not work very well. When the generator ran out of gas at 1700, we gave up." — *Johnson County Teenage RC, KØPFV.* . . . "A shorted-out generator on FD is private disaster. Murphy's Law again but



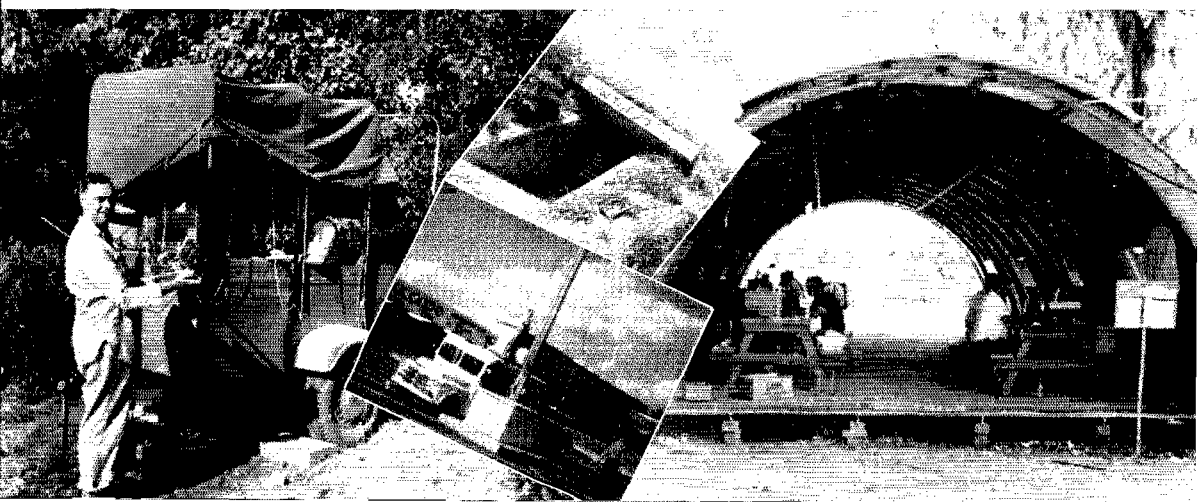
"W2BTR has developed a method which saves considerable time in getting down from tall trees after stringing antennas. As soon as he is allowed visitors, we will send in details of Bill's technique."—Pelham Bay Radio Club, W2BTR/2

we had a ball." — *Crescent Bay Emergency Net, K6LDA/6.* . . . "Our generator delivered more than ample power for our equipment, but the substitution of silicon rectifiers in the receiver and transmitter reduced stand-by drain by 35 watts, and at the same time delivered more output voltage, lowered the cabinet temperature a great extent, and improved reliability." — *Radio Amateurs of Erie County, W2EUP/2* . . . "Chow wagon was the star performer, again; our best score yet, but I know we can do better next year." — *Rio Hondo RC, K6PVN/6.* . . . "We used a full length three-element 20-meter beam this year that covered half the hill on which we were operating. When it swung around there was barely enough room to clear our low-frequency dipoles. In the middle of the night someone stumbled over one of the guy stakes and down came the beam on top of the tents and equipment. Was there ever a FD that something unforeseen didn't happen?" — *Detroit Metropolitan RC, W8RJI/8.* . . . "Nothing special but lots of boo-boo's. Next year watch our smoke." — *Colonie Central High School RC, WA2DNR/2.* . . . "We were all enlightened a little more in operating in portable conditions. If we had a tornado, the hams could do a very good job of carrying out the responsibility of providing communication." — *Kay County ARC, W5EQT/5.* . . . "We borrowed our generator in March and stored it in a room at our school, until FD. A few weeks before the end of school, there was a power failure in the city, and we used the FD generator to supply power for bells and a few lights, thus keeping the school going." — *Baltimore Polytechnical Institute RC, W3CDI/3* (My, I bet you were popular! — *Ed.*). . . . "The Novices had a lot of contacts on 2-meter phone and did a fine job. Technicians did likewise on six, thus leaving the Generals free for other bands." — *Newport County RC, W1SYE/1.* . . . "If ARRL has any weather control experts, let's shoot for a little cooler week end. 90 degrees plus in a cow pasture is mighty rough." — *W2RUJ/2.* . . . "We proved to the gang that we could work all U.S. call areas with eight-watts output." — *Elkhart County AREC Team, W9LMX/9.* . . . "Operated approximately 500 feet from the Gulf of Mexico on Grand Isle, La. Nice time was had by all with good fishing in surf. Mosquitoes were very bad despite nice gulf breeze most of the time. Other insects were scared off by the giant mosquitoes." — *W5USN/5* . . . "Two generators were used as follows: one 3 kw. job for operating rigs, and one 2-kw. job for operating coffee maker and hot-dog bun warmer. Cost of heating hot dog buns and coffee was 35¢ per hour or $8.40 for twenty-four hours. Kinda expensive heat for hot dogs and coffee, huh?" — *Broward ARC, W4JB/4.* . . . "Oh, these chigger bites! Advise all future participants who have their equipment set up on a hill in the weeds to take a bath in 6-12." — *Monmouth ARC, WA2DNI/2.* . . . "Best score yet in five years." — *Reynolds-Rapp, W3EAN/3.* . . . "We used a 'Magic Track Op Saver' which automatically tracks and zero-beats a station that you want to work, as you tune the receiver." — *Walla Walla Valley RAC, W7DP/7.* . . . "Water in the generator carburetor; archer arrows boomeranged in shooting up antennas; snake whipped through the tent routing all hands. All adding up to a heckuva good time." — *Suburban Coloncls, W4CJG/4.* . . . "To reduce QRM, how about a schedule where alternate call areas would be transmitting during specific periods of four hours on each frequency with the frequencies shifting with the call area?" — *New York RC, W2KR/2.* . . . "Our operating time was curtailed because of the intense heat and our open site. But the club members found relief in a local luncheonette where a better score was made on a pin ball machine than our FD score." — *Oxford Circle RC&807 Society of Central High School, K3ALD/3.* . . . "We are hoping that by having a two-element Moseley tribander beam up about 50 feet, improved 40-meter antenna, and by reducing power, we would be able to do a little better than last year. So the only thing we can do is wait for the results." — *Lafayette ARC, W5DDL/5.* . . . "For our use we now have available a 20-kw. generator for all power. Since we use it each FD we have built up cables and keep them on large cable reels which we can easily transport to any site for emergency or FD use." — *Lower Columbia ARA, W7NCW/7.* . . . "We planned for FD for a month, and then arrived at the FD site with all our gear fifteen minutes before the last 24-hour period." — *K4UGR/4.* . . . "The generator blew up before we started, and the v.f.o. on the 10-meter rig blew up shortly therefore. FD was a bang" — *Owen County ARC, W9QAJ/9.* . . . "Our location was on the shores of Puerto Rico at the exact spot where Columbus landed in 1493." — *Ramey ARC, KP4FAC/KP4.* . . . "We claim high score on using motor oil. One generator used five gallons!" — *Lake ARA, W4YKY/4.* . . . "No TVI! Operated from the base of an old drive-in theater. Antennas located on top of 65-foot screen. Gang had to go without donut breakfast; about 2 million ants beat us to them." — *Old Post Amateur Radio Society, W9EOC/9.* . . . "Block Island did not seem to be 'rare DX' as it was last year. We had to



Always a boon to the operating crew is the liquid refreshment platoon. This collection of soft drinks belongs to the Pompton Valley Radio Club, W2OR/2. The operator in the foreground not identified.

Field Day draws people out to oddball locations as evidenced here. The trailer scene on the right of the Bandhopper Radio Club, WØRFU/Ø finds left to right: WØGEP, WØVEP, WØJHH. The Quonset on the right was the site of the Westside Amateur Radio Club, W5ADB/5. Mysterious and intriguing upper insert is the rear entrance to a bunker with a 250 foot drop to the bay in front, FD home of the Mount Erie Radio Club, W7UF/7. Lower insert, a city street scene, shows W4WTI (left) and K5MGO (right) taking down antenna for Mid South Amateur Radio Association, W4EM/4.



work for our contacts. Fog so heavy around 0100 Sunday that we could just barely see the beams, with the aid of a flash light, of course." — *Shoreline VHF Society, W1FVY/1.* . . . "Two hours of downpour Sunday caused static from some poor cords lying on the ground. There was no quest for water." — *Grays Harbor ARC, W7TZ/7.* . . . "Operated on an island, Fisheries Experiment Station, not open to the public." — *Pensacola ARC, K4ALI/4.* . . . "Twenty-nine minutes after arrival at site both stations were on the air. Isn't this what FD is really for? Our small group can do this any day of the year." — *All Band Amateur Radio Klub, W3RSC/3.* . . . "Our FD location was on Pine Mountain elevation 7400 feet and approximately 100 miles northeast of Los Angeles. A cool, windy, dusty time was had by all." — *K6QXZ/6.* . . . "Hastily erected doublet for 75 meters loaded fine on all bands so no other low frequency antennas were put up; far end was in Tennessee with the rig in North Carolina. Many stations worked on 6 meters reported: 'first N.C. QSO'." — *Greeneville ARC, W4ZZ/4.* . . . "We enjoyed eating steaks, sleeping, and operating when we wanted to get on the air." — *Loafers and Steak Eaters Ass'n, W5-PIZ/5.* . . . "The band seemed poor both days, with northern lights and weak signals. Everyone had lots of fun though." — *Spokane RAC, W7NBR/7.* . . . "Had beautiful display of northern lights plus an electrical storm which did not assist in securing an abundance of contacts." — *Shoshone County ARC, W7UAK/7.* . . . "The XYL and OM took their annual amateur radio honeymoon again this year, with the OM at the key and mike, and the XYL handling the log, coffee pot, and ant-chasing duties." — *K6-QIK/6.* . . . "Saturday evening a fisherman got his plug caught in our 414-foot long wire, and Sunday night just as we finished our 24 hours of operetion, a sailboat mast took the antenna down." — *W9DO/9.* . . . "Wow!" — *K5-DRC/5.* . . . "Anyone collect moths? I captured after a vicious battle, a beautiful blue-green one who tried to steal page one of our log." — *W6ANB/6.* . . . "The 40-foot sailboat mast created a much bigger disturbance when we carried it through the center of town on our shoulders than the groundplane did in the contest." — *K2SYS/2.* . . . "Food, soft drinks, ice, gasoline for generators, and transportation were donated by the local citizenry on an individual asking basis. All we had to do was ask and state our objective. We were not denied a single donation. We have tried to keep ham radio a respectable, fun loving, enjoyable hobby, without tramping on the rights of TV viewers and others, and this should serve to illustrate that we are not in anyone's hair. In a real emergency and under pressure we could double the number of stations on the air, not to mention eight or ten mobiles." — *Wayne County ARA, K4CVP/4.* . . . "Deserted house we called home for FD's burned to the ground during the winter. Set up in tents this year and had the best year since organizing the group." — *Hamfesters RC, W9AA/9.* . . . "Darned aurora again. Also wasted a lot of time calling CO stations coming through in 60 over 9 on six meters." — *Elizabethtown Area Radio Society, W3MFW/3.* . . . "The 15- and 10-meter rigs were set up right on the bank of the Mississippi River with beams on both sides." — *Old Natchez ARC, W5KHB/5.* . . . "There ought to be a prize of at least a glass arm for the guy who has to translate the logs and rewrite them for headquarters." — *Crescenta Valley RC, W6HS/6* (Agreed! — *Ed.*). . . . "Compact, light weight, low drain, transmitters and receivers specially built for FD were used on 40- and 80-meter c.w. requiring only about 150 watts of primary power per station. Entire seven transmitter setup was powered by a single 2.5-kw. PE75 gasoline generator with power to spare. Band opening on 6 meters Sunday provided a field day on Field Day." — *Watchung Valley RC, K2DN/2.* . . . "Don't ever put two beams on one rotator unless the two operators are out of shouting (or rumbling — *Ed.*) distance of each other. 'They said it couldn't be done' department: (1) accurately hit the ¼-inch ARRL log sheet line at 0300; (2) forsake aid number 6 and still have no duplicate QSOs; (3) have all equipment work the very first time turned on. Well, our FD proved one thing. They were right." — *Fordham RC, K2SOQ/2.* . . . "Saturday dawned bright and clear and remained that way until approximately 1400 when the rigs started their operation. But about one half hour later a group of clouds floated over and either from irritation from r.f. or other mysterious Field Day gremlins, one of the finest thunder storms of the young season became an unwanted guest at our site." — *RC of Tacoma, W7DK/7.* . . . "Our antennas were put up with the help of a helicopter from the 4th Army." — *San Antonio RC, W5SC/5.* . . . "The 6-meter Long John was carried 20 miles to the site and assembled on top of one of the cars. The kw. low band phone rig never did get on the air, because of a bug that remains yet to be found to this day." — *Rensselaer Institute RC, W2SZ/2.* . . . "We were forced to stop along the way to the FD location to tie down in better fashion 6 twenty-foot 2 by 4's on the roof of the car, as it had begun to behave in somewhat of a teeter-totter fashion. No rope was to be found in the car (owned by VE3QU). However, VE3FT had some in his which caused VE3QU to slam his trunk door in thankful relief — oops the car keys are inside! We had to empty the back of the car, remove the seats, tear out the back cushions, yank out the generator, cooler, food, beer and gosh knows what else through the hole in the back and then we finally reached the keys." — *Blackheath Cold Beer and Hot Bun Propagation Society, VE3FT/3.* . . . "At our FD site on 4000-foot Mary's Peak, the weather was miserable. We were constantly engulfed in clouds, with a never-ending 35

Birds-eye view of FD operating positions shows in the upper insert the Massilon Amateur Radio Club, K8APE/8. Lower insert shows the Radio Amateurs of Greater Syracuse, W2WS/2 in operation; while the center photo finds KN7EVA pausing at K7AYF/7, Shy-Wy-Radio Club.

m.p.h. wind blowing from the south. Rain and near freezing temperatures added to the misery. Irregardless of the elements, the three operators battled the QRM to a new high score for the club. This itself helps alleviate the suffering encountered." — *Salem ARC, W7SAA/7.* . . . "This year's secret weapon was a 40-meter quad." — *Miami Springs RC, K4OSQ/4.* . . . "Short skip conditions were best ever heard on FD and we had to go FD without any 10- or 20-meter gear. Biggest thrill was working two KP4s on 6 meters. QRM on all lower bands terrific and less than 30-watt power requires lots of perseverence." — *West Side RC of Toronto, VE3JJ/3.* . . . "Best FD yet! No breakdowns, excellent food, crack c.w. operators, but need more to maintain around-the-clock operation." — *Waterbury ARC, W1LAS/1.* . . . "Used a 250-foot vertical supported by a helium balloon." — *The Sperry Gang, W6WUB/6.* . . . "Our best FD except for that 75 m.p.h. wind that blew down two of our three 35-foot towers Friday afternoon. Boy, Lake Erie can kick up quite a storm!" — *St. Joseph High School RC, K8BFF/8.* . . . "One new experience for us all was having charcoal broiled steaks at 0300!" — *Dade RC, W4NYU/4.* . . . "Again our all-YL operator FD was a huge success! Our OMs again furnished brawn for setting up camp and stations, antennas, etc., as well as cooking the meals and serving the YLs. They think they had fun, but we know the YL operators did. Making big plans for FD, 1960." — *Gulf Area Young Ladies Amateur Radio Klub, K5SKF/5.* . . . "Low-hanging trees were something of a menace to antenna system when mobile in motion." — *K6EPC/6.* . . . "Too much food and beer to keep the boys 'point hungry.' The secretary simply went beserk deciphering the log sheets." — *Woodbridge RC, K2ODP/2* . . . "'Catfish' beam really paid off on 10 and 15 meters. The use of this beam and s.s.b. on 80 made possible this group's best score yet." — *Harrison Emergency Communications Assn, K5AUC/5.* . . . "The 10-meter homebrew had output of approximately 15 watts. It was thrown together on a piece of wooden board, after having been originally used on hidden transmitter hunts." — *Oak Park ARC, W8MLN/8.* . . . "Perfect!" — *K6PVS/6.* . . . "Operated at Boy Scout Camp with three trucks and large tent. Flag pole held end of two dipoles." — *Michigan City ARC, W9KLL/9.* . . . "Could not start the old 750-watt generator. After having searched for hours, finally found a 3-kw. job. That decided to give us anywhere from 70 to 140 volts depending upon temperament. W2TQY got stuck in the mud while K2KTK got a flat tire. Grand time had by all." — *W2TIO/2.* . . . "Welcomed by the state to use their parks for any such worthwhile work." — *I.M.O. VHF Club, W9QWW/9.* . . . "A 45-foot c.d. trailer and a Volkswagon truck contained our operating, sleeping, and cooking facilities. A 60-foot crank-up tower on wheels supported the 20-meter beam." — *Halifax ARC, VE1FO/1.* . . . "Used high power this year which worked O.K. with little interference. Had some generator-voltage stability trouble however." — *Hampden County ARA, W1NY/1.* . . . "Lucky we had a spare generator, as we had to dismantle the other one completely to remove dirt from the fuel section." — *Massillon ARC, K8APE/8.* . . . "Our home brew c.w. rig broke down twenty minutes before the contest but fortunately we were able to throw in a BW-5100 without much delay." — *KBT RC, W2UDD/2.* . . . "The refreshment committee did a great job, hi." — *Horseshoe RC, W3QZF/3.* . . . "Built a rig from *QST* but had a different layout and cut the power down." — *North Augusta-Belvedere ARC, K4IVI/4.* . . . "Within one hour on 20 c.w. we worked W5FC, W5KC, and W5SC." — *Chaminade High School RC, W2JTZ/2.* . . . "It was like being a DX station in a rare country with 240 contacts in seven hours on 10-meter phone." — *Swani RC Unit 2, K9HOL/9.* . . . "To officially finish off Field Day for this year, we hold our Post Mortem during which we discuss our mistakes and make recommendations for the next year. This we tape record and listen to a few months prior to next June to get things humming again." — *VE2CB/2.* . . . "DX100 kept blowing low voltage filter capacitors, seven all told. Local county fire department gave us a hand in raising a fifty-foot tower with tri-band beam." — *Richmond ARC, W6IFZ/6.* . . . "Found out a YL's voice is a good drawing card on phone!" — *Green Bay Mike and Key Club, K9EAM/9.* . . . "We put up a six-meter beam 40 feet high, all guyed, but forgot to connect the coax, hi." — *W1SEA/1.* . . . "Thought of everything except food and good sleeping bags. We only stopped two hours at noon time to cool off the generator, as we were looking for hot dogs during that time." — *Le club des Jeunes Operateurs, VE2JC/2.* . . . "One receiver gave out with smoke signals, but no damage." — *Winslow Amateur Radio Society, W9QID/9.* . . . "ZL2FT woke us all up at 0157 — can stand more shocks like that." — *Dinosaur Valley RC, K4VMX/4.* . . . "Can't figure it out — for a second year in a row our coax relay broke down." — *Manchester RC, W1KKS/1.* . . . "White Tower people must have thought I was crazy when I came in for coffee at 0200." — *Pinhead Net, W1EUH/1.* . . . "Is there a method of eliminating mosquitoes?" — *Radio Amateur Megacycle Society, K9CJU/9.* . . . "Had a jolly time this year." — *Quad City ARC, W9YCR/9.* . . . "All three stations connected by portable telephone. How about a better FD summary sheet?" — *Mount Shasta ARC, W6BML/6* (Yes, new summary sheet on the agenda for next year — *Ed.*). . . . "All-band vertical failed to function, so had to go back to old reliable wire dipole." — *Door County ARC, W9AIQ/9.* . . . "Even the gnats behaved!" — *Kinston Amateur Radio Society, W4OIX/4.* . . . "This was a great moral victory for our group, showing that our 260 contacts could come close to our club's c.w. group and their 270-odd contacts; thanks to our G4ZU beam." — *Cuyahoga Falls RC — Phone Group, W8VPV/8.* . . . "Found out six and two-meter beams don't work out too well inside a barn." — *Southern Chester County ARC, K3BKG/3.* . . . "We set up in Long Island's famous potato fields from an old abandoned farm house; primitive facilities and near primitive results." — *Frog Hollow RC, K2OFQ/2.* . . . "Our site was on top of a little mountain 900 feet high. Since we had to bring water from over a mile up a mountain trail, we had to ration the stuff. A ham must really love his hobby if he will go through all the hardships of Field Day knowing what will happen beforehand." — *K4KWI/4.* . . . "Winds with gusts up to 60 m.p.h. hampered our FD activity this year. It whipped the feeders in two about three times. Until the wind died down near 0400, it spit *snow, sleet,* and rain, keeping everyone miserably cold." — *Boulder ARC, WØIA/Ø* (In June? — *Ed.*). . . . "Regardless of the fact that visibility was zero from our mountaintop FD site; had two transmitters break down minutes before the contest, forcing us into the one-rig class; and then had a bobcat run off with our choice steaks — most of the operators survived and immediately set forth to formulate plans for a bigger and better FD 1960." — *Royal Order of Left-handed Bug Swatters, Donut Dunkers and Peanutwhistle Propagators, Ltd., K1APR/1.*

You've heard of the college telephone booth manias. Well, how about this. Squeezed in are K2MMT (left) and K2LRR (right) for the Communication Clubs of New Rochelle, K2YCJ/2.

SCORES

CLASS A

Class A stations are clubs and groups in the field. Scores are tabulated according to the number of transmitters operated simultaneously at each station. The figures and letters following each call indicate the number of valid contacts, the power inputs used, the number of participants at each station and the final score. The "power classification" used in computing the score is indicated by the letters A, B or C after the number of QSOs shown. A indicates power up to and including 30 watts (multiplier of 3); B indicates power over 30, up to and including 150 watts (multiplier of 2); C indicates over 150 watts (multiplier of 1).

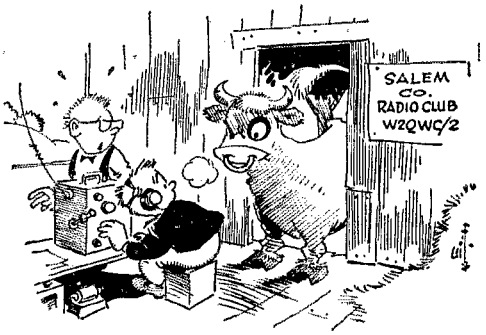
One Transmitter

W8CEA/8	(nonclub group)	568-	A-10-	5337
WØRA/Ø	St. Paul RC	566-	A-12-	5319
KH6RS/KH6	Maui ARC	597-	AB-17-	5202
W5DDL/5	Lafayette ARC	508-	A-10-	4797
W7OTV/7	Tualatin Valley ARC	560-	AB-18-	4437
W6QFK/6	San Gabriel Valley RC	418-	A-26-	3987
WØDEP/Ø	(nonclub group)	372-	A- 3-	3582
KØAXU/Ø	Northwest St. Louis ARC	395-	A-12-	3555
W3MSR/8	(nonclub group)	364-	A- 3-	3501
W7LHM/7	(nonclub group)	567-	B-10-	3402
K8EPV/8	Brass Pounders ARC	352-	A- 8-	3393
W9ONB/9	(nonclub group)	341-	A- 4-	3294
W2EUP/2	RA of Erie County	337-	A- 5-	3258
W8VPC/8	(nonclub group)	329-	A- 7-	3186
KH6AN/KH6	Happy Hawaiians	498-	B-11-	3138
W8NCF/8	Tusco RC	344-	A- 6-	3096
VE3FT/3	Blackheath Cold Beer & Hot Bun Propagation Soc.	295-	A- 4-	2889
W8RTR/8	Canton ARC	281-	A-12-	2781
KH6RU/KH6	Hawaiian Mynahunies	436-	B-10-	2766
K7GHV/7	Beaverton Mike & Key Club	429-	B-12-	2724
K9HOL/9	SWANI RC (Unit #2)	404-	AB-10-	2694
W8BSR/8	Cuyahoga Falls RC	273-	A-10-	2682
W3RVC/3	Allegheny-Kiski AR Assn.	412-	B-15-	2622
W8VPV/8	Cuyahoga Falls RC (Phone group)	258-	A-15-	2547
W4CJG/4	Suburban Coloneis	396-	B- 6-	2526
KH6LM/KH6	(nonclub group)	253-	A- 6-	2502
W7SAA/7	Salem ARC	305-	AB- 3-	2490
VE1JV/1	Pictou County ARC	245-	A-12-	2430
W4COZ/4	Lake Wales ARC	368-	AB-12-	2427
W8INS/8	Muskingum AR Assn.	404-	B-35-	2424
W6DTS/5	(nonclub group)	269-	A- 4-	2421
W9NLJ/9	Sheboygan County Nxrs.	398-	B- 8-	2388
K8APE/8	Massillon ARC	240-	A-10-	2385
W5DGJ/5	Bayshore RC	264-	A-20-	2376
K4LVW/4	Old Dominion ARC	369-	B-10-	2364
K5AUC/5	Harrison Emergency Communications Assn.	356-	AB- 9-	2313
W9KZZ/9	Racine Megacycle Club (Unit #2)	359-	B- 4-	2304
W3YVQ/3	Colonial Park Safari & Propagation Assn.	224-	A- 4-	2277
W6IFZ/6	Richmond ARC	379-	B-17-	2274
W7SO/7	Albany ARC	376-	B-16-	2256
W1FWH/1	Newington AR League	223-	A-12-	2232
W4WQT/4	Clarksville ARC	346-	B-10-	2226
K1APR/1	Royal Order of Left-Handed Bug Swatters, Donut Dunkers & Peanutwhistle Propagators, Ltd.	221-	A- 5-	2223
K6TZH/6	(nonclub group)	217-	A- 3-	2178
W9LIT/9	Tri-State AR Soc.	335-	B-25-	2160
W5DQK/5	(nonclub group)	332-	B- 5-	2142
W2WS/2	RA of Greater Syracuse	314-	AB-15-	2112
K8DVJ/8	Stark County ARC	209-	A- 7-	2106
W2RUJ/2	(nonclub group)	233-	A- 6-	2097
W9NZ/9	SWANI ARC (Unit #1)	205-	A-12-	2070
K4BDT/4	Manatee ARC	316-	B- 9-	2046
W6UW/6	Santa Clara County AR Assn	340-	B- 5-	2040
W4DIJ/4	(nonclub group)	306-	B- 4-	1986
W7SSF/7	Butte ARC	301-	B-11-	1956
W5PIZ/5	Loafers & Steak Eaters Assn.	217-	A- 3-	1953
W2MIG/2	The Southhillmen	191-	A- 9-	1944
W6SF/6	Stockton ARC	324-	B- 6-	1944
W8ODJ/8	Buckeye Shortwave R Assn.	316-	B-12-	1896
W5MMD/5	(nonclub group)	287-	B- 4-	1872
K4RAD/4	(nonclub group)	278-	AB- 5-	1839
W9JMN/9	Oconto County AR Assn.	281-	B- 3-	1836
K8BSV/8	Buckeye Shortwave R Assn (Phone group)	305-	B-17-	1830
WØNWX/Ø	Newton RC	181-	A-10-	1809
KØUDM/Ø	Steel City ARC	272-	B-28-	1782
W7VPJ/7	Richland ARC	296-	B-12-	1776
W4WHF/4	Sarasota AR Assn.	293-	B-12-	1758
K4EOP/4	(nonclub group)	170-	A- 3-	1755
W9NGI/9	Society Radio Ops.	259-	AB-12-	1752
K4VMX/4	Dinosaur Valley RC	185-	A- 8-	1665
W6VJB/6	(nonclub group)	275-	B- 4-	1650
K4KBC/4	Cheraw RA League	274-	B-16-	1644
KØFEI/Ø	Forbes A.F.B. ARC	273-	B-28-	1638
K8BTP/8	Quaker R Assn.	246-	B-19-	1626
W4BOW/4	Lakeland AR Soc.	244-	B-10-	1614
W1ALL/1	Southwick CD	152-	A- -	1593
W7LRA/7	Utah ARC	265-	B-13-	1590
K9ILL/9	Gibson County ARC	240-	B-14-	1590
KH6AQL/KH6	Hilo ARC	156-	A-20-	1584
KØINN/Ø	(nonclub group)	234-	B-10-	1554
W8SYX/8	6 Meter Nomads	171-	A-10-	1539
W9PSD/9	Richmond AR Assn.	171-	A- 8-	1539
W4KX/4	Rappahannock Valley RC	228-	B- 9-	1530
WØZWY/Ø	Sioux Falls ARC	251-	B-24-	1506
W3FT/3	Baltimore ARC	140-	A-15-	1485
K5VLE/5	6 Meter Club of San Antonio	165-	A- 7-	1485
W4EM/4	Mid-South AR Assn.	218-	B-15-	1458
K6EPI/6	Mojave Desert ARC	137-	A- 5-	1458
W2TIO/2	(nonclub group)	160-	A- 7-	1440
K2OVI/2	Adirondark ARC	212-	B- 8-	1422
WØFFN/Ø	(nonclub group)	211-	B- 5-	1416
WØLSX/Ø	(nonclub group)	211-	B- 8-	1416
K7AIA/7	Santiam RC	233-	B-10-	1398
VE2CO/2	Lakeshore FD Group	129-	A- 4-	1386
W4HXS/4	(nonclub group)	201-	B-10-	1356
K5TFT/5	(nonclub group)	221-	B- 5-	1326
VE1WL/1	(nonclub group)	172-	AB- 4-	1308
W7RUX/7	Eta Alpha Mu	144-	A- 4-	1296
K8DXF/8	Mason County ARC	188-	B-12-	1290
K9LXX/9	Thornton RC	213-	B- 6-	1278
W2PET/2	(nonclub group)	212-	B- 3-	1272
W7TRU/7	Harlo RC	181-	B-10-	1272
W3CDI/3	Baltimore Polytechnic Institute RC	185-	B- 6-	1260
W3NUF/3	(nonclub group)	210-	B- 3-	1260
VE1DN/1	Dartmouth, N. S. ARC	182-	B- 7-	1248
W9FLN/9	St. Louis University ARC	140-	AB-15-	1245
K8DEO/8	Springfield ARC	171-	AB-15-	1230
KØMMA/Ø	Sugar Creek RC	204-	B- 7-	1224
W4HXS/4	Richmond County ARC	202-	B-10-	1212
W5VFM/5	Sabine Valley ARC	201-	B- 7-	1206
W3GAG/3	Philadelphia Wireless Assn.	145-	AB- 6-	1197
W5CYN/5	Hot Springs ARC	196-	B-15-	1176
W5USN/5	(nonclub group)	358-	C- 8-	1149
K8BLS/8	Butler County VHF Club	166-	B- 8-	1146
W1MBR/1	(nonclub group)	190-	B- 3-	1140
KØEMR/Ø	Wapsie RC	183-	B-14-	1098
K9BSH/9	Bay View RC	158-	B- 4-	1098
VE2CQ/2	RC of Quebec	86-	A-12-	1089
W8MLN/8	Oak Park ARC	163-	AB-14-	1071
W9RNC/9	(nonclub group)	118-	A- 5-	1062
W3YZD/3	Mt. Lebanon CD AR Assn.	175-	B- 6-	1050
KH6CWQ/KH6	Teen-Age RA Soc. of Hawaii	148-	B- 9-	1038
K6QXZ/6	(nonclub group)	89-	A- 4-	1026
WØQHT/Ø	(nonclub group)	168-	B- 5-	1008
K7AYF/7	Shy Wy RC	153-	AB-18-	984
VE7AFV/7	(nonclub group)	135-	B- 4-	960
W3CYU/3	Warren County Emergency R Assn.	159-	B- 6-	954
W9LVC/9	(nonclub group)	153-	AB- 7-	951
W4EIE/4	Anderson City ARC	156-	B- 4-	936
W2ZJ/2	Elmira AR Assn.	155-	B-20-	930
W5QWM/5	Moore County ARC	153-	B- 4-	918
KØDKA/Ø	(nonclub group)	102-	A- 6-	918
KØDPT/Ø	Hamilton County RC	151-	AB- 6-	918
W1CB/1	Burlington AR Assn.	152-	B- 7-	912
K2OIX/2	(nonclub group)	152-	B- 3-	912
VE2APX/2	Club Radio St. Jean	126-	B-10-	906
K4IKF/4	Three Half-Baked Virginia Hams	100-	A- 3-	900
K9CAH/9	(nonclub group)	141-	B- 8-	846
W9KKK/9	Oshkosh ARC	138-	AB- 6-	843
KØHFX/Ø	Clarinda Hams	140-	B-12-	840
K9MMH/9	(nonclub group)	80-	A- 4-	810
KØWBD/Ø	Roubidoux RC	109-	B- 6-	804
W8WMQ/8	Greater New Vienna AR Assn.	132-	B- 5-	792
W9LMX/9	Elkhart County AREC Team	88-	A- 4-	792
KØOAM/Ø	(nonclub group)	131-	B- 3-	786
KØHJ/Ø	(nonclub group)	126-	B- 4-	756
KØURC/Ø	(nonclub group)	125-	B-10-	750
W8UTN/8	Wayne State Univ. RC	122-	B- 3-	732
WØFGV/Ø	East Central Minn. ARC	91-	B- 8-	726
K5NBD/5	CSNR Div. 8-35 Ruston	117-	B- 3-	702
K6UTO/6	San Diego YLRC	117-	B- 6-	702
K1JMQ/1	Lexington High School RC	91-	B- 4-	696
W9CRD/9	Electron Club	116-	B-10-	696
W3KYR/3	Boys' Club of St. Marys AR Soc.	75-	A- 3-	675
W3PIE/3	Uniontown ARC	110-	B- 3-	660
KØJFO/Ø	(nonclub group)	104-	B- 4-	624
KN9POE/9	Four Lakes ARC (Novice)	69-	A- -	621
W2MPM/2	(nonclub group)	103-	B- 4-	618
W3FIT/2	(nonclub group)	102-	B- 3-	612
KØHVD/Ø	(nonclub group)	101-	B- 6-	606
KØHEB/Ø	Missouri Valley ARC	99-	B- 8-	594
KØNRM/Ø	Kaw-Blue RC	79-	B-15-	564
W9HAH/9	(nonclub group)	90-	B- 3-	540
W3ZIC/3	Ft. Venango Mike & Key Club	89-	B-11-	534
W3JEH/3	(nonclub group)	59-	A- 3-	531
W9QFQ/9	(nonclub group)	59-	A- 3-	531
WØWLZ/Ø	University RC	86-	B- 3-	516
KØKCY/Ø	Albert Lea Area Spider Web AR Assn. Holiandale Division	85-	B- 5-	510
W8MRM/8	Motor City RC	84-	B- 3-	504
K9HDH/9	Elkhart ARC	55-	A-16-	495
KØPFV/Ø	Johnson County Teenage RC	28-	A- 4-	477
WØLJX/Ø	Albert Lea Area Spider Web AR Assn. Albert Lea Division	79-	B- 3-	474

K4UGR/4	(nonclub group)	152-	A-	3-	456
VE7NA/7	Nanaimo AR Assn	75-	B-	5-	450
KN8PAL/8	Buckeye Shortwave R Assn (c. w. group)	74-	B-	6-	444
W9QAN/9	DuPage 6 Meter Emergency Net	49-	A-	7-	441
K8EJL/8	(nonclub group)	69-	AB-	3-	426
WØMCX/Ø	O.B.P. #1 of St. Louis	69-	B-	7-	414
WØZSJ/Ø	Mitchell RAC	137-	C-	8-	411
KØAZV/Ø	Kirkwood High School ARC	59-	B-	3-	354
KØOCC/Ø	Ottumwa ARC	57-	B-	4-	342
KØMDX/Ø	(nonclub group)	56-	B-	4-	336
VE2AWD/2	(nonclub group)	36-	A-	6-	324
K4ANB/4	(nonclub group)	53-	B-	4-	318
W9JCL/9	Neenah-Menasha ARC	51-	B-16-		306
VE1DB/1	(nonclub group)	114-	AB-	3-	279
K2EKM/3	(nonclub group)	32-	AB-	4-	265
VE3CKV/3	Algoma ARC	42-	B-	8-	252
WØCYE/Ø	Minnetonka RC	81-	C-	8-	243
W8NUL/8	Chain of Lakes ARC	75-	C-	9-	225
W9QAJ/9	Owen County ARC	24-	A-	9-	216
W9NSG/9	(nonclub group)	106-	B-	3-	212
KØKEE/Ø	(nonclub group)	20-	A-	3-	180
KN8LVW/8	(nonclub group)	24-	AB-10-		165
WA2DNR/2	Colonie Central High School RC	22-	B-	4-	132
K7FEC/7	Big Stack RC	22-	B-	5-	132
K2SKO/2	(nonclub group)	128-	C-	3-	130
W8HE8/8	(nonclub group)	11-	B-	4-	66
K9DXB/9	Sullivan County RAC	33-	BC-	4-	41
K3DSQ/3	(nonclub group)	2-	B-	3-	12

Two Transmitters Operated Simultaneously

K6QEH/6	Hughes ARC	1182-	A-10-10,863	
W3JNQ/3	Frankford RC	1107-	A-10-10,188	
K6GLC/6	San Bernardino Valley Contest Assn	976-	A- 8-	8964
W3EIS/3	Potomac Valley RC	929-	A- 9-	8586
W3MFW/3	Elizabethtown Area R Soc	915-	A-20-	8460
W2SSC/2	Niagara Frontier DX Assn	1005-	AB- 9-	7938
W1EIA/1	Connecticut Wireless Assn	816-	AB-13-	7398
W3ATR/3	Beacon RA	733-	A-12-	6822
W2ODP/2	Irvington RAC	736-	A-32-	6624
K8IDH/8	Northern Ohio Teenage DX Club	875-	AB- 4-	6447
W1VB/1	Candlewood AR Assn	651-	A-55-	6084
K2KGB/2	Night Owl Net	676-	A-15-	6084
W4ZV/4	Richmond ARC	741-	AB- -	5835
K4OSQ/4	Miami Springs RC	572-	A-22-	5373
K2FC/2	Order of Boiled Owls	856-	B-12-	5286
W3WJD/3	Delco RC	876-	B- 4-	5256
W9RFU/9	Dandihopper RC	656-	AB- 9-	5061
K2VTL/2	Woodhaven RC	555-	A- 6-	4995
W4NVU/4	Dade RC	525-	A-25-	978
K6LDA/6	Crescent Bay Emergency Net	520-	A-14-	4905
K4UYT/4	Hampton Roads RC	773-	B-20-	4788
W3ATV/3	(nonclub group)	520-	A- 9-	4680
KP4FAC/KP4	Ramey ARC	596-	AB- 7-	4668
W5ZDN/5	Central Texas ARC	626-	AB-16-	4644
W4ZAE/4	Tallahassee ARC	487-	A-25-	4608
W9HRM/9	Milwaukee RAC	678-	B-19-	4218
W2IQ/2	RCA, Moorestown ARC	435-	A- 8-	4158
W4CB/4	Danville ARC	516-	AB-15-	3981
W1OP/1	Providence R Assn	404-	A-15-	3861
W3PSH/3	Keystone ARC	398-	A- 5-	3807
K6TVQ/6	(nonclub group)	419-	A-10-	3771
K4YUX/4	Shaw ARC	620-	B- 8-	3720
K4ROF/4	Barnwell Mike & Key Club	413-	A-17-	3717
K4LPR/4	Tidewater Mobile RC	594-	B-25-	3714
K9REG/9	Tippecanoe AR Assn	570-	AB-31	3705
VE2CB/2	(nonclub group)	376-	AB-10-	3618
W4MN/4	Palmetto ARC	559-	AB-12-	3537
W2UDD/2	KBT RC	561-	B-10-	3516
K4FEF/4	Mac Dill ARC	584-	B- 6-	3504
W8RYI/8	Kalamazoo ARC	367-	A-30-	3465
W7IMA/7	Scottsdale ARC	468-	AB-12-	3426
W3VPR/3	Anne Arundel RC	545-	B-21-	3420
K4ZJT/4	Roane County RAC	465-	AB-20-	3180
W2ODV/2	Bayonne ARC	503-	B- 8-	3168
K2KIB/2	Camptown ARC	396-	AB- 6-	3108
W6ASH/6	Northern California MARS Group	317-	A- 5-	3078
K3DVS/3	Short Skip RC	506-	B-14-	3036
W3CWC/3	Antietam R Assn	350-	AB-17-	3015
W8GMP/8	Mumford High School ARC	400-	AB-16-	2982
W9YCR/9	Quad City ARC	496-	AB-15-	2979
K3DTT/3	Kimi Wireless Assn	329-	AB- 8-	2904
WØLGG/Ø	Central Iowa ARC	294-	A- 8-	2871
W3EQA/3	Philadelphia Electric Co. Employees Assn RC	473-	B-12-	2838
W5MRK/5	Bartlesville ARC	360-	AB-30-	2832
VE3RM/3	(nonclub group)	441-	B- 3-	2796
W9FAU/9	(nonclub group)	309-	A- 4-	2781
W5UAO/5	Pittsburg County ARC	436-	B-14-	2766
KØOYM/Ø	Mid-Mo. ARC	436-	B-16-	2766
K4AA/4	Hialeah ARC	382-	AB-12-	2754
K6JAV/6	Tassajara Teenage ARC	304-	A- 4-	2736
W8LT/8	ARC of Ohio State Univ.	421-	AB-14-	2679
W1HNX/1	Willimantic RC	422-	AB-22-	2610
KP4ARL/KP4	(nonclub group)	434-	B- 3-	2604
W8COE/8	Kanawha RC	602-	ABC-30-	2596
W6HDO/6	The Raytheon Gang	393-	AB- 8-	2592
W4OIX/4	Kinston AR Soc	405-	B-12-	2580
W4PXM/4	Opelika ARC	428-	B- 8-	568
W3PAN/3	Reynolds-Rapp	386-	AB- 6-	2553
W1URM/1	(nonclub group)	408-	AB- 4-	2544
W8ING/8	Ford AR League	423-	B-24-	2542
W2TPV/2	Greene ARC	252-	A-12-	2493



"The entire FD operation was observed by a year-and-a-half-old Holstein bull. We tried to keep him in a small enclosure but he kept breaking out. After several uneventful visits to the shack, the fellows lost the jitters and fists improved."—*Salem Co. Radio Club, W2QWC/2*

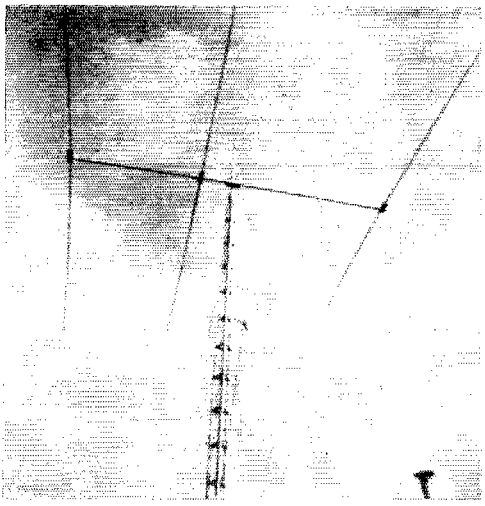
K4CK/4	Winter Haven AR Assn	384-	B-18-		2466
WØLA/Ø	Boulder ARC	369-	AB-14-		2466
W5VM/5	Univ. of Arkansas ARC	385-	B- 4-		2460
W4HCB/4	(nonclub group)	408-	B- 4-		2448
W2QWC/2	Salem County RC	271-	A-10-		2439
W8AM/8	Coffee Dunkers of Detroit	381-	B-11-		2436
W3RIP/3	The DX Club	784-	BC-13-		2415
W5TGP/5	(nonclub group)	379-	B- 9-		2394
K2KFJ/2	Peafniks ARC	238-	A- 6-		2367
W4NC/4	AR Transmitting Soc	394-	B-21-		2364
W9QQQ/9	Sparta RC	262-	A- 4-		2358
VE2EE/2	Canadair ARC	266-	AB- 8-		2337
K5DYW/5	(nonclub group)	382-	B- 6-		2292
K4IVI/4	North Augusta-Belvedere ARC	254-	A-15-		2286
W8RLB/8	Dayton AR Assn	326-	AB- 7-		2241
W5FQ/5	Meridian ARC	473-	BC-15-		2232
K4PFN/4	Daytona Beach AR Assn	371-	B-24-		2226
W4KFK/4	Peninsula ARC	342-	B-10-		2202
W1BFE/1	Sturbridge Brass Pounders	365-	B- 4-		2190
W4YE/4	(nonclub group)	342-	AB- 4-		2190
K5CFA/5	(nonclub group)	364-	B- 4-		2184
K4JIY/4	Aiken ARC	300-	AB-11-		2178
W6WUB/6	The Sperry Gang	240-	AB- 8-		2178
W9CDU/9	Racine Megacycle Club	363-	B-25-		2178
W4LLO/4	Key West ARC	214-	A-19-		2151
W4AB/4	Proward ARC	302-	AB-12-		2145
W9VQC/9	Kankakee Area R Soc	329-	B-15-		2136
W6UJ/6	(nonclub group)	355-	B- 3-		2130
K9AVG/9	(nonclub group)	314-	AB- 6-		2115
W4DXI/4	(nonclub group)	327-	B- 3-		2112
W3DTZ/3	North Pittsburg Brass Pounders & Gum Beaters	266-	AB- 4-		2109
K9CDI/9	Albany Park ARC	326-	B- 8-		2106
K8EIJ/8	Wayne County ARC	290-	AB- 6-		2068
K2ODP/2	Woodbridge RC	284-	AB-12-		2055
W3RSC/3	All Band Amateur Radio Klub	311-	AB- 6-		2043
K3BFT/3	Windsor ARC	339-	B-12-		2034
VE3GX/3	Ottawa Valley Mobile RC	201-	A-10-		2034
W8OAJ/3	Mercer County R Assn	225-	A-25-		2025
W9UBA/9	MARS-Fifth US Army Signal Section	311-	B- 4-		2016
W8QQO/8	Blossomland AR Assn	275-	AB-10-		2004
W7VE/7	AR Assn. of Bremerton	328-	B- 5-		1968
W9CIZ/9	Waupaca ARC	296-	B-11-		1926
W8LTZ/8	Gratiot County AR Assn	321-	B-15-		1926
W2WQU/2	Walton Ham Group	213-	A- 7-		1917
W2SV/2	Sunrise RC	293-	B-10-		1908
K5JZZ/5	(nonclub group)	318-	B- 4-		1908
W7TD/7	Apple City RC	293-	B-12-		1908
W4HHO/4	Charleston ARC	258-	AB-12-		1905
VE3HCD/3	Sarnia ARC	285-	B-15-		1860
W5QEG/5	ARC of Southwest Louisiana	282-	B- 6-		1854
W9OKH/9	AR Ragchewers of Whitewater	281-	B-12-		1836
W8ATH/8	(nonclub group)	233-	AB- 3-		1818
W4TJ/4	West Palm Beach RC	209-	B-16-		1794
WØTJA/Ø	Rochester ARC	268-	B-20-		1758
VE3DZ/3	St. Clair Valley ARC	292-	B-21-		1752
W3GH/3	Wyoming Valley ARC	194-	A- 6-		1746
VE1IM/1	Annapolis Valley RC	263-	B-10-		1728
K6FDG/6	Suisun Slough RAC	287-	B- 9-		1722
VE2JC/2	Le Club des Jeunes Operateurs	213-	AB-12-		1716
K8ADD/8	Hillsdale ARC	205-	AB- 8-		1710
W4PAY/4	ARC of Falls Church	233-	AB-12-		1701
K5FGK/5	Laughlin AFB ARC	281-	B- 6-		1686
K5FHU/5	(nonclub group)	280-	B- 5-		1680
K9JAP/9	(nonclub group)	280-	B-10-		1680
W8TOT/6	The Sperry Gang, I	158-	A- 5-		1647
W9AIQ/9	Door County ARC	274-	B-10-		1644
W8DOG/8	Forest City ARC	246-	B-16-		1626

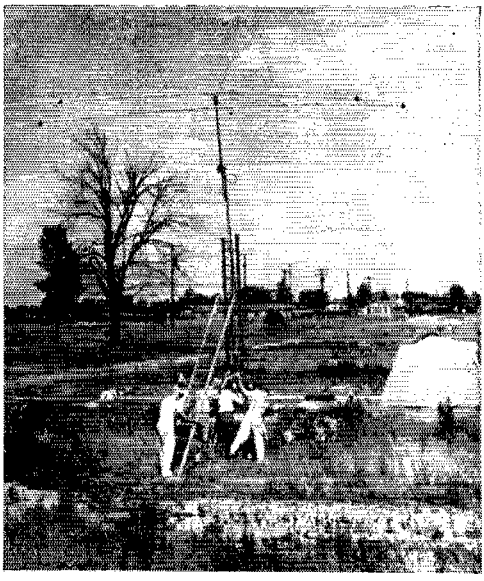
K8DZX/8	Auglaize County AR Assn.	243-	B- 6-	1620
K2DIE/2	Cowanesque Canisteo AR Assn.	167-	AB- 6-	1566
W1MWB/1	(nonclub group)	237-	AB- 8-	1542
W3CL/3	Mt. Airy VHF RC	170-	A-10-	1530
K3CSG/3	Abington ARC	255-	B-15-	1530
K5FFJ/5	Greenville AFB MARS Club	435-	AB- 9-	1530
W8ZHO/8	Muskegon Area AR Council	483-	C-20-	1524
VO2HA/VO2	Goose Bay ARC	162-	AB-10-	1509
W1ZLH/1	Middlebury Mike & Key Club	224-	B-10-	1494
W3ERW/3	Etna RC	166-	A-10-	1494
W3GR/3	*Friendship ARC*	246-	B-15-	1476
W1YK/1	Worcester Polytechnic Institute RC	214-	AB- 7-	1473
W4TM/4	Jackson RC	205-	AB-15-	1464
WA6BAI/6	Tulare County ARC	219-	B-10-	1464
W1VKZ/1	(nonclub group)	231-	AB- 3-	1446
K5LRU/5	Muskogee ARC	480-	C-12-	1440
W6RHM/6	(nonclub group)	216-	AB- 4-	1404
K8BFF/8	St. Joseph High School RC	154-	A-11-	1386
VE3UY/3	(nonclub group)	228-	B- 5-	1368
K8NMD/8	RA Activities League	226-	B- 9-	1356
W9CKF/9	Minneapolis RC	215-	AB- 8-	1329
KH6MOP/KH6	Leeward Oahu ARC	195-	A- 6-	1320
W1WQM/1	Port City ARC	211-	AB-12-	1314
W8YN/8	*Calhoun Area RC*	271-	BC-38-	1314
W7LAB/7	Ogden ARC	216-	B-18-	1296
W8IAD/8	(nonclub group)	218-	B- 6-	1278
W1FJI/1	Whaling City Hi-Bandcers	141-	B- 6-	1269
W9ADO/9	(nonclub group)	176-	AB-11-	1266
W1TKA/2	Stamford ARC	175-	AB-10-	1230
K3HKI/3	St. Mary's AR Assn.	172-	AB- 6-	1226
K3ERL/3	Mobile Sixers RC	200-	B-15-	1200
WØWAB/Ø	RF ARC	311-	BC-23-	1194
K7CHR/7	(nonclub group)	197-	B- 6-	1182
K8MIT/8	Niles ARC	192-	AB-14-	1182
VE7SE/7	Club 13	172-	B- 8-	1182
W9CMO/9	(nonclub group)	129-	A- 4-	1161
VE7ASM/7	Fraser Valley ARC	129-	A- 7-	1161
K4YYL/4	(nonclub group)	192-	B- 3-	1152
W4SIZ/4	Clearwater AR Soc.	164-	B-15-	1134
K6PDX/6	Encanto Mike & Key Club	135-	AB- 5-	1104
K8JHG/8	Ottawa ARC	180-	B- 7-	1080
WØQDN/Ø	Huron ARC & Redfield ARC	154-	B-20-	1074
W9AWE/9	Western Illinois RC	178-	B-10-	1068
W8GQN/8	Straits Area RC	174-	B-14-	1044
K5PPZ/5	Alamo Heights High School ARC	170-	B-12-	1020
K1GBJ/1	(nonclub group)	145-	AB- 3-	999
K1ATS/1	Central Connecticut ARC	144-	AB- 7-	990
VE6QE/6	Central Alberta R League	138-	B-10-	990
WØIII/Ø	Story County AR Emergency Corps	137-	B-35-	972
KØSOQ/Ø	Hastings ARC	136-	B-10-	966
W7DUN/7	Morrow County AREC	116-	AB- 7-	957
K2REY/2	Jersey City RC	139-	AB- 6-	951
W4LDEJ/4	Raleigh Teenage ARC	158-	B- 7-	948
K7CCH/7	Coos County RC	133-	B- 9-	948
W9BZW/9	(nonclub group)	150-	AB- 4-	945
W4FIG/4	(nonclub group)	153-	AB- 4-	936
W9HQJ/9	Point RA, Ltd.	156-	B-10-	936
VE3MRC/3	Metro ARC	79-	A- 9-	936
W4ABZ/4	Ringgold High School ARC	151-	B- 8-	906
K4VES/4	(nonclub group)	145-	AB- 7-	900
VE5AA/5	Saskatoon ARC	100-	AB-20-	873
K8DAC/8	Saginaw Valley AR Assn.	143-	B-25-	858
W2SSK/2	Westfield AR Soc.	95-	A- 7-	855
W7YXG/7	Great Falls RC	140-	B- 6-	852
W1ECV/1	Southington AR Assn.	185-	ABC-10-	846
W9BOM/9	(nonclub group)	141-	B- 8-	846
W4ILR/4	Virginia Highlands ARC	137-	B-10-	822
K2DUR/2	Fulton ARC	129-	AB- 7-	786
W2LOJ/2	Bayside ARC	106-	B- 6-	786
K4YHB/4	Naples ARC	130-	B- 8-	780
W7BCZ/7	Lower Yakima Valley RA	114-	B- 7-	774
W3FZC/3	M.I.C. ARC	107-	AB- 8-	740
W5UK/5	*New Orleans ARC*	98-	B-17-	738
W8SHA/8	(nonclub group)	123-	B- 3-	738
W1FVY/1	Shoreline VHF Soc.	80-	A- 7-	720
W2KQW/2	Schoharie County ARC	104-	AB- 8-	720
K9EAM/9	Green Bay Mike & Key Club	120-	B-12-	720
K9GKI/9	*(nonclub group)*	120-	B- 4-	720
WØBGG/Ø	Pioneer RC	116-	B-20-	696
K4VMF/4	Pioneer ARC	110-	B-10-	660
VE3AMG/3	Stratford ARC	109-	B- 6-	654
WØTDH/Ø	(nonclub group)	107-	B- 5-	642
VE3YJ/3	London ARC	84-	AB-15-	642
W4CWS/4	Dalton Teenage ARC	81-	B- 8-	636
W8CLA/8	Louisville ARC	97-	AB- -	625
W1PRT/1	Bloomfield AREC	68-	A- 4-	612
W0CVJ/Ø	Tube & Shutter Club	74-	AB- 8-	603
W3UDX/3	Butler County AR Assn.	100-	B- 4-	600
VE3ERH/3	Mt. Ida RC	93-	B- 4-	558
KØJOQ/Ø	Crete ARC	29-	A- 4-	486
W7TYG/7	Payette Valley ARC	79-	AB- 4-	477
K9NBK/9	Naval Avionics ARC	72-	AB- 5-	477
W2BTR/2	*Pelham Bay RC*	75-	B- 3-	450
K3DPD/3	Somerset County ARC	224-	B- 3-	448
W3MOZ/3	Shamokin Area ARC	69-	AB- 8-	444
W8DVA/8	Geneva AR Assn.	56-	AB- 6-	438
K6PVS/6	(nonclub group)	218-	B- 3-	436
K9OBO/9	Mississippi Valley RC	71-	B- 4-	426
VE5NN/5	Regina AR Assn.	46-	B- 6-	426
K8MAP/8	Gallia County ARC	114-	BC- 4-	408
K9DFK/9	North Central Indiana ARC	199-	B-20-	398
VE4JW/4	Beasejour RC	39-	B- 4-	396
W8VVX/8	(nonclub group)	58-	B- 3-	348
W9QAL/9	Montgomery ARC	52-	AB-10-	318
W2UXC/2	Champlain Valley ARC	30-	AB- 3-	255
KL7DCA/KL7	Bering ARC	16-	B- 8-	246
KØKYD/Ø	(nonclub group)	116-	AB- 3-	244
K9IZT/9	Sheboygan County ARC	39-	B-10-	234
W8KEG/8	Tri-State AR Assn.	33-	B- 4-	198
W7UAK/7	Shoshone County ARC	32-	B-12-	192
KN8PIE/8	(nonclub group)	19-	AB- 8-	141
K8LCH/8	Columbus Grove Key Clickers	47-	AB- 7-	97

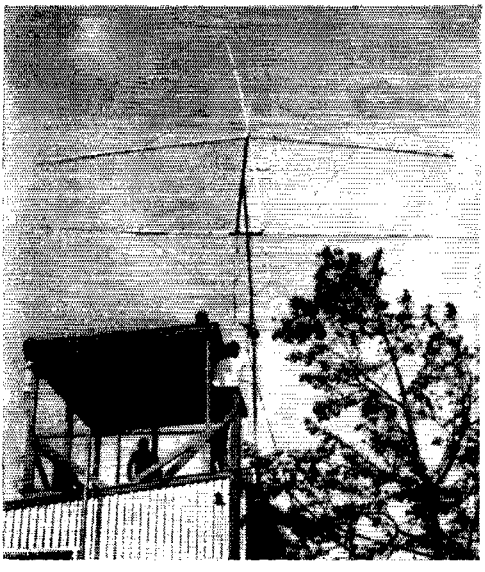
Three Transmitters Operated Simultaneously

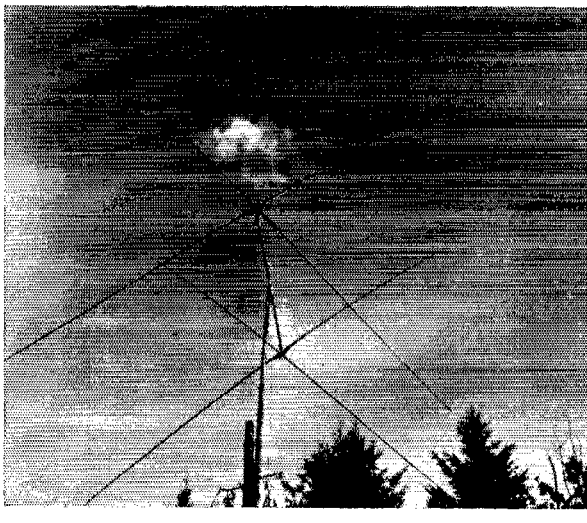
W4FU/8	Ohio Valley AR Assn.	1319-	A-25-12,096	
W3TYU/3	William Penn RC	1273-	A-12-11,457	
W8AF/8	West Park Radiops	1371-	AB-40-	9093
W5KHB/5	Old Natchez ARC	1107-	AB-20-	8652
K2BC/2	Wind Blowers VHF Soc.	900-	A-20-	8100
W4PLB/4	Orlando ARC	978-	AB-25-	7731
W5MPZ/5	Sandia Base RC	990-	AB-31-	7674
W6PD/6	Foothill Mobile Net	788-	A- 9-	7317
W2UBW/2	Mid-Island RC	777-	A-14-	7272
W9AA/9	Hamfesters RC	1085-	AB-11-	7205
W4GNF/4	Greensboro RC	1186-	B-50-	7116
W9AB/9	Michiana ARC	731-	A-30-	6804
W6MHM/6	*Bell Gardens AR Assn.*	694-	A-20-	6471
W2MO/2	Livingston ARC	808-	AB-20-	6369
W5PDO/5	Los Alamos ARC	916-	AB-18-	6369
W4DU/4	Jacksonville AR Soc.	655-	A-13-	6120
W3OK/2	Delaware-Lehigh ARC	666-	A-30-	5994
W6HC/6	Santa Clara County AR Assn.	766-	AB-17-	5949
K5USA/5	Lawton-Fort Sill ARC	778-	AB- 9-	5748
K6DQE/6	Aerojet RAC	705-	AB-17-	5634
KZ5AF/KZ5	Albrook Air Force Base MARS Club	579-	A-15-	5445
K4ALI/4	Pensacola ARC	869-	AB-30-	5370
W7NTO/7	Lewis County ARC	566-	A-21-	5319
K2GKM/2	Lockport AR Assn.	606-	AB-17-	5301
W2GLO/2	Levittown ARC	840-	AB-26-	5286
W4AKC/4	Rock Hill ARC	555-	A- 4-	5220
W6IJK/6	Sacramento Aerojet RAC	600-	AB-20-	5082
W4YKY/4	Lake AR Assn.	768-	AB-25-	4980
W6KA/6	Pasadena RC	519-	A-15-	4896
W6JBT/6	Citrus Belt ARC	536-	A-25-	4824
W5GU/5	Oklahoma City ARC	736-	AB-20-	4716
W5PAA/5	Aeronautical Center ARC	522-	A-40-	4698
W4ABK/4	Kentucky-Ana RC	754-	B-37-	4674
W5KC/5	Baton Rouge RAC	749-	AB-20-	4659
W6AEX/6	Soc. of AR Operators	638-	AB-20-	4620
K6FAV/6	McClellan AR Soc.	737-	B-49-	4572
K4YIN/4	*Explorer AR Soc.*	761-	B-12-	4566
VE7ARV/7	Vancouver ARC	471-	A-19-	4482
K5SKF/5	Gulf Area YL R Klub	718-	B- 9-	4470
W1LAS/1	Waterbury ARC	469-	A-30-	4446
W5OX/5	Suburban West ARC	631-	AB-17-	4284
W6NWG/6	Palomar RC	712-	B-15-	4272
W1DDD/1	Blackstone Valley ARC	608-	AB-26-	4239
K4JVA/4	South Miami RC	466-	A-20-	4194
W0ERG/Ø	Sioux City ARC	569-	AB-15-	4188
W9QWW/9	I.M.D. VHF Club	670-	B-23-	4170
W2GLQ/2	Nutley AR Soc.	457-	A-14-	4113
W5CT/5	Austin ARC	685-	B-13-	4110
W4ACQ/4	ARC of Selma & Craig AFB ARC	597-	AB-15-	4077
W4LG/4	Post 599 B.S.A.	804-	BC- 7-	4071
W7IO/7	Arizona ARC	650-	B-14-	4062
W4TRC/4	Kingsport ARC	632-	B-20-	3948
W2SSL/2	Utica ARC	438-	A-18-	3942
WØEQU/Ø	AK-SAR-BEN RC	438-	A-14-	3942
VE2BY/2	Club 807 of Hull	437-	AB-10-	3837
KZ5PA/KZ5	Crossroads ARC	595-	B-12-	3732
W9CAF/9	Chicago ARC	413-	A-23-	3717
W5OFE/5	Jackson ARC	588-	B-10-	3678
W6ELI/6	Crockett Toll AR Assn.	551-	AB- 5-	3582
K5AEX/5	(nonclub group)	521-	AB-10-	3567
K5RUA/5	Two Meter MARS Club	566-	B-14-	3546
K6BTR/6	Mountain View ARC	525-	AB- 9-	3504
KØKJQ/Ø	Kansas City ARC	583-	B-12-	3498
W5US/5	Wichita Falls ARC	581-	B-15-	3486
W9YQV/9	(nonclub group)	555-	B-10-	3480
K2PQL/2	Bethpage ARC	455-	AB-13-	3438
VE7EZ/7	*Victoria Shortwave Club*	547-	B-35-	3432
K6UGZ/6	(nonclub group)	379-	A- 4-	3411
K2BR/2	Southern Counties AR Assn.	537-	B-18-	3372
K9QDE/9	Kokomo ARC	558-	B-12-	3360
W4BKM/4	*Macon ARC*	559-	B- 8-	3354
W2QYV/2	Niagara RC	529-	B-30-	3324
K6OUK/6	El Segundo CD Radio Group	477-	AB-12-	3294
W8AW/8	Edison RA Assn.	522-	B-11-	3282
K6CT/6	Convair-Pomona Ham Club	359-	A-12-	3231
VE7APL/7	North & West Vancouver ARC	417-	AB-12-	3165
W7ACX/7	Skagit ARC	527-	B- 5-	3162
VE2BN/2	(nonclub group)	340-	A- 3-	3150
W4CVY/4	Columbus ARC	493-	B-35-	3108
KØLDN/Ø	Iowa-Illinois ARC	488-	B-13-	3078
K5AIR/5	Barksdale ARC	486-	B-11-	3066
WØEBE/Ø	Southwest Missouri ARC	313-	A-10-	3042
W2GBY/2	(nonclub group)	333-	A- 6-	2997
W7YN/7	Nevada AR Assn.	375-	AB-15-	3033
W2BVL/2	Nassau RC	469-	AB- 7-	2988
K4OJV/4	Alamance RC	497-	B- -	2982
K2UDI/2	Putnam County AR Assn.	443-	AB-10-	2871

(Continued on page 68)









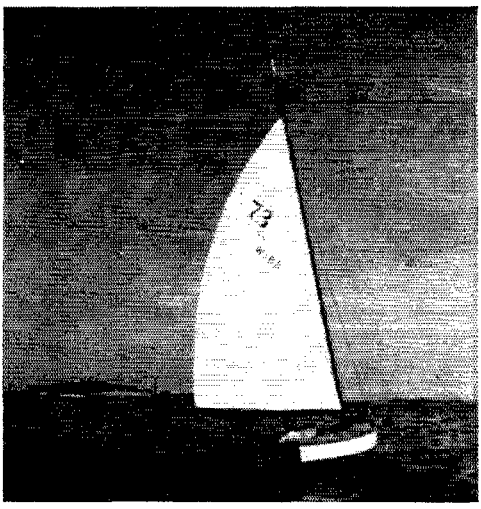
Beams, quads, and towers—a highlight of the 1959 Field Day. Trying to get maximum signal from low power rigs, there was a big switch to big antennas this year. And it isn't usually easy to get these big babies up for portable operation. Left column, top to bottom: W9DO/9; W3UHP/3. Right, top to bottom: Mumford High School Amateur Radio Club, W8GMP/8; Camptown Amateur Radio Club, K2KIB/2; Valley Amateur Radio Club, W7HZ/7.

W8YDJ/8	Kent RC	507-	ABC-15-	2802	
K9CQA/9	Hoosier Hills Ham Club	554-	BC-18-	2694	
K5FHL/5	Curry County ARC & Cannon AFB MARS Members	422-	B- 8-	2682	
W2MAC/2	Syracuse VHF Club	410-	AB- 7-	2679	
W2MBC/2	Delaware Township High School RC	261-	A- 9-	2574	
W1WHF/1	Hamden AR Assn	386-	AB-12-	2523	
W9BXR/9	Montgomery County AREC	317-	AB- 6-	2519	
W7DP/7	Walla Walla Valley RAC	408-	AB-27-	2505	
K9EUT/9	Chicago Radio Traffic Assn	285-	AB-10-	2499	
W3UHP/3	(nonclub group)	410-	B-13-	2460	
K3DBE/3	Aliquippa Area RA Assn	377-	AB-13-	2436	
W2HIP/2	(nonclub group)	287-	AB- 8-	2367	
W5HMF/5	Oil Capital Mobile Club of Tulsa	352-	AB-20-	2364	
W4SRX/4	Eglin AR Soc	367-	B-10-	2352	
W7ECA/7	Electric City RC of Great Falls	414-	ABC-12-	2332	
W4ZZ/4	Greeneville ARC	360-	B- 7-	2322	
VE3DOH/3	Windsor ARC	257-	A-25-	2313	
KØKGR/Ø	Ornate Order Bloodshot Eyeballs	350-	B-23-	2250	
VE1FO/1	Halifax ARC	271-	AB-10-	2214	
K6UMA/6	South Bay AR Soc	247-	A-15-	2233	
K9GLV/9	Shelby County RC	370-	B-15-	2220	
W6PNW/6	Downey ARC	386-	ABC-10-	2208	
W1LAM/1	Bristol County R Assn	315-	AB-12-	2151	
K2AAN/2	Great South Bay RC	353-	B-12-	2118	
W7AQ/7	Yakima ARC	295-	AB-14-	2088	
K4BXZ/8	(nonclub group)	202-	A- 6-	2043	
W8NTL/8	Scioto Valley ARC	339-	AB-23-	2043	
W3QZF/3	Horseshoe RC	338-	B-12-	2028	
K5RY8/5	Sun City ARC	334-	B-15-	2004	
VE3BSQ/3	Quinte ARC	308-	B-12-	1968	
W2HYP/2	Squaw Island ARC	225-	AB-20-	1902	
W2WXP/2	Peekskill Communications Club	280-	AB- 8-	1881	
W6BML/6	Mt. Shasta ARC	304-	B-10-	1824	
K2LNK/2	Marathon ARC	230-	AB-10-	1821	
K9IND/9	West Suburban YMCA AR Council	184-	A-12-	1818	
K5ANN/5	(nonclub group)	233-	AB-12-	1800	
K2HXW/2	Cumberland County RC	214-	AB- 9-	1776	
WØPMW/Ø	Foot Hill ARC	271-	B-15-	1776	
W3PGA/3	Aero ARC	295-	B- -	1770	
W3CTG/3	Norristown High School ARC	258-	B- 7-	1698	
W6NKR/6	(nonclub group)	228-	AB- 6-	1698	
K6HAI/6	North Shores ARC	213-	AB-12-	1692	
VE7IP/7	East Kootenay ARC	163-	A- 8-	1692	
W1SWX/1	(nonclub group)	247-	B- 3-	1632	
W1NC/1	Melrose CD Radio Group	268-	ABC- 6-	1614	
W7TZ/7	Grays Harbor ARC	239-	B-30-	1584	
K6KHZ/6	Tehama County ARC	175-	A- 9-	1575	
K6HPC/6	Indian Wells Valley ARC	261-	B-12-	1566	
W1IA/1	South Shore ARC	173-	A- 3-	1557	
KØTOA/Ø	Air Capital AR Assn	247-	AB-25-	1521	
W3VV/3	McKean County RC	251-	B- 3-	1506	
W1HQH/1	Falmouth AR Assn	238-	AB-11-	1503	
WA6BMH/6	Poinsettia RC	238-	AB-15-	1482	
W3CAB/3	Washington RC	465-	ABC- 8-	1470	
W9LMA/9	Midway RC	237-	B-15-	1422	
WØECD/Ø	Flint Hills ARC	207-	B-15-	1392	
KØGPV/Ø	Southwest Iowa AR Assn	254-	BC-20-	1383	
W3GV/3	R Assn of Erie	229-	B- 8-	1374	
W1PX/1	Town of Barnstable RC	224-	B-10-	1344	
K6CXL/6	Alexander Hamilton High School RC	149-	A-15-	1341	
K9 CW/9	Randolph AR Assn	197-	B-14-	1332	
WTUF/7	Mt. Erie RC	221-	B- 4-	1326	
W1S A/1	(nonclub group)	167-	AB- 9-	1323	
K4FHJ/4	North Miami RC	200-	AB-10-	1314	
W7VJR/7	(nonclub group)	218-	B- -	1308	
K9ARN/9	Kishwaukee RC	176-	AB-20-	1272	
VE6KC/6	(nonclub group)	210-	B- 5-	1260	
W9CPN/9	Sky-Wire RC	209-	B-12-	1254	
K3ALD/3	807 Society of Central HS & Oxford Circle RC	161-	AB-15-	1248	
WØBRN/Ø	Three Rivers ARC	167-	AB-12-	1239	
W9MJL/9	Vermilion County AR Assn	308-	BC-40-	1227	
W9HZP/9	National Trail ARC	197-	AB-15-	1206	
WA2GAN/2	466 RC	199-	B-15-	1194	
K2YNT/2	Metuchen Y RC	179-	AB-15-	1172	
K5ISK/5	Okla. State Tech. AR Assn	188-	B-17-	1128	
K2VZK/2	(nonclub group)	121-	A- 4-	1089	
K6HMK/6	Delta ARC	93-	A- 6-	1062	
K9HGX/9	Cenois ARC	148-	AB-33-	1026	
K1AOR/1	(nonclub group)	168-	B-11-	1008	
W9MWQ/Ø	La Crosse ARC	167-	B-25-	1002	
W2RON/2	(nonclub group)	121-	AB- 3-	999	
K8DAA/8	Holland Area RC	85-	A-10-	990	
WØZOU/Ø	Blue Valley RC	154-	AB-15-	969	
WØCOM/Ø	CQ ARC	136-	B- 8-	966	
W9VMW/9	Cass County RC	135-	B- 9-	960	
W7TEN/7	Totem ARC	129-	AB- 6-	951	
K5QHK/5	Snyder ARC	156-	B- 8-	936	
WØSLK/Ø	Black Hills ARC	131-	B-25-	936	
K2CD/2	Telephone Employees AR Assn	135-	AB-10-	882	
W9RJY/9	Fort Wayne RC	137-	B-14-	822	
K9RHH/9	Falls ARC	109-	AB- 6-	765	
W9AY/9	Ft. Sheridan ARC	124-	B-10-	744	
WØDRC/Ø	Tri-State R Soc	114-	AB-15-	687	
K9ENM/9	Communicators RC	111-	B-25-	666	
K1JMR/1	Norwood ARC	46-	A- 9-	648	
K3GGW/3	Penn Central RC	253-	AB- 7-	645	
K1HPQ/1	Walpole High ARC	87-	AB- 8-	615	
WØELJ/Ø	Grand Island AR Soc	97-	AB-12-	603	
W1KOO/1	Burlington ARC	80-	AB-10-	504	
WØEEK/Ø	Minot AR Assn	82-	B-12-	492	
K4YJT/4	Mike & Key Club	87-	B- 8-	478	
W3GUR/3	Pottstown AR Assn	475-	C- -	475	
W9QID/9	Winslow AR Soc	235-	B- 5-	470	
W3OWP/3	Carbon ARC	211-	B-10-	422	
KL7AWR/KL7	Kodiak ARC	58-	B- 9-	408	
VE6NC/6	Northern Alberta RC	150-	AB- 6-	405	
K2MYY/2	Rahway High RC	64-	ABC- 6-	363	
K1DJH/1	Windhams RC	52-	B- 8-	357	
W7MRW/7	Newberg ARC	51-	AB-18-	357	
W2MES/3	Tu-Boro RC	146-	AB-16-	297	
K1CLF/1	(nonclub group)	56-	BC- 4-	291	
W6MLK/6	High-Frequency Amateur Mobile Soc	108-	AB- 4-	282	
W3SJ1/3	Hazleton ARC	26-	B- 7-	156	

Four Transmitters Operated Simultaneously

W6HS/6	Crescenta Valley RC	1120-	A-17-	10,305	
W2OR/2	Pompton Valley RC	1561-	AB-50-	9837	
W3ISE/3	Soc. for Preservation Key Clicks, Splatter & TVI	1011-	A-22-	9324	
W4SKH/4	Oak Ridge R Operators Club	963-	AB-48-	7356	
K4HEX/4	Lynchburg ARC	1019-	B-30-	6264	
K6QZJ/6	Riverside County ARC	878-	AB-20-	5961	
W2CWW/2	Staten Island AR Assn	677-	AB-25-	5919	
K9AVE/9	Illinois Valley R Assn	621-	A-20-	5814	
W8TO/8	Columbus AR Assn	946-	AB-23-	5703	

Some folks were eager beavers (left), while others just . . . well (right, top and bottom); so they took five now and then. Left, Amateur MARS Communications Club, K8AIR/8. Right top, Distinct Heights Radio Club, K3HDO/3; bottom, W3SL/3.



Some went to the mountains (left), while others went to the seashore (right). Left, Aerojet Radio Amateur Club, K6DQE/6, and right W1BB/mm.

K9QMH/9	Montrose County ARC	569-	A-24-	5346
K4DPZ/4	Gainesville A Soc.	567-	A-15-	5328
W5CF/5	Kilocycle Club	822-	B-18-	5202
K6QEZ/6	Sequoia ARC	547-	A-20-	4923
K3GFW/3	Cumberland Valley ARC	533-	A-23-	4797
W3RDM/3	York Road RC	494-	A-13-	4671
W1UBS/1	Pittsfield RC	678-	AB-15-	4443
W1SYE/1	Newport County RC	733-	B-25-	4398
VE7BAR/7	Burnaby ARC	445-	A-31-	4230
W9EOC/9	Old Post AR Soc.	676-	B-20-	4206
W6MSO/6	Inglewood ARC	649-	AB-20-	4191
K2OML/2	Raritan Bay RA	608-	AB-12-	4188
W2KR/2	New York RC	452-	A-15-	4068
W6PML/6	Santa Maria City RC	629-	AB-15-	4023
W4HFH/4	Alexandria RC	614-	AB-11-	4020
K8BAA/8	20/9 ARC	635-	B-16-	3960
W6MGJ/6	Helix ARC	629-	B-11-	3936
VE3AIS/3	Oakville ARC	436-	A-15-	3924
W3ZEK/3	Harrisburg RAC	648-	B-20-	3888
W5IU/5	Kerrville RC	567-	AB-17-	3768
W9ARA/9	Bloomington ARC	597-	AB-20-	3732
K9CJU/9	RA Megacycle Soc.	429-	AB-16-	3696
W9IDU/9	Delaware AR Assn	562-	B-25-	3660
K9JKJ/9	Martinsville ARC	554-	AB-10-	3576
W1KKS/1	Manchester RC	440-	AB-30-	3546
W3WPW/3	Chesapeake ARC	387-	A-10-	3483
K2SOL/2	Gloucester County ARC	538-	AB-31-	3450
K1GAY/1	Bedford RC	509-	AB-11-	3372
W8MAA/8	Central Michigan ARC	558-	B-19-	3348
W8DC/8	Grand Rapids AR Assn	461-	AB-30-	3282
W6PMK/6	No. Peninsula Electronics Club	364-	A-10-	3276
W9KLL/9	Michigan City ARC	462-	AB-24-	3246
K7AUO/7	Tektronix Employees RAC	528-	AB-24-	3192
W5HPI/5	Terry County ARC	504-	B-12-	3174
K6SVO/6	Imperial Beach RC	500-	AB- 8-	3114
W4LEN/4	Decatur ARC	491-	AB-12-	3087
W2DYM/2	Amateur UHF Club of Jamaica	366-	AB-21-	2964
W4HBB/4	Savannah ARC	493-	B-17-	2968
VE3DRT/3	Skywide ARC	434-	AB-15-	2829
W8QXN/8	Huntington RAC	466-	B-15-	2796
VE3KCD/3	Kitchener Waterloo ARC	450-	AB-17-	2778
W1NEM/1	Hartford County AR Assn	283-	A-35-	2772
W8HTX/8	Heath ARC	420-	AB-21-	2756
W4LX/4	Ft. Meyers ARC	422-	B-15-	2682
K8BYL/8	Southeastern Michigan AR Assn	377-	AB-25-	2646
W8FY/8	Van Wert ARC	414-	AB-17-	2577
W1VPU/1	Shelton Emergency R Assn	362-	AB-23-	2523
W6MIX/6	El Dorado County ARC	404-	AB-20-	2523
W6TO/6	Fresno ARC	407-	AB-28-	2193
K5DMM/5	Richardson ARC	415-	B-20-	2490
K5INH/5	(nonclub group)	408-	B- -	2448
K1COV/1	(nonclub group)	363-	B- 9-	2328
W2PG/2	(nonclub group)	538-	AB-14-	2244
W8JPT/8	Livonia RC	337-	AB-30-	2244
K8IFU/8	Tri Cities ARC	344-	B-17-	2214
W9URC/9	Central Indiana Mobile Club	446-	BC-14-	2182
W9AML/9	Central Illinois RC	309-	AB-23-	2178
K2KED/2	Burlington County RC	240-	A-14-	2160
W1CLO/1	Podunk ARC	238-	A-13-	2142
W8RJI/8	Detroit Metropolitan RC	294-	AB- 8-	2043
K2IBC/2	Avenel RC	311-	AB-14-	1977
K9IXS/9	Elkhart High School ARC	322-	AB-12-	1959
W1JT/1	East Providence AR Assn	247-	AB-15-	1953
W5RIN/5	Beaumont ARC	302-	AB-15-	1944
W6LMN/6	San Mateo RC	322-	B-12-	1932
W3OI/3	Lehigh Valley ARC	314-	B-16-	1884
W4THM/4	Bristol ARC	1147-	BC-20-	1872
W3JTI/3	Pocono AR Klub	265-	AB-12-	1845
W8EWE/8	Tri-County AR Assn	299-	AB-14-	1824
W3TQU/3	South Philadelphia AR Klub	286-	ABC- 4-	1791
W9GRP/9	(nonclub group)	298-	B- -	1788
W0LNA/0	Chippewa RC	276-	AB-25-	1692
W6OPT/6	Venice High School RC	223-	AB- 8-	1608
W2AVZ/2	Hamilton Township R Assn	202-	AB-20-	1587
W8WNK/8	(nonclub group)	264-	B-11-	1584
K0OGT/0	Mid St. Louis County AR Assn	263-	B-18-	1578
W2SEX/2	AR Assn of Tonawandas	262-	B-30-	1572
W1GES/1	North Shore R Assn	212-	AB-12-	1548
W3FQR/3	Dlt Happy Dash Hounds	238-	B- 8-	1428
W7NBR/7	Spokane RAC	213-	B-25-	1428
VE3DC/3	Hamilton ARC	230-	B-18-	1380
VE7CM/7	Point Grey ARC	203-	B- 7-	1368
K1CBR/1	Pawtuxet Cove R Assn	224-	AB- 6-	1356
W2SZ/2	Rensselaer Polytechnic Institute RC	297-	BC- 8-	1356
K8EMY/8	South East ARC	335-	BC-20-	1338
W1ORS/1	Strafford ARC	198-	AB-18-	1335
W2JTZ/2	Chaminade High School RC	175-	AB-13-	1323
K2MXN/2	Burlington Short Wave RC	131-	AB- 7-	1254
K9ONA/9	6 Meter Club of Chicago	170-	ABC-24-	1161
W1IHO/1	Aberjona ARC	112-	AB- 8-	1131
W3MER/3	Huntingdon County ARC	176-	AB- 8-	1110
K3HDO/3	District Heights RC	200-	ABC-13-	1105
K5STG/0	Texas Southmost RA	183-	B- 7-	1098
VE2MO/2	St. Maurice Valley AR Assn	177-	AB-25-	1074
W0ZRT/0	Central Dakota R Assn	162-	B-10-	972
K2IAP/2	AR Soc. of Harrison	129-	AB- 8-	915
K2MQX/2	Black River Valley ARC	137-	AB- 9-	843
W8TYL/8	Fairborn Chigger & RF Propagation Soc.	114-	AB- 4-	705
KL7AIR/KL7	(nonclub group)	155-	BC-12-	675
K9PEB/9	Quad County RC	85-	ABC- 8-	113

Five Transmitters Operated Simultaneously

W2OYH/2	Morris RC	1402-	A-30-12,843	
W6FNE/6	(nonclub group)	1389-	A-18-12,501	
K8AIR/8	Amateur MARS Communicators Club	1340-	AB-25-11,595	
K6BAG/6	Pacifico RC	1286-	AB-11-11,454	
W2YKQ/2	Lake Success RC	1195-	AB-21-10,338	
W2GTD/2	Ridgewood ARC	1056-	A-22- 9504	
K6DI/6	Santa Barbara ARC	937-	AB-23- 7904	

W7AW/7	West Seattle ARC	795-	A-22-	7380
W3BTN/3	North Penn ARC	1338-	BC-30-	7203
W2ZQ/2	Delaware Valley R Assn	992-	AB-38-	6192
W1SKT/1	Narragansett Assn AR Ops	894-	AB-16-	5886
W5ABD/5	Westside ARC	840-	B-16-	5190
W5EQT/5	Kay County ARC	964-	BC-14-	4938
K0DWC/0	Bellevue ARC	687-	ABC-26-	4938
W5DPA/5	Houston ARC	658-	AB-37-	4896
W1TNH/1	Quonset Point ARC	637-	AB-16-	4707
W8RNF/8	Lake Geauga ARC	737-	AB-28-	4617
K6IL/6	Newport AR Soc	496-	A-40-	4464
W9JP/9	Indianapolis RC	648-	AB-17-	4383
W1WNJ/1	Bell Telephone Labs ARC	478-	A-16-	4302
W8VVL/8	Queen City Emergency Net	473-	A-30-	4257
W8HH/8	Marietta ARC	447-	A-20-	4248
VE3JJ/3	West Side RC of Toronto	430-	A-21-	4095
W8ID/8	Seneca RC	582-	AB-14-	3870
VE3SRC/3	Scarboro ARC	424-	AB-18-	3840
K1BCI/1	CQ RC	570-	AB-27-	3792
K1BUZ/1	Eastern Conn. AR Assn	644-	AB- -	3678
K4AHV/4	Panama City ARC	594-	B-25-	3564
K2MQW/2	Five Towns RC	554-	AB-20-	3528
W3IWE/3	Bucks County ARC	524-	AB-60-	3357
K2TAZ/2	Northern Nassau ARC	492-	AB-15-	3321
W6AK/6	Sacramento ARC	456-	AB-20-	3135
VE2ADX/2	South Shore ARC	430-	AB-16-	2114
W1BRF/1	Quinebaug Valley RC	495-	B-25-	2970
K1JSO/1	Tri-City AR Council	444-	B-50-	2967
K3CEZ/3	Greenbelt AR Assn	487-	AB-10-	2955
W9FQ/9	Wheaton Community RA	467-	B-14-	2952
W9GFD/9	Prairie ARC	452-	AB-15-	2913
WA6DJS/6	El Cajon Valley High School RC	422-	AB-20-	2907
W6OT/6	Oakland RC	464-	B-12-	2784
K5QHD/5	Garland ARC	453-	B-19-	2718
K3HKK/3	Nittany ARC	412-	AB-12-	2706
W2III/2	Mohawk ARC	433-	AB-15-	2682
W3ZIG/3	Fisherman's Net	336-	AB-10-	2640
K1ECU/1	Bishop Bradley High School RC	401-	AB-12-	2619
VE6NQ/6	Calgary AR Assn	360-	AB-20-	2595
W5QJW/5	Dallas Ten Meter Net	432-	B-20-	2592
W6ZE/6	Orange County ARC	373-	AB-22-	2463
K6FAC/6	Hayward RC	374-	AB-18-	2451
W6VMS/6	Mt. Soledad ARC	249-	AB- 5-	2340
W8AKA/8	Ohio Bell Radio Hams	311-	AB-12-	2202
W9CEQ/9	Fox River Radio League	356-	B- 9-	2136
K1WAS/1	Northeastern University MARS Club	312-	AB-11-	2022
K6ZOP/6	Pan Am Beer Canners	250-	AB- 9-	1959
W7KYC/7	Portland ARC	299-	B-25-	1944
W6UTU/6	Tuolumne AR Soc	308-	AB-11-	1911
W3SL/3	Delaware ARC	229-	AB- 8-	1860
W9YYJ/9	Elgin AR Soc	206-	A-10-	1854
VE3NSR/3	North Shore RC	274-	AB-15-	1830
W2ODT/2	Adirondack RC	238-	AB-23-	1743
K2DZA/2	Central Queens RC	422-	AB-15-	1709
W2OKE/2	(nonclub group)	234-	AB- 7-	1602
K6DBS/6	Convair RAC	230-	AB-13-	1446
K2YOU/2	Ulster County Mike & Key Club	225-	B- -	1350
W0UTL/0	Sekan RC	205-	B-12-	1230
K6HDE/6	Yuba-Sutter RC	147-	B- 5-	882

Six Transmitters Operated Simultaneously

K2AA/2	South Jersey R Assn	1822-	A-80-	16,623
K4CYP/4	Wayne County AR Assn	1279-	AB-18-	7845
W4MI/4	Jefferson County AREC	1223-	B-24-	7488
W6PMI/6	United RAC	1134-	AB-20-	7452
W2RK/2	Larkfield RC	984-	AB-26-	7398
W6ULI/6	Fullerton RC	903-	AB-12-	6486
W3BN/3	Reading RC	744-	AB-40-	5613
W8ACW/8	Genesee County RC	799-	AB-50-	5589
W1GLA/1	Framingham RC	690-	AB-23-	5355
K6CST/6	Ventura County ARC	805-	AB-20-	5010
WA6GFY/6	Lockheed ARC	559-	AB-18-	4839
W3PIQ/3	South Hill Brass Pounders & Modulators RC	761-	B-27-	4716
W8KP/8	Dayton Air Force Depot RC	679-	AB-47-	4353
W3AVK/3	West Branch AR Assn	575-	AB-23-	4339
K2DZ/1	Westchester AR Assn	703-	B-16-	4218
W0JEE/0	Hidden Valley Hams	671-	AB-18-	4218
K6SIR/6	Ramona RC	598-	AB-20-	4122
W1EUH/1	Pinhead Net	660-	B-16-	3960
K3CJT/3	Harford County AR Assn	564-	AB-20-	3774
K9GXU/9	St. Clair ARC	624-	ABC-52-	3747
WA2DNI/2	Monmouth ARC	408-	A-15-	3672
W1NY/1	Hamden County R Assn	783-	ABC-50-	3639
WA2BEX/2	(nonclub group)	560-	B- 9-	3360
VE3ZM/3	Guelph ARC	367-	A-18-	3303
W4BTI/4	Kennehoochee ARC	527-	AB- 6-	3198
K2OFQ/2	Frog Hollow RC	442-	AB-16-	2964
W1ACT/1	Fall River ARC	408-	AB-20-	2619
W2UF/2	Western Westchester RC	309-	AB-26-	2208
W0BXR/0	Davenport RAC	173-	AB-12-	1131
VE1PF/1	St. Croix Valley RC	167-	B-10-	1002
W3MPX/3	Penn Jersey VHF Club	85-	B- 6-	510

Seven Transmitters Operated Simultaneously

W7HZ/7	Valley ARC	1978-	A-41-	18,027
W2VDJ/2	Lakeland AR Assn	1277-	A-12-	11,718
K2DN/2	Watchung Valley RC	1253-	A-40-	11,502
W9SW/9	Chicago Suburban R Assn	1217-	A-45-	11,178
W1ECO/1	Sub Sig ARC	920-	AB-50-	8118
W9SWQ/9	Four Lakes ARC	761-	A-40-	7074
K3IVO/3	Free State ARC	1098-	B-32-	6738
W6CX/6	Mt. Diablo ARC	664-	A-31-	6219
W6WWJ/6	South County AR Soc	949-	ABC-28-	6192
W2NAB/2	West Jersey RC	683-	A-18-	6147
W1VXL/1	Cranston AR Assn	790-	AB-25-	5358
K8DXU/8	Blennerhassett ARC	852-	B-12-	5274
W9YH/9	Twin City RC	843-	AB-30-	5256
W9DUA/9	Sangamon Valley RC	507-	AB-31-	3972
W4MOE/4	Asheville ARC	632-	AB-20-	3960
K6QWL/6	North Hills RC	609-	ABC-15-	3657
W6BXN/6	Turlock ARC	515-	AB-17-	3255
K3BKG/3	Southern Chester County ARC	561-	AB-15-	2824
W6UCS/6	Monterey Bay RC	442-	B-24-	2652
W8FO/8	Toledo RC	271-	B-20-	1626
W4PAR/4	Davidson ARC	284-	BC-20-	1422

Eight Transmitters Operated Simultaneously

K2SOQ/2	Fordham RC	1475-	A-17-	13,500
W4VTA/4	Confederate Signal Corps	908-	AB-16-	5937
W0OUI/0	Denver RC	612-	A-45-	5733

Nine Transmitters Operated Simultaneously

K4DTV/4	Huntsville ARC	951-	B-25-	5856
W9FLP/9	West Allis RAC	750-	B-32-	4500

Ten Transmitters Operated Simultaneously

W7DK/7	RC of Tacoma	1928-	A-43-	17,577
W2GSA/2	Garden State AR Assn	1937-	AB-33-	17,211
W1OC/1	Concord Brasspounders	1549-	A-20-	13,941
W9RK/9	Northwest ARC	1390-	AB-35-	12,609
K2USA/2	Ft. Monmouth RC	1566-	AB-37-	12,360
VE3NAR/3	Nortown ARC	1388-	AB-60-	8916
W8HLD/8	Catalpa AR Soc	1171-	AB-25-	7188
W2US/2	Suffolk County RC	899-	B-23-	5544
W7NCW/7	Lower Columbia AR Assn	781-	AB-25-	4998
W2EFU/2	Schenectady AR Assn	632-	ABC-39-	2068

Eleven Transmitters Operated Simultaneously

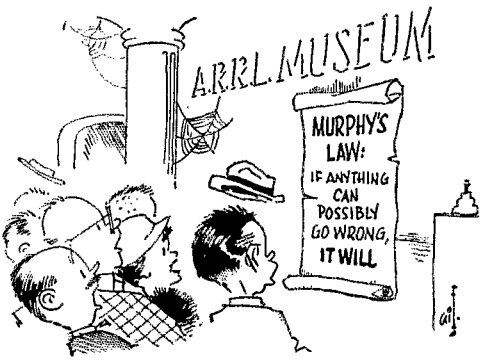
W5SC/5	San Antonio RC	2376-	AB-	-20,376
W3RCN/3	Rock Creek AR Assn	1906-	AB-68-	15,495
K6DTA/6	West Valley RC	1300-	AB-28-	11,835
K6PVN/6	Rio Hondo RC	868-	ABC-32-	6325

Twelve Transmitters Operated Simultaneously

W2LI/2	Tri County R Assn	2539-	A-40-	22,851
K6EA/6	Associated RA of Long Beach	1444-	AB-60-	10,926

Fourteen Transmitters Operated Simultaneously

K2YCJ/2	Communications Club of New Rochelle	748-	AB-15-	5178
W8KGG/8	Huron Vally AR Assn	634-	ABC-25-	3264



CLASS B

Grouped in this listing are the scores of portable stations manned by one or two operators. Where two persons participated, the call of the other operator (if known) is given below that of the amateur whose call was used. Figures following the calls indicate number of contacts, power and final score.

One Transmitter

W2FBA/2	445-	A-6272
W2JBQ		
K6SXA/6	557-	A-5256
WA6BLZ		
K6QIK/6	244-	A-3659
K6QHZ		
W9DO/9	388-	A-3492
W9YYG		
W9UA/9	332-	A-2988
W9DRY		
K5DRC/5	289-	A-2826
K5ATD		
K6GOI/6	265-	A-2578
KP4AJN/KP4	261-	A-2574
K6UNT/6	173-	A-2573
WV6FWB		
W6ANB/6	251-	A-2259
K4LDR/4	223-	A-2232
W4WHK		
K6QLN/6	137-	A-2241
K6QLM		
W4JZC/8	299-	AB-2052
W9ZHD/9	339-	AB-2040
W9IDPF		
K2SYS/2	181-	A-2034
K2HVI		
K4BOM/4	181-	A-2034
W4YMG		
K8GJM/8	223-	A-2007
K8LBQ		
W8VWY/8	121-	A-1971
W5RMH/5	202-	AB-1935
W5NXE		
K8HTP/8	298-	B-1890
W0VXO/0	902-	B-1834
W3FNH/3	301-	B-1806
K3BTS		
W2CAH/2	145-	A-1745
K8CMW/8	255-	B-1680

W8UDB/8	155	A	1656
K8KFK			
W9WLY/9	273	B	1638
K9DZJ			
K2IR8/2[1]	270	B	1620
W2IFS/2	265	B	1590
K2DWL			
W2DMJ/2	149	A	1566
W5VC/5	256	B	1536
K5EMA			
W6BAM/6	163	A	1467
K6LWN			
K2MBU/2	80	A	1418
K2MKC			
W1NXX/1	210	B	1410
W1FKJ			
W1ESV/1	229	B	1374
W1ZQT			
W9OHU/8	76	A	1364
W9OEY			
W0ZMU/0	201	B	1356
K0AVZ			
K2AZJ/2	122	A	1323
K2VXA			
W3WDK/3[1]	219	B	1314
W8HNY/8	213	B	1278
K8JZZ			
W8SKU/8	127	A	1278
K8CCV			
K6DYX/6[1]	69	A	1269
K6VKO/6	140	A	1260
K6TVO			
K0OBF/0[1]	147	A	1233
K4IIX/4	205	B	1230
W4OWV			
K1BAB/1	124	AB	1218
K1DRX			
K8DKU/8	133	AB	1200
W2TXU/2	128	A	1152
K6HFK/6	192	B	1152
W6DGR			
K4ZYI/4	190	B	1140
K4TBN			
K4QPJ/4[1]	100	A	1125
W0ISJ/0	180	B	1080
K0IJL			
W7YIU/7	152	B	1074
W7UPS			
K2PSR/3	149	B	1044
K2PGC			
W7GVV/7[1]	146	B	1038
K6VOQ/6[1]	115	A	1035
W9CHD/9	114	A	1026
W9NGP			
K3DCB/3[1]	112	A	1008
W3DUN/4[1]	124	AB	981
W8WJL/8	69	A	932
K5IRV/5	153	B	918
K5BNZ			
W3FYS/3	150	B	900
W6HOH			
W9YAE/9[1]	149	B	894
K5QXF/5	118	B	870
W1HBO/3	115	AB	848
K6YIK/6			
WA6CQU	111	B	816
K8GAZ/8[1]	136	B	816
W0UXT/0	133	B	798
K0AQO			
K9JKL/9	106	B	786
K9AIN			
K8EHS/8	124	B	744
K8BUT			
W0EBO/0[1]	120	B	720
W7CKD/7[1]	118	B	708
W6TOD/6[1]	118	B	708
K0CDG/0	117	B	702
K0LFP			
K6CKW/6			
K9GKC	88	AB	696
K9MZJ/9[1]	100	B	660
W0TEY/0			
K0CJD	109	B	654
W6RLP/5[1]	71	A	639
WA6DMM/6	79	B	636
K6LYN			
W1MKE/1	20	A	634
W1ZPT			
K1IIK/1[1]	102	B	612
K0IZI/0			
K0EKA	64	A	576
K0IZD/0	54	A	486
K1DNG/1	50	A	450
W5FCX/5[1]	72	B	432
W9BKJ/7	69	B	414
KL7CDF/KL7	139	C	399
K4QIA/1	66	B	396
K8BSZ/8			
K8JFT	196	B	392
W8MTI/8			
K8EXF	4	A	392
W0DCL/0[1]	65	B	390
K1ITU/1			
W1RWR	61	B	366
W1YNL/1	26	A	351
W2AAW/5	1	A	351
W6CIS/6	175	B	350
W2WZQ/2			
K2CSN	114	C	342
K7HYX/7	9	A	324
W9JJT/9			
W9KYC	53	B	318
W8QIW/8[1]	33	A	297
K2AUW/2	143	B	286
W2NZA			
K8JPV/8[1]	86	A	258
W0WUU/0	43	B	258
W9HWN/9[1]	114	B	228
W2SKS/3			
W3ZXI	67	A	201
K8NIN/8			
KN8PEN	95	B	190
K2PHC/2	21	A	189
W2RZK/2	27	AB	183
WV2DGV			
WA2BFU/2[1]	75	B	180
WV6AWF/6	58	A	174
W2LQO/2	72	B	144
W4BUU/4	10	A	135
K0LAX/0	41	B	132
K1GVQ/1	21	B	126
W3ML/4	106	AB	226
K1JGA/1	51	B	120
KN8OMO/8	51	B	102
K6RAU/6	23	A	69
W5GI/5	7	B	63
K8KXJ/8[1]	23	B	46
K5UYF/5	6	B	42
KN3INE/3	3	A	41
W1LIG/1	16	B	32
W8VZE/8	13	B	30
W4IFT/4	2	B	12
KN8PTK/8	1	B	6
VE9NG/9	1	A	3

Two Transmitters

K5DGI/5	804	A	10,854
K5FSW			
W6UF/6	440	B	2640
W6HB			
K5TEL/5[1]	430	B	2580
K2TJM/2[1]	242	B	1602
K1KFR/1[1]	234	B	1554
W5CXJ/5	197	AB	1445
W5COF			
K2ARS/2	122	A	1359
K2JAP			
K7NXZ/7	184	B	1266
W7HFZ			
K5LSH/5	121	AB	1107
K5MPM			
W7GUS/7	106	A	954
W7BJW			
W8WGR/8[1]	436	B	872
W1MRQ/1	100	AB	861
K1HCN			
K4MWB/4	330	B	660
K4IEX			
VE2UN/2[1]	60	B	522
K6VXN/6[1]	75	B	450

FD 1921? Nope, this is for real. OM, W9USJ showed son (left) and new hams what an old time ham station looked like. This spark gap transmitter and crystal detector receiver was set up at the Chicago Suburban Radio Association site W9SW/9.

W4MVX/4	69	AB	441
K4MUT			
WV2DLT/2[1]	34	AB	303
W3DHQ/8	44	AB	303
W3KDZ			
K3EVF/3	68	A	204
K3EXF			
K9OCX/9[1]	102	B	204
K8JPF/8	60	AB	123
KN8LEN			

CLASS C

Grouped in this tabulation are the scores of entrants in the mobile class. Figures following the call indicate number of contacts, power and final score.

W8PVC/8	485	A	7987
K6EPC/6[1]	230	A	3443
W8GHO/8	125	A	2930
W2MIU/2[2]	162	A	2525
W3VXN/3	156	A	2484
K8IZM/8	90	A	2417
W8GMK/8	86	A	2390
K6RRD/6	147	A	2322
W8QAV/8	77	A	2282
W8AEU/8	75	A	2268
W8QXG/8	75	A	2265
W8CZM/8	70	A	2201
K8GBH/8	67	A	2160
W8NNX/8	65	A	2133
W8QYS/8	65	A	2133
W8NMA/8	65	A	2133
K8CFH/8	65	A	2133
W8FKB/8	65	A	2133
K8MVA/8	65	A	2133
K8PZV/8	65	A	2133
W8MAE/8	65	A	2133
K8SWH/8	65	A	2133
W8ZEU/8	65	A	2133
K8GDR/8	65	A	2133
W8OHA/8	65	A	2133
K8GVK/8	65	A	2133
W8QYT/8	65	A	2133
W8URX/8	65	A	2133
K8GVT/8	65	A	2133
W8AGA/8	65	A	2133
W8CZW/8	65	A	2133
W8SDV/8	65	A	2133
W8BDZ/8	65	A	2133
W8UNI/8	65	A	2133
W8NLX/8	65	A	2133
W8WAG/8	65	A	2133
W8AJH/8	65	A	2133
K8JIC/8	65	A	2133
K2OLG/2	137	A	1850
W3HFY/3	107	A	1782
W3DSG/3[1]	107	A	1782
W6GGW/6[1]	93	A	1593
W3RQZ/3[1]	118	B	1593
W9TWA/8	100	A	1691
W3CNO/3	90	A	1580
W2SOX/8[1]	99	A	1674
K6UVE/6	58	A	1499
W6GTG/6	52	A	1485
W6OPY/6	74	A	1364
K6VUZ/6	65	A	1364
K9MFK/8	96	A	1298
W3ILZ/3	71	A	1296

FD installations come in handy when a real emergency occurs. The Fordham Radio Club gang, K2SOQ/2, pitched in to rescue four people in distress on a cabin cruiser close to rocks.

W3PXY/3	70-	A-1283	W1DMH/1	40-	B- 585
W3SRU/3	70-	A-1283	W6IKJ/6	41-	A- 554
W6OOR/6	62-	A-1175	K6LFO/6	41-	A- 554
W3OQH/3	61-	A-1161	K6ZFI/6	16-	A- 554
WA6BVI/6	61-	A-1161	W3YHV/3	37-	B- 548
W0FUH/7[3]	102-	B-1143	W3MHR/3	15-	A- 540
K9MNF/8	58-	A-1124	W3GGP/3	18-	B- 536
W6QPX/6	57-	A-1107	W3CW/3	14-	A- 527
W3NIP/3	55-	A-1080	W0RVA/9	39-	A- 527
K3CRU/3[4]	55-	A-1080	W3LNQ/3	13-	A- 513
K2DEV/2/3[5]	54-	A-1067	W3SAA/3	12-	A- 500
K9LJC/8	53-	A-1055	K6SWZ/6	12-	A- 500
K8IGR/8	52-	A-1042	K6IGB/6	29-	A- 492
W9EZ8/8	51-	A-1028	VE2SC/2	26-	B- 477
W6CXD/6	48-	A- 999	WA6DVZ/6	35-	A- 473
W7ARB/6	48-	A- 986	W3YJM/3	10-	A- 473
W3IGW/3	44-	A- 932	W3BBB/3	9-	A- 459
K9LWB/8	43-	A- 920	W3LKI/3	6-	A- 368
W3JIL/3	43-	A- 918	W1CUT/1[7,8]	55-AB-	563
W8UTF/8/9	68-	A- 918	W1BB/1[7]	26-	A- 351
W3GOW/3	41-	A- 891	W1ZPT/1	1-	A- 351
W7UCA/7[1]	37-	A- 837	W3IDR/3	13-	B- 342
W3AWH/3	66-	B- 819	K6RGN/6	10-	A- 315
W8SKP/8[9]	45-	A- 810	K1GVW/1	17-	A- 230
W3VVS/3	35-	A- 810	K6OWS/6	25-	A- 225
K6JNV/6	35-	A- 810	K8JKI/8	16-	A- 216
W9TIL/8	35-	A- 810	W3KFA/2	15-	A- 203
W6BRT/6	6-	A- 770	KN1IWY/1	10-	A- 135
W3PWG/3	31-	A- 756	W3CUB/3	15-	B- 135
W3FPT/3[8]	82-	B- 738	K6GAC/6	9-	A- 122
W6KQI/6	11-	A- 716	W9MTO/9	9-	A- 122
K3CJC/3[1]	28-	A- 706	W0DSP/0/VE3	12-	B- 108
K9MAD/8	26-	A- 690	W8KMPZ/8	8-	A- 108
W3IVD/3[1]	26-	A- 689	K2LWQ/2	6-	A- 95
W3HQJ/7[1]	26-	A- 689	W3LEM/3	7-	A- 95
K6BJU/6	25-	A- 675	W8CBM/8	7-	A- 94
W3UMK/3	37-	B- 674	W0BPO/3	6-	A- 81
W3WNC/3	24-	A- 662	W8CU/8	6-	A- 81
W2KOY/2	38-	B- 657	W8HHV/8	6-	A- 81
K3DJE/3[1]	48-	B- 657	VE5JK/5	7-	B- 63
W6KTB/6	23-	A- 648	K5CBA/5	7-	B- 63
K9IBW/8	22-	A- 635	VE3AUU/3	5-	B- 45
W3DJV/3	22-	A- 635	K6PAC/6	5-	A- 45
K6SGQ/6	5-	A- 621	W3OEC/3	4-	B- 36
K6PQZ/6	5-	A- 621	VE3BMS/3	2-	A- 27
K6KYH/6	5-	A- 621	W0PB/0	1-	A- 14
K6KNP/6	5-	A- 621	VE3DXS/3	1-	A- 14
K6GPX/6	4-	A- 608	VE3RQ/3	1-	A- 14
W6GAU/6	3-	A- 594	W1SWX/1	1-	B- 9

CLASS D

Grouped in this tabulation are the scores of home stations operated from emergency power.

W4NPT [9] 546, W1HPM [23] 447, K6VTT [10] 230, W5FC [11] 210, K4JLA [12] 154, K1BSM [21] 140, W1EDH [13] 138, W1GFH 132, W6BLY [14] 113, W5HTK [12] 102, K6FCC 86, W2JC [15] 82, K4DSD 79, K9GCL [24] 75, W3ZRQ 67, K7CQQ 53, W0JUI [16] 48, K2BCI/2 [17] 39, K1GCS 34, W4NYF 25, W1BNB 18, WV6EPA/6 [1] 18.

CLASS E

Grouped in this tabulation are the scores of home stations operated from commercial power sources.

W4BTO 407, K6QHC 382, W4LYV [1] 370, K4HAV [1] 358, K4QHG [1] 347, K4MSM [1] 338, K0LIR [18] 294, K6UKX 271, W5VVF [1] 246, W6GEB [19] 246, K2EZG [20] 240, K2TCD 215, K4RBH 209, K0SLD 200, K3DMO 181, K6LPL 176, K9OKD 170, K7BHQ [1] 166, W4WKQ 165, W4KFC 164, K3DPR 151, K4YFB 142, K6ZWS 141, K6PXQ 140, K0LRS 137, W1AQE 136, k2GTC 129, W1AW [3] 124, W7IAQ 7 123, K2MMW 122, K4MYR 115, K7GQM 111, K6VLG [1] 110, K9ELT 110, K6STI 106, W2GRD/2 [21] 105, W2AMRV 103, W8ELE 101, W6KG 93, K9MNT 95, K0UDQ 95, W3KHA 86, K7DNX 84, K6GLS 83, W3JRX 78, W8LFJ/8 [21] 75, K9STN [22] 71, K9KWB 70, K1GPJ 68, W6EYM 67, K0PFF 61, W8OTI 60, WA2CDP 57, K9JUU 56, W1EZM 54, W2EWZ 54, WA6EXR 54, K6BFZ 49, K0CQA 48, K6KPB 47, W5GLD 46, K6SUW 45, K5GBU [5] 42, K3GJE 41, W4OGG 38, W5BW 38, W7EBI 36, K9CBE 36, W4VZD 35, K2RJF/2 [19] 34, W1IQD [19] 33, K8KCB 33, K0KMZ 33, W6OJW 31, K2VYQ 30, K0GRS 29, W1LHY 28, KH6BG 25, W2DUN 24, K6ICQ 24, K6STZ 24, W3UJP 22, K7CPC 20, W1BDI 19 K5LLJ 19, VE3ELQ 19, VE3CTN 19, W2QJY 18, W3EDX 17, W3ROA 17, WV6CRQ 17, K6HYX 17, VE7FD 17, W1NJL 1 16, K3CTN 16, K0QGJ 16, K6HOV 15, W2FRC 14, W6AM 14, W8IBX 14, K8OCO 14, K1BCH 13, W2KVL 13, K3HOC 13, W8DAE 13, K0SBP 13, K2HGR 12, KN3HLJ 12, W6QXZ 12 K8MLO 12, WA2BDP 10, W8MLX 10, KN9SLT 10, WV6FOL 9, VE3CKW/3 9, K8SXU 7, W6QFX 7, W9QGA 7, WV2DQN 6, K2SKY/2 [4] 6, KN4ZRU/4 6, K0OJC 6, K2PTI 5, W4CDA 5, KN4DRF 5, K8GUV 5, W9NWV 5, KN9QKI 5, K4QMS 4, K5LOV 4, KN9RJO 4, W6PLG 3, KN9RQU 1.

[1] 2 oprs. [2] 10 oprs. [3] K0MFV 2nd opr. [4] K3GAY 2nd opr. [5] 3 oprs. [6] W8RBD 2nd opr. [7] 2 rigs. [8] W1WPO 2nd opr. [9] 5 rigs, 11 oprs. [10] 6 oprs. [11] 3 rigs, 25 oprs. [12] 2 rigs, 10 oprs. [13] 2 rigs, 16 oprs. [14] 10 oprs. [15] 2 rigs, 11 oprs. [16] 11 oprs. [17] 7 rigs, 8 oprs. [18] 4 rigs, 12 oprs. [19] 2 rigs, 2 oprs. [20] 4 oprs. [21] 2 rigs, 3 oprs. [22] 2 rigs, 21 oprs. [23] 6 rigs, 15 oprs. [24] 15 oprs.

Strays

K4PPR, whose last name is Beam, lives at 73 Grid Drive. — *W4PJU*

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W1ERB would like to hear from other AVEA members who are hams. (For those of you who don't know what an AVEA is — each year the CAP has an exchange program for CAP cadets with about twenty other nations. *A*viation *E*xchange *A*lumni.)

—•••—

W8WT points out that at least twenty-one certificates are now available for working counties in the various states. If each ham would list the name of his county on his QSL, it would certainly help the award hunters.

—•••—

The Minot Amateur Radio Ass'n of Minot, N. D., is sponsoring a QSO party the second week end of January, 1960, to give as many amateurs as possible the opportunity of working North Dakota. The party will start at 0900 CST on Saturday, Jan. 16, and will end at 2100 CST, Jan. 17. All QSLs received will be answered. Look for North Dakota stations on the following phone frequencies: 3930 kc., 7250 kc., 14,250 kc., 21,360 kc., 29,100 kc., 50.2 Mc., and 144.05 Mc. The only c.w. frequency listed is 7160 kc., which will be guarded by KNØWIO. The club asks that you keep each contact short, keeping the exchange of information down to name, QTH, and RS reports.

—•••—

WA2BWM now lays claim to living in the hammiest neighborhood. He reports that within a one-mile radius of his home there are 16 licensed hams, plus two more waiting for their tickets to arrive. It's Brooklyn, naturally!

—•••—

Here's a fellow who has no one to blame but himself. W7HOP, engineer at a broadcast station, started a 15-minute transcription going and then dashed out to his mobile rig for a quick QSO. Right away he was in trouble, as his rig got back into the broadcast station's audio and its listeners heard not only the music but also one end of a QSO with Iowa!

—•••—

The Owensboro (Kentucky) Amateur Radio Club is sponsoring its fourth annual class in amateur radio. In the past more than 60 students have enrolled in the course, with about half of them going on to get their amateur licenses. — *K4URX*

—•••—

WA2BWT reports the FCC's sense of humor is still in high gear. They issued WV2BRA to his cousin, a YL.

—•••—

W2YVP says he got a QSL from W1RJA confirming a QSO that took place eleven years ago, but doesn't tell us how come it took so long to get the card.

Happenings of the Month

REPORT FROM GENEVA

During the period September 28 through October 23, subcommittees and working groups dealing with allocations problems for chunks of the spectrum brought in reports generally favorable from the amateur point of view. It must again be emphasized that these decisions are subject to change later on in the full allocations committee (Committee 4) or on the floor of the conference itself.

For Region II, which includes North and South America, the western Atlantic and the Pacific Ocean to Hawaii, recommendations at the working level were encouraging. If these recommendations are finally adopted by the conference, amateurs in our hemisphere will have no changes in our bands below 220 Mc.

In the bands above 220 Mc., the only change from the present U. S. allocation appears to be a return to 3300–3500 *Megacycles* in lieu of the 3500–3700 *Megacycle* band we now have.

The 11-meter band is still provided for by a footnote, but the language of the footnote has been changed slightly to make it permissive rather than mandatory. The effect is that those countries now enjoying use of an 11-meter amateur band, including Canada, will probably continue to have the privilege.

Elsewhere, the picture is not quite so bright. As was reported last month, amateurs outside the Western Hemisphere likely will lose their sharing arrangements above 7100 kc. to the broadcasting service. In Europe, several countries want to assign — by footnote — fixed and mobile services to the 29.0–29.7 Mc. band, but would protect amateur stations elsewhere from interference. Japan wants a similar footnote for 29.2–29.7 Mc. In Region 1 (Europe, Africa) the 70 cm. band will probably be cut to 430–440 Mc. shared with radiolocation (called "radiopositioning" in FCC regulations).

General Manager Budlong has been appointed a member of the Steering Committee of the U. S. delegation by FCC Commissioner Craven, head of the delegation.

ARRL President Dosland was in attendance at the Conference for about a week, in addition to our other people previously reported as being present.

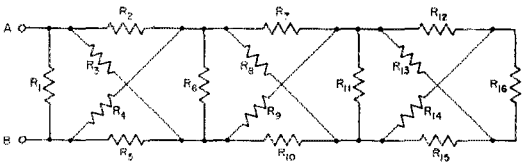
The conference is now expected to conclude about Christmas time. Members are advised to listen to W1AW bulletin schedules (see page 77, November *QST*) frequently toward the end of this month for news of final results of the conference. QST

FEEDBACK

On page 36 of the October issue ("Perseids Powerhouse") the caption at the bottom of the page should say that the tube sockets are at the *right*.

Quist Quiz

John Roberts jr., W2HRG of Cranford, N. J., submits the teaser below. Each resistor is 1000 ohms, and the problem is to find the equivalent resistance of the network as measured across A-B. With only 16 resistors like this, par for the course is one minute.



The answer to last month's d.c. amplifier problem is 12 ma. through R_5. We trust you noticed that it wasn't necessary to know the value of R_1, R_4 or R_7.

Strays

WV2IMH and WV2IMP are having fun cross-banding between 7 and 21 Mc. Wonder how many other Novices have tried this.

W1SS conducted tests with several other members of the SDL net on the morning of the eclipse in New England, Oct. 2. He reports that he himself was in the path of the darkened area and that all the net stations he worked were outside the path of the eclipse. All these stations reported sizeable increases in his signal strength during the period of the eclipse.

K9RQU and K9RQX both are named Wright. The Novice licenses of both were dated the same day, and the General licenses of both were dated the same day. One lives in LaGrange and the other lives in LaGrange Park. Obviously, their call signs are similar. Despite all this, they are not related and never knew each other until the day they were taking the General Class exams in the FCC office.

Nominations for the annual Cosmos G. Calkins Memorial Award must be mailed to the award committee before Feb. 28, 1960. The purpose of the award is to give recognition to that Michigan amateur who has performed the most outstanding public service for amateur radio in Michigan during the past year. The facts and all information on the services rendered by the amateur must be submitted in writing and countersigned by the officers of the sponsoring club or by three individuals submitting the nomination. Mail nominations for the award to the Central Michigan Amateur Radio Club, c/o Currin L. Skutt, W8FSZ, 119 N. Foster St., Lansing, Mich.

What Happened to Willy

First, You Make a Country . . .

BY PAT MILLER, W2AIS*, KH6ARA, ZC8PM

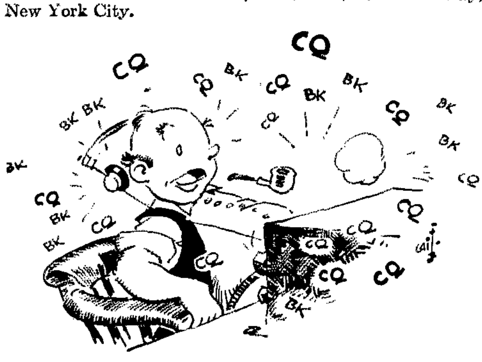
WELL, of course I've heard about Willy. Who hasn't? In fact, I'll bet I'm the only one who really knows the whole story. You see, Willy and I were college roommates and I still drop in on him once in a while. This last time, I guess he just felt like talking. No, I guess it isn't a secret. Well . . . sure . . . I'll tell you.

You sail east-northeast from Montauk Point, Long Island, to reach Willy Barron's QTH — the Southeast Point Lighthouse on Block Island. Willy's a retired Navy chief, a big, easy-going fellow with a grin that splits his face from ear to ear. Everybody likes Willy — he'd do anything for you. Yeah, I know what some people say, but I'm telling you. Willy is a great guy. They don't make 'em better than Willy. Well, anyhow, Willy has two hobbies: lighthouse keeping and ham radio. And his first love is traffic — even more than his old pipe, Willy loves the Driftwood Net on 3610 kc. where he's been moving traffic for ten years.

Willy's call is W1IIN — well, I mean that's what it was for ten years. Then he got a notice from the FCC stating that his call had been changed to WB1IIN. Yeah, I know. But Willy's a happy-go-lucky fellow and he just never thought about it So he went on his net as usual that night. And that's how it all began.

Willy had accepted three messages for relay to the Musselshell Net on eastern Long Island when a dozen S9 signals started howling zero beat on the net frequency for Willy. Some chattered "BK" and others just called continuously.

* c/o Radio Officers Union, Suite 1568, 1440 Broadway, New York City.



The net was completely blanketed. Even Willy's best buddy in Providence was buried in the bottom layer.

Stunned, Willy pulled himself together and answered a W2, who promptly came back: "Gee, thanks for my number 299." A hailstorm of signals rattled against Willy and his reply to a W3 brought: "Golly, you give me double DXCC!" Willy tried to find out what the W3 meant, but the fellow had gone and the deafening calls now covered about 40 kc. either side of the net frequency. Willy answered a faint W4 on the edge of the pile-up and tried to get an explanation of all the excitement, but all he got was: "589, thanks for new country, OM."

"New country?" muttered Willy. "They must be out of their collective minds!" His thoughts were interrupted by a loud, very loud, and mind-reading W1, who cried: "Well, Buster, you've had it. How do you like being a new country?" But when Willy frantically tried to get more information a caterwauling of loud signals, zero beat, drowned the W1's attempts to explain. Willy, dizzy and bewildered, shut off the rig and lighted up his favorite meerschaum to consider the incredible state of affairs.

"New country?" mused Willy, puffing meditatively. "Number 299? What kind of madness is this?"

In the next day's sunshine, it all seemed an impossible nightmare. At sked time that evening, Willy turned on his rig and found to his relief that the net was clear. His buddy in Providence was shooting a couple of QTCs to one of the gang at Bass Rocks. Willy came in with a QRU and his call. It was like flipping a switch. Seven dozen signals, nearly zero beat, roared in with delirious racket of assorted BKs and call letters. Shaking his head and sighing, Willy turned off his rig. After 15 minutes, he turned it on again with hesitant fingers and found to his horror that the fearsome clatter was still going on. Trying again an hour later, he found the frequency quiet and gave his buddies a quick call.

The response to his effort was an even greater build-up of signals that swept out of nowhere to zero beat right on his frequency. He could make out fellows as far away as the Ninth District trying to break through. Then his telephone shrilled through the babel. It was his pal in Providence. The conversation crushed poor Willy. The net boys were sorry, but they wanted Willy to quit. All the traffic between 3570 and 3700 kc. was disrupted by a solid mass of signals calling

Willy. Tragic as it was, Willy realized that his new call was forcing him out of his favorite phase of ham radio. His friend suggested, in what was supposed to be a tactful manner, that Willy go on 20 and work a few of the guys calling him. Willy could only hang up the phone numbly and go out to tend his lighthouse chores, the plaintive CQs whining in his ears.

One evening two weeks later, Willy sat listening wistfully to his net. All was peaceful now and his erstwhile buddies briskly rattled off the traffic. Willy, the exile, just sat and listened with his transmitter cold and silent in the corner. He was deep in a reverie of mingled self-pity and anger when he became suddenly aware of a truck pulling up the driveway and babbling voices outside. The doorbell rang sharply. Willy opened the door and a rush of humanity swept over the threshold and formed a group in the middle of his living room. As Willy, his hand still on the door knob, stared in amazement, a man strode forward from the group. Hand outstretched, he boomed with Elk Club heartiness:

"Willy Barron, aren't you? I'm Herman Harrington, sales manager of Teleceptonic Industries." He waved at another man. "With me is my distinguished friend and competitor, Art Lindemann of Collicrafters and on his right is one of ham radio's maddest engineers, Sam Zhukov, the inventor of the Zero Beat Peeler."

"Oh," said Willy in dazed tones. "And who is the young lady with you?"

"Why that's Helen Keese. She has a major role to play in our master plan. But more about her later. May we sit down, Willy?"

"Oh, Sure," said Willy, letting go of the doorknob and advancing somewhat doubtfully into his own living room. "Do make yourselves comfortable . . ." He couldn't finish as Harrington and the group noisily made themselves at home while Harrington's full golden tones rolled above the chatter.

"Willy, I cannot tell you how disappointed we all are over your leaving the air. Whether you know it or not, it took an Act of Congress to make you into a new country. The least, we feel, you could do is to show your appreciation by getting on the air and giving the boys a new one. . . ."

"Whoa! Whoa! Whoa!" wailed Willy. "Look, I don't know what this is all about but I do know I have been driven off the air by the crazy Indians calling me on the net frequency." Taking fire at the thought of his wrongs and his silent transmitter, Willy squared his drooping shoulders and continued with outraged dignity: "As a matter of fact, I have been asked by the net to resign. By what right did Congress make me a new country, anyhow? Was it your idea? You people surely have your nerve coming here . . ." Willy choked with rage.

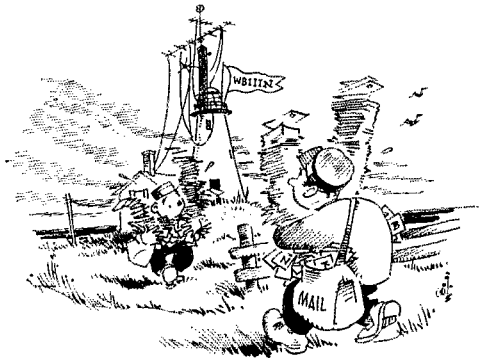
"Now, now, Willy," soothed Harrington. "We do know how you feel. But it's your duty, OM, and it should be an honor to be hamdom's newest country."

"Duty! Honor!" howled Willy, his eyes rolling with fury. "Even if I tried to work those maniacs, I'd be out of my mind in 15 minutes! They're just too many of them. And talk about operating practice! They make anarchists look like a bunch of policemen!"

"Softly, softly. Easy does it," crooned Harrington, patting Willy's shoulder and pushing him into a chair. "That's why we are here. Our truck is piled with the best goodies that store buyin' money can buy." Harrington showed his smooth white teeth in a Cheshire grin. "Just imagine yourself on the air with the newest Collicrafter's X5 receiver using quadruple conversion with 2 kc. i.f.'s and a 50-cycle mechanical filter . . . *plus* a Teleceptonics new Broomcloset Kilowatt and its five-band five-element curtain with a 90 db. front to back ratio. With such a set-up, you will have it made!"

"Have what made?" rasped Willy. "I don't need your store-bought gear. I build my own and it works fine."

Harrington and Lindemann gasped in horror.



Lindemann recovered first and purred in soft, condescending tones: "Willy, I'm sure your gear is fine, but when it comes to being a new country you just need the best . . . and that is what we have brought with us. The best — and it is yours as a gift."

"A gift?" gasped Willy. "Why that gear including the antenna must net at seven thousand dollars!"

"Yes, that is true," purred Lindemann. "But we are hard-headed business men and a new country is good for our business. Anyway, these are lab samples and we want to put them to the test."

Willy filled his pipe with fumbling fingers as the group eyed him in expectant silence.

"Willy, I know what you're going to say," piped Sam Zhukov in a reedy voice. Willy, who hadn't any idea what he was going to say, looked at Zhukov hopefully.

"You're going to point out that even the best gear couldn't cope with several dozen stations zero beat. Right?"

"Hum," mumbled Willy, drawing a deep breath of familiar, soothing pipe smoke. "That's true."

"Well," Zhukov shrilled triumphantly. "That's where my Zero Beat Peeler will come in!"

"What the cotton-pickin' is a Zero Beat Peeler?" asked Willy, taking the bait warily.

"Ahhhh!" exulted Zhukov. "It's the greatest thing yet for ham radio. You can have 36 stations on the exact same frequency and my little toy will just peel 'em apart."

"How?" snapped Willy.

"It's very simple," said Zhukov. "My little black box is a phase-sensitive sampling device. I got the idea from one of Larson Rapp's articles. My box is so designed that any signal that is ten degrees or more out of phase with another signal on the same frequency can be peeled away from the others without a wisp of QRM. I've been trying to convince my business friends here that they should incorporate it in their gear, but we haven't been able to find interference that is dense enough to prove my claims . . ."

"And now that I am a new country, you have your chance," said Willy, breaking into Zhukov's piping monologue. He looked around the group, his friendly eyes tired and resigned. "Is that right." But it wasn't a question.

"Right! Right! You're a bright fella, Willy," came the chorus.

The next half hour was consumed in haggling, mostly between Willy who just wanted to be rid of them and Harrington who was the more persuasive of the two sales managers. But Willy's resistance weakened when Harrington suddenly took a new tack and made a surprise offer.

"Willy," he boomed. "Suppose we got you reinstated in the Driftwood Net? Would you give the DX men a few hours a day . . . say six?"

"You mean you can control those madmen and keep them off the net?" cried Willy, with hope he hardly dared feel creeping into his voice.

"Well, we could try," said Harrington. "Let's say we allow you an hour per night with your old crowd and then six hours daily for DX? That leaves you eight hours for sleep and plenty of time to take care of the lighthouse." Willy puffed thoughtfully. Harrington's liquid syllables flowed over him. "Why not look at the gear? It's real classy." Before Willy could nod assent, there was another rush through the doorway. A bunch of crates and workmen swept into the room, followed by an outlandishly dressed fellow who identified himself as a Collicrafters interior decorator. One hand clutched a bolt of flowered curtain material and the other gripped a huge pair of scissors which he waggled to punctuate his staccatto speech.

"We at Collicrafters aim to please all members of the family! The ham shack should blend! Taking one look at this hovel, I can see that the only thing that will save it is full-length curtains. This cerese material with this calla lilly overprint should go a long way to help." Dancing over to the windows, he sighed and tch'd as he measured.

For ten minutes, a whirlwind of pounding and shouting battered Willy. Then the transformation emerged. Willy's own gear had been unceremoniously ripped out and tossed in a corner of the kitchen. It was replaced by a gleaming desk full of push buttons and hidden lights with recessed inclined panel equipment. The feedline was nowhere to be seen. The new curtains screamed from the windows. The interior decorator was patting in final touches, smiling obsequiously at Harrington and saying: "Oh, Mr. Harrington, I do hope you approve of our Congo motif in the floor lamp. The figure is one of the fertility gods from near the Rhodesian border." Willy stared at it unbelievingly for a moment, then averted his eyes, blushing. Even Harrington looked momentarily disconcerted. But he nodded and shooed everyone outside where the workmen hurried to install the beam.

"Well, what do you think of it?" he asked, Willy, beaming at the shiny equipment.

Willy just nodded despairingly and said: "Look, Harrington. The gear looks great, very nicely thought out. But even if I do try to fulfill your scheme, how am I going to keep up with the QSL problem? It would take the rest of my wak-

ing day just sorting them out."

"Tut, tut," beamed Harrington. "That's Helen's job. Meet your new social secretary." Helen, who had been sitting so quietly that Willy had forgotten her, smiled at him. "Hello," she said sweetly and winked at him mischievously. Willy blushed, mumbled hello and asked with growing alarm: "But where's she going to stay?"

"Oh, no worry there," soothed Harrington. "She has a nice room at the inn down the road. Don't fret about her. She's a faithful Collicrafters employee. She has her job to do, haven't you, Helen?"

Helen smiled demurely and turned to Willy, who still looked nervous.

"Why don't you sit down?" she said. "There are several people waiting outside to see you — Greeks bearing gifts, shall we say." She moved to the sideboard and poured a glass of sherry which she brought to Willy. Harrington gathered Zhukov and Lindemann and shepherded them outside where the workmen were packing tools into the truck. Helen clapped her hands and a motley group crowded into the room, clutching boxes and papers with anxious hands.

The first stepped forward, a youngish man, rather shy and awkward in his manner. "Hello, Mr. Barron," he said, smiling uncertainly at Willy. "I represent the Cedar Meadow Long Path Only DX Association and we would like you to try to work us long path. Here is a list of our calls and here is a little gift from our club . . . a thousand QSL cards with your call on them."

"Long Path only?" asked Willy in puzzled tones. "How come?"

"Well . . . uh," mumbled the youngish man. "I've already worked 250 short path and my mother won't let me go out with girls so I had to start something . . ." Helen gave him a gentle nudge and called: "Next!"

A heavy-set, florid-faced man stepped forward briskly and shouted: "Welcome, OB, to the DX fold. We of Ramas greet you and wish to present you with this little black stamp box with all our calls inscribed. You will find $250 worth of reply coupons as a gesture of appreciation. Don't forget to answer us when you hear us!"

"Just what is Ramas?" inquired Willy.

The man beamed broadly. "Why, Ramas means Radio Amateur Mutual Admiration Society. The membership is limited to 250 hams. To become a member, two other hams in our group must vouch for you and you must be good at working DX. So good, in fact, that we want to get you in the group and wangle your trade secrets. Heh, heh!"

"Next!" said Helen with a touch of severity in her voice.

The third fellow, a bit on the middle-aged side, handed Helen a pile of self-addressed, stamped envelopes and a long list of call letters. He said he was a private QSL bureau for more than 500 hams. Willy asked him how he got into that and the man replied sadly: "Well, one morning I came up out of the cellar to tell my wife that I had worked my 210th country and I found she had gone. She had left a note in the milk bottle telling me that the milkman had more to offer — and she saw more of him. So here I am without wife or kids. I'm trying to make it up by filling out other guys' cards. I'm so busy doing that that I have no time to work any DX myself. Anyway, it helps me forget."

Helen smiled sadly and shoved him gently along. "Next!"

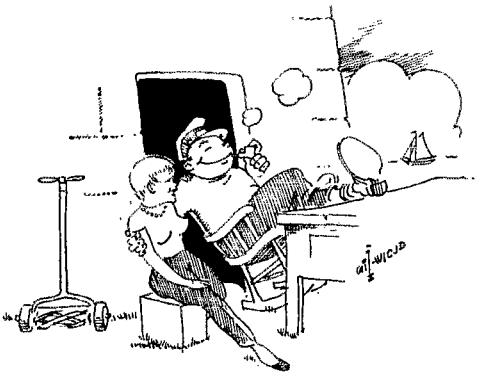
The entourage continued to file past, leaving gifts and pleading for special attention . . . the Quincy, Illinois, QRP Society; the Teaneck Transistor DX Association, Worked All Walla Walla Society. Finally, Willy fell sound asleep. Helen accepted the gifts and sent the representatives on their way. Then turning out the light and tucking a blanket around Willy, she went off to the inn to get the sleep she knew she would need to face the morning's onslaught.

The next few weeks were a mad rush of activity. Harrington had prepared an ironclad schedule: 28 Mc. c.w. 1400–1500 GMT; s.s.b. 1500–1600 GMT; 21 Mc. c.w. 1600–1700 GMT . . . and so on through the day, leaving 0100 to 0200 for the Driftwood Net. Pressure built up and Willy extended his DX efforts to eight and then ten hours a day as he tried to answer the eager CQs. He was grateful to the hams for keeping their word and staying off his net sked — his only happy time these days. Helen's typewriter pounded early and late and reams of QSLs poured in and out of the lighthouse. The first one to quit was the postman. Then the postmaster began begging for funds to build a wing on the post office. Helen took pity on poor Willy, who stuck doggedly to his schedules with red-rimmed eyes and calloused fingers. She began cooking first dinner, then lunch and finally three meals a day.

Three months went by with 75,000 QSOs and it seemed that only a small dent had been made in the massive pile-ups. Sam Zhukov's Zero Beat Peeler was a Godsend, helping Willy day after day to untangle what sounded like the cries of a thousand wounded elephants.

Then, one night, it happened.

One lone man busted in on the Driftwood Net, pleading: "Please, just an RST! I've been calling you eight hours straight for three months!" This keyed off six other plaintive "me toos." In 60 seconds, the frequency was loaded with calls. Willy just shut down. He sighed, turned to Helen and said: "I sure hope that won't happen again." Helen just smiled enigmatically.



The next night, things went peacefully for about ten minutes and then it started again. Two more nights and Willy gave up in disgust. He announced he was going off the air for good.

A week went by. Willy tended to badly needed chores about the lighthouse and his transmitter stood cold and dead. Then a car screeched to a stop in front of the house and heavy footsteps pounded up to the door. Willy answered the doorbell's angry peal. It was Harrington, grim and cold. He stared around the room. "Where is all of our gear!" he exploded.

"Gave it to the new novice over at Clay Head," said Willy quietly.

"Why? In Heaven's name, why?" cried Harrington.

"The boys broke the rules. You know that, Harrington."

"Oh, well, they must have their fun, Willy. Where's your sense of humor?" said Harrington, turning on his golden note.

"I gave it away with the gear," snapped Willy. "Why not go over and meet the Novice. He's a nice chap and I think he should be able to copy the code in about six months."

Harrington's brow darkened. "Are you really leaving ham radio, Willy?"

"Yeah," sighed Willy. "I can't stand the *honor* of being a new country."

Harrington was a realist. "Well, Willy," he said, "Thanks for your nice try. Where is my secretary? I need her for Sea Island, Georgia. That's going to be our next new country."

"Sorry, OB," chortled Willy. "Helen's retired. She and I got married last Tuesday. Boy, can she cook! . . . Hey, honey! Come out and say bye-bye to Mr. Harrington!"

So, you see, that's why Willy's gone off the air. Yeah, it is quite a story, isn't it? Kind of makes you think. By the way, have you snagged Sea Island yet? The boys say he's been silent down there for the last week. QST

The WARC Automatic Club Programmer

In Which Everyone Brings a Handful of QSL Cards to the Meeting

BY W. J. PACE,* WIILV

As ANY Activities Manager or Program Chairman of the average amateur radio club will ferverently aver, coming up with an interesting program for the edification of the membership, meeting after meeting, can be a rough, time-consuming and in many cases, frustrating job.

After all, he can get only so many speakers and show only so many movies before the numerical as well as interest limit is reached, and the worthy gentleman-in-charge finds himself facing a blank wall in the search for program material.

Such has been the case of the writer. Many times he has mentally compared the program-thirsty membership of the Waterbury Amateur Radio Club to the insatiable appetite of the picture-hungry TV audiences and deeply sympathized with the poor harassed soul charged with feeding that bottomless maw.

However, this can now all be changed with the institution of the WARC Automatic Program Plan. It will definitely *not* ease the TV producer's headaches, but will go a long way to accomplish the following:

Increase Meeting Attendance.

This is the biggest bug-a-boo. Many a chairman has found himself in the position of having an evening's entertainment all worked out, only to be greeted on meeting night by a poor turnout of members. This is especially embarrassing when he has a speaker on the agenda whom he has cajoled into coming because of the intense interest every member has in his particular subject.

Encourage on-the-air Activity.

It may be surprising to many but this must be done. Is this not the basic reasoning behind the many awards, contests, etc. that are with us all the time? We all know and will recognize the member who talks a terrific operating job, who raves on about his gear and DX QSL ad infinitum, but who we just never hear because *we* are always on at the wrong time. This guy needs jogging to light the filaments and the WARC Plan will do it.

* Upland Road, Middlebury, Connecticut

Promote and Encourage QSL Exchange.

This one hits home. The writer is noted for his Scotch proclivities with regard to QSL's and his cards are sought after like ZC4s. Piteous pleas from WAS-seeking stations fall on hardened and phone-calloused ears. The WARC Plan is guaranteed to persuade such hard-hearted skinflints to loosen up.

Swell the Club Treasury.

No, this is not the catch you have been waiting for. As will be shown, the process is so painless that all you lads who gird for a fight whenever the word treasury is mentioned won't even breathe heavy when you find out how easy it can be.

Enrich Some Lucky Member with a Valuable Piece of Gear at Laughable Cost.

This we all like.

Enfold Any or All-Band Phone or C.W. Operator, Novice or Hoary Old-Timer, Into One Equi-odded Continuous Self-Sustaining Membership-Participation Program.

Sounds impossible! But the WARC Plan can do it!

Ease the Load of the Program Chairman.

This is important, even if only to the chairman. When all other attempts at programming fail, he can very comfortably rely on *the plan* to fill a large hole in every meeting.

Last But By No Means Least, Accomplish all of the Above at Absolutely no Cost to the Club.

You program men interested? Read on . . .

To best describe the plan, it seems only necessary to spell out the Rules and Regulations, as originally drafted by the author, for use of the Waterbury Amateur Radio Club. They are self-explanatory, and can easily be tailored to suit club requirements. It is now being instituted at this club and, so far, has generated a great deal of enthusiasm.

The only equipment needed can be easily obtained. This consists of a plywood disk about 2 feet in diameter and about ¼-inch thick. This must be fitted with a central axle about which it can spin freely, after the manner of the old carnival wheels, but without the control mechanism with which these could be precisely stopped! We leave the details of construction to the user. It can be simple or ornate. The important detail is in the marking.

Four concentric circles must be painted on the face of this disk and each circle must be divided into equal segments. The segments of the outer circle will be marked with the numbers 3-4-5 alternately around the circumference, being certain that each is repeated an equal number of times. The segments of the second circle will be marked with the numbers 5-6-7-8-9, and observing the same precaution. The third circle will be marked with the numbers 7-8-9-0, in similar fashion. The last or innermost ring will be marked with the names of the fifty states.

If we haven't completely confounded you by now, you probably are already beginning to get the drift. Anyway, here are the simple rules.

1. A definite starting date must be set.
2. To participate, each entrant must pay an entrance fee of fifty cents and ten cents each time he participates. Participation is *not* compulsory.
3. The wheel is spun the first time and the number of the outer circle on which it stops is read. This is compared with the first number of the RST report on a QSL card.
4. The wheel is spun the second time and a reading is made from the second circle. This is compared with the signal strength report on the card.
5. The wheel is spun again. A reading is made on the third circle and this is checked against the tone reading on the card.
   In the case of phone operation, the number must be 0 on this spin.
6. QSL cards used must bear dates after the starting date decided upon.
7. Entrant must be present to participate.
8. Cards will be cumulative. Thus the more active member gets more cards, and thus more chances to win.
9. If a member comes forward after the drawing with a QSL bearing the correct RST-state combination, he is awarded the prize. In case of duplicate winners, the card bearing the earliest time of QSO is the winner.
10. If no winner is found, the drawings will continue on following meeting nights.
11. If no winner is found after the third month, an additional prize is added of equal value to the original, and this process is continued until a winner is found.
12. When an award is made, a new entry fee is paid and the whole process is repeated.
13. A minimum of five members must participate in each weekly drawing or "no contest" is declared.
14. All cards must be a verification of actual contact by the bearer.

These then are the rules of the WARC Automatic Program Plan, and although they may seem quite complex at first glance, they really are quite simple after examination.

I feel quite certain that the plan will accomplish all the seemingly wild claims we have made for its institution, and I would be most happy to correspond with any club chairman who would like to exchange further ideas or variations of the plan. QST

EDITOR'S NOTE: It might be easier to put the names of the states in the outside circle, as the greater diameter will provide more writing area.

While we're at it, make sure that you check to see whether any local ordinance prohibits such a raffle.

Technical Correspondence

SATELLITE NOTES

207 Addax Drive
San Antonio 1, Texas

Technical Editor, *QST*:

Here are some notes on the solar-powered satellites. At the present time, there are three earth satellites which are transmitting continuously. These are Vanguard I, Sputnik III and Explorer VI. They transmit continuously because they use solar energy for power, either directly to the transmitter or to charge chemical batteries. As a result, their signals will be around for many years enabling studies to be made on radio propagation, solar radiation and the Van Allen belts, geodetic data, solar converters and many others.

VANGUARD I — This is the first of the solar-powered satellites. It was launched by the U. S. on 17 March 1958. It transmits continuously on 108.025 Mc. only when in sunlight. During some months of the year, it is in sunlight 100% of the time and never less than 70% of its orbit period. Due to the Doppler shift, its frequency can vary as much as 6 kc., from 108.028 Mc. down to 108.022 Mc. as it moves by a receiving location. Its estimated lifetime is now given as 200–1,000 years.

Power for the transistor transmitter is obtained directly from 18 solar cells located in six windows displaced about the 6.4-inch sphere which supply voltage to the emitter and collector. Since the solar cells do not receive uniform sunlight as the satellite spins in orbit, the output voltage of the cells varies. This change in voltage causes the five-milliwatt transmitter signal to chirp about two to three kc. in a matter of seconds as it tumbles through space. There is also a slight bit of amplitude modulation as power output varies with the chirp rate. This transmitter feeds a short dipole (gain three db. below isotropic) so that the signal amplitude also varies slightly as the antenna pattern spins through space. The Vanguard I signal is indeed distinctive and easy to identify.

Because it does not dip very far into the earth's atmosphere at perigee, its lowest point in orbit (405 statute miles), it does not lose much of its energy on each revolution about the earth. As a result, its period is extremely accurate. The Army Map Service has been timing its appearance over islands in the Pacific and has located the positions of the islands to within several hundred feet. Prior to this, their position was not known to within miles. It is no doubt the most perfect satellite orbit established to date.

Vanguard I will transmit indefinitely, until its solar-cell windows cloud over due to micrometeoric impact, its transistor transmitter is affected by radiation, or it suffers a direct hit by a meteor (rather remote).

Most satellite transmitters on 108 Mc. are very low powered, usually in the milliwatt region. Therefore, it is extremely important to know your receiver frequency to within several kc. The writer uses a Tapetone TC-108 crystal-controlled converter which feeds an SX-28 b.f. receiver. Frequency can be read to within 1 kc. after the equipment has been on for several hours. This is made possible by calibrating the 14-Mc. bandspread dial of the SX-28 using a local VOR aircraft navigation station on 108.400 Mc. The local oscillator of the converter is on 122.400 Mc. The difference of the two is 14.000 Mc. Going back up to 14.400 Mc. on the bandspread dial places the receiver at 108.000 Mc.

VOR stations are convenient to use as they operate continuously and there are many of them throughout the country from 108 to 118 Mc., with assignments every 0.1 Mc.

The most important requirements for receiving weak satellite signals are crystal control, low-noise front ends and frequency resolution. Antenna gain appears secondary; but if it is available, increased signal-to-noise data may be obtained. The writer has received Vanguard I on a six-meter Yagi, 15-meter Yagi, corner reflector and f.m.-band Yagi. The six-meter beam has done much better than expected, receiving signals at apogee, 2500 miles out, and as long as 15 minutes. Signals have been received on five consecutive passes covering more than 180 degrees of equator crossings. A five-element 108 Mc. Yagi performs best of all.

There is also the possibility of an antipodal (ghost signal) reception of Vanguard I which occurred between the two near passes. In this instance, the signal was heard for several minutes when the satellite was on the opposite side of the earth. The signal rose about 3 kc. in frequency, indicating that first the signal path was away from the receiver and then toward the receiver. This caused the signal to Doppler shift up in frequency instead of down as in the case on near passes. A 108 Mc. ghost signal has been reported from Norway and an over-the-horizon signal with changing azimuths with reciprocal bearings has been reported by the Signal Corps.

SPUTNIK III — Launched by the USSR on 15 May 1958, Sputnik III is still transmitting on 20.005 Mc., with a weak harmonic on 40.01 Mc. Its transmitter is not running the one-watt output as did Sputniks I and II, but it still puts out a very good signal for 5 to 15 minutes during a pass.

In a recent Russian Translations article in *Electronic Design* (2 September 1959), data on the operation of the transmitter power supply was given. When the transmitter is operating off solar batteries, the telegraphic dit-dah lengths are 150 milliseconds (ms.), followed by a 300 ms. pulse. When the transmitter is operating off electro-chemical batteries, the dit is 50 ms. and the dah is 300 ms. long. The switching of power sources is automatic. When the chemical batteries are no longer able to supply power (or cycle), the transmitter will operate only when the solar batteries are in sunlight.

The signal of Sputnik III varies in amplitude at a seconds rate, apparently due to antenna pattern change as it spins through space. A second transmitter reported to be aboard has never been used as the present one has served well.

Originally, the signal sent out was an "L" but later settled down the present "A".

Because of its long enduring signal at 20 Mc., Sputnik III has been used to investigate many unusual propagation effects. Probably the most important are the ghost signals first reported by H. W. Wells, and the ionic cone, or sheath, as reported by John Kraus, W8JK. Both effects have been reported in great detail in the *Proceedings of the IRE*.

Sputnik III is due to re-enter the earth's atmosphere and fall to earth in December, 1959. Amateurs throughout the world can do well to listen to the 20 Mc. signal and tape record the passes as it goes to its fiery death. The cessation of its signal will have the same meaning as that of Lunik II when it hit the moon on 13 September 1959. It's not often we can be aboard a heavenly body when it meets its end.

EXPLORER VI — Placed in orbit on 7 August 1959 by the U. S., the Paddlewheel satellite transmits on 108.06 and 108.09 Mc. It uses solar cells and chemical batteries for power and is expected to operate for one year. After this, it will cease transmitting so that the frequencies can be used for other satellites or space probes.

At perigee, its height is only 157 miles. At this time, its velocity is 22,000 m.p.h. and total Doppler shift can be 7 kc. It has been heard to have this shift in just seven minutes when its height was 170 miles above San Antonio, Texas.

When it is at apogee, its highest point in orbit, it is 26,400 miles above the earth. It then does only 3100 m.p.h. in orbit and actually appears to be stationary and then backs up as observed from the earth. This is because most of its velocity is radially away from the earth rather than around or parallel to the earth.

When at apogee, its signal is 44 db. weaker than when in close. That's when a dipole just won't cut the DX! But its signal has been heard when the satellite was on a north-to-south crossing 5,000 miles above Texas, using a Tapetone converter and 6-meter Yagi. At this same time, Leon Matheny, ex-CX1BB, ex-DL4ABF, also of San Antonio, heard the signal using an f.m.-band Yagi into a Grundig f.m. receiver. And that's with 200 kc. bandwidth. A BC-221 frequency meter is used to inject a beat signal.

The 170 r.p.m. of the Paddlewheel satellite can easily be heard on its signal as the antenna pattern spins through space. The signal on 108.06 Mc. appears to be slightly stronger than the one on 108.09 Mc.

Explorer VI is not a time-consuming satellite to track.

Because of its 12 hour 45 minute period, it makes only one good pass per day in about four consecutive days. Real good passes are about eight days apart and that is certainly more relaxing than those of the Sputniks which have come every 100 minutes!

— *Calvin R. Graf, W5LFM*

WHAT WAS IT?

West Baden College
West Baden Springs
Indiana

Technical Editor, *QST:*

On Sunday, September 13, we had some tasks to perform in the shack, and just out of curiosity thought we'd see if we could pick up the signals from Lunik I. Tuning to 20.05 Mc., where we had previously monitored several of the Sputnik signals, we detected a fairly weak but steady signal. It was about R3, S6, T6; not the strong "beep . . . beep" note which we had expected, but as if the signal were showing some trace of what we call "Arctic flutter" and with a very hollow musical ring, like an amplifier approaching the feedback point. Closest phonetic approximation we might make would be "b - - - eemg, b - - - eemg, b - - - eemg" with the dashes showing just a slight trace of syncopation or flutter in the "beep." This signal held steady at a constant, though rough, count of 24 beats to a minute. We listened to it, on and off, through most of the afternoon. When we heard on radio that the Lunik was due to hit the moon around 4:00 CDT, we were on hand and monitoring this same signal. The signal faltered, then stopped at 4:02 CDT in our shack. We *thought* we had heard the moon shot.

But in *Time* magazine (Vol. LXXIV, No. 12, Sept. 21, 1959, p. 72) we read:

"Signals were received briefly in San Francisco and Japan, then faded out as moon and Lunik disappeared behind the earth. . . .

The world waited; U.S. radio receivers were on the wrong side of the earth, but at Jodrell Bank the beeping continued while the moon climbed higher . . . they stopped at 5:02:24 EDT." . . .

So we are now wondering what we heard that afternoon on 20.05 Mc., and why it should stop at 4:02 CDT. We have listened since, but not heard that signal. It was not RTTY, but a definite, steady (if weak) signal with constant beat. Could it have been the moon shot? Did any other hams also hear this shot, or at least this signal?

— *D. L. Flaherty, K9LJY*
Trustee of Club, W9EBB

ELECTRONIC KEYER CLICKS

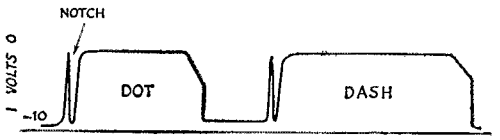
230 Orange St.
Duncanville, Texas

Technical Editor, *QST:*

I would like to call your attention to some findings regarding the circuit of the "All Electronic Key and Keyer" published in October 1958 *QST*. I have worked a great many hams that have built this circuit and it does a nice job, but there is one thing which I believe should be brought to the attention of users. I used the keyer for several weeks myself before making a detailed check on the waveform, and when I did I found that there was one discrepancy which could be a possible cause of unknown or undetected trouble, in the form of clicks or TVI, for some users. I observed some clicks on my own transmitter when I first used the circuit, and have observed some clicks on others using it, although not severe.

The waveform at the grid of the keyer tube, observed with a Textronix scope using a very fast triggered horizontal sweep, shows a positive spike of very short duration very close to the leading edge of each character. This spike is of the same amplitude as a dot or dash, and is so close to the main character that it probably would go unnoticed if observed on a regular scope unless the waveform is spread out enough to observe only the first part of the character. Unless this spike is filtered out in the keying system of the transmitter it could cause various undesired effects.

Referring to the original circuit on page 28 of October 1958 *QST*, analysis reveals that the spike originates in the inductance L_1 of the blocking oscillator. When the blocking oscillator V_{1A} fires, a positive sawtooth voltage is applied to the grid of V_{2A}, which should initiate the leading edge of the character. The 0.25-μf. capacitor becomes charged suddenly and bleeds off slowly. However, as the blocking oscillator goes through saturation and into sharp cutoff a very sharp negative pulse appears because of the collapsing field in L_1. This pulse is superimposed on the sawtooth input to V_{2A}, driving the tube back into cutoff a few microseconds after the initial firing. The superimposed negative pulse only lasts a few microseconds, after which the charge on the 0.25-μf. capacitor returns V_{2A} to conduction for the duration of the character. But the negative excursion of the blocking oscillator pulse has notched out the leading edge of the character, and can similarly notch out the leading edge of the dot or dash on the air unless it is filtered out (Fig. 1).



WAVEFORM AT GRID OF KEYER TUBE

Fig. 1

I was unable to find an effective method of eliminating the notch in the waveform at the source without upsetting the operation of the circuit, but found the circuit of Fig. 2 effective in filtering out the notch while adding a pleasing amount of shape to the characters. I am using a 6BX7 or 6BL7 keyer tube instead of a 6AS7 and do not need the full amount of negative voltage developed at the plate of V_{1B} to keep the transmitter blocked off. Using a voltage-divider arrangement as shown develops enough negative voltage to keep the transmitter blocked off and allows the trailing edge to be shaped in addition to filtering out the notch. I used a switch and three capacitors in order to select a pleasing amount of shaping. The voltage divider from the plate of V_{1B} to ground would have to be determined experimentally for different keying requirements.

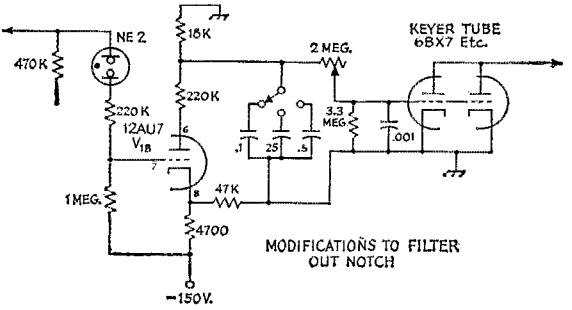


Fig. 2

Users who do not have a scope available may find it interesting to listen carefully to the leading edges of the characters, as the notch does exist. Possibly it is being filtered out in many of the keying systems using the circuit, but possibly in some it is not.

— *Earl B. Huff, W5HTB*

MECHANICAL FILTER FOR THE TRANSISTOR COMMUNICATIONS RECEIVER

192 Mills St.
Morristown, N. J.

Technical Editor, *QST:*

Mr. C. F. Zilm of the Sales Department of Collins Radio Company, Burbank, California, has informed me that the F455A-3 filter which I used in the transistor receiver described in February *QST* is obsolete and no longer available. However, an improved model to take its place is the F455F-31. When this substitution is made the 0.01-μf. capacitor between transistor Q_8 and the filter should be changed to approximately 115 $\mu\mu$f. and adjusted for maximum filter output. Also, a 115-$\mu\mu$f. capacitor should be placed in series with the "hot" side of the input to the filter and this, too,

(*Continued on page 206*)

CONDUCTED BY EDWARD P. TILTON,* W1HDQ

JUST twenty years ago this month regular coverage of activity on the amateur bands above 30 Mc. began in *QST*. The monthly department was called *On The Ultra Highs*, for all frequencies above 30 Mc. were "ultra high" then. The column was the work of your present correspondent, but it was done as a part-time proposition, handled in addition to a full-time job in the radio manufacturing field. Perhaps it would not be amiss if we took a quick look back over our shoulders, at this milestone, to see how far we all have come.

In 1939 we were recovering from the enforced stabilization of amateur transmitters used in the old 56-Mc. band. There had been increasing chaos up to the end of 1938, due to widespread use of modulated-oscillator transmitters. Their fuzzy wandering signals precluded the employment of selective receivers of any kind. Worse, they often drifted outside the prescribed band limits, then 56 to 60 Mc. It had been common knowledge that the "band" extended from about 54 to 62 Mc. in some areas. This was not so bad in earlier times, but now commercial services were beginning to move into the "u.h.f." region, and out-of-band operation could no longer be tolerated. Effective Dec. 1, 1938, amateur transmitters on 56 Mc. were required by FCC to conform to the same regulations as those on lower bands.

This made quite a hole in 5-meter activity for a while, but it also made practical our first real improvements in receiving techniques. Freed forever from the need for broad frequency response in our receivers, we soon went to superhets and high selectivity as standard practice in 5-meter work. There were not so many stations on 5 in 1939, but those that were on made rapid strides in extension of the reliable working range. 1939 is thus remembered as the year that hamming on frequencies above 30 Mc. began to come of age.

In our first *QST* column we recognized the remarkable achievement of W9ZJB, Gashland, Mo., in working all 9 call areas on 56 Mc. A tropospheric contact over 400 miles by W8CIR, Aliquippa, Pa., was recognized as the record for this kind of propagation. There were unconfirmed reports of reception of South African 56-Mc. signals by American amateurs. Sporadic-*E* skip was common, and the continent had been spanned on 56 Mc. by W1EYM and W6DNS, in 1937.

The 2½-meter band (it was 112 to 118 Mc. in 1939) was jumping with new activity in the larger cities. This was mostly of the modulated-oscillator type, the boom having resulted from the banning of unstable gear from the 56-Mc. band a year earlier. Receiving-tube oscillator rigs, superregenerative receivers and simple dipole antennas were the order of the day, though we had a note on the crystal-controlled doublers then in use at W1HDF and W1HDQ. The DX record was 150 miles, the achievement of W9WYX/9 atop Pikes Peak, and W9VTK/7, near Cheyenne, Wyoming.

W1KH, Weston, Mass., later to become third president of ARRL, reported extensive 1¼-meter experimentation in the Boston area. A distance of 18 miles was being covered regularly on schedule. The band was 224 to 230 Mc. Frequencies above 300 Mc. were labeled "experimental." They were open to anyone, just as frequencies above *30,000 Mc.* are today! We had no way of knowing precisely, but it is likely that not more than 1000 amateurs in the country were interested in the bands from 56 Mc. up.

Those were great days, to be sure. Much had been done, but our horizons were expanding rapidly. Particularly in connection with little-understood and even then unknown forms of long-distance propagation, v.h.f. men were making real contributions. It has been the good fortune of this writer to have been able to write many of these into the amateur record, through the pages of *QST*.

Amateurs were the first to use the aurora as a reflecting medium for long-distance v.h.f. communication. It was from amateur work in this field that much of the early knowledge of the aurora was derived. Following World War II we

50 Mc. WAS

1 W6ZJB	19 W3OJU	38 W7ILL	57 W1SUZ
2 W0BJV	22 W6TMI*	39 W0DDX	58 W1AEP*
3 W0CJS	21 K6EDX	40 W0DO	59 W5LFH
4 W5AJG	22 W5SFW*	41 K9DXT	60 W6NLZ
5 W9ZHL	23 W0ORE	42 W6ABN	61 W7MAH
6 W9OCA	24 W9ALU	43 W6BAZ	62 W8ESZ
7 W6OB	25 W8CMS*	44 VE3AET	63 W2BYM
8 W0INI	26 W0MVG	45 W9JFP	64 W7ACD
9 W1HDQ	27 W0CNM	46 W0QIN	65 K6PYH*
10 W5MJD	28 W1VNH	47 W0WWN	66 W4HOB
11 W2IDZ	29 W0OLY	48 K9ETD	67 K0JJA
12 W1LLL	30 W7HEA	49 W0FKY	68 K6RNQ*
13 W0DZM	31 K0GQG	50 W8LPD	69 W9QWT*
14 W0HVW	32 W7FFE	51 W0ZTW	70 W6EDC*
15 W0WKB	33 W0PFP	52 W6GCG	71 K6VLM*
16 W0SMJ	34 W6BJI*	53 W2RGV	72 K6GOX*
17 W0OGW	35 W2MEU	54 W1DEI	73 W0EDM
18 W7ERA	36 W1CLS	55 W1HOY	74 W9JCI*
	37 W6PUZ	56 W6ANN	75 W0LLU

*49 states

VE7CN	45	VE4HS	41	LU9MA	26	LA7Y	20
KL7AUV	44	SM6ANR	30	ZS3G	26	VQ2PL	18
VE1EF	42	SM7ZN	29	CT1CO	24	JA8AO	18
XE1GE	39	PZ1AE	28	CO6WW	21	JA8BU	17
VE2AOM	38	SM6BTT	28	LA9T	21	JA1AAT	17
KH6UK	37	CO2ZX	27	LU3DCA	20	JA1AUH	16
EI2W	37	ZE2JV	26	SM5CHH	20	VP5FP	7

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

were to turn up all manner of interesting facts about the world-wide potential of the 50-Mc. band at the peaks of solar cycles. Until hams first worked on 50 Mc. via the F_2 layer in 1946, nobody thought that the maximum usable frequency for the F_2 layer would go that high.

Our work over long paths in the middle '40s was of real value in many ways. Perhaps the most spectacular was the discovery of what is now called *TE* propagation — the mode by which transequatorial communication is done on 50 Mc. at times of the day and night when it was not thought possible on the basis of existing theories.

Amateur work in the meteor-burst field was instrumental in pointing out that frequencies higher than those normally reflected by the ionosphere could be used for long-distance communication, by reflection from meteor trails — a mode now being intensively investigated for military and other purposes.

Amateur radio stock rose markedly in the world of science with the announcement of the success of KH6UK and W6NLZ in working from California to Hawaii on 144 Mc. in 1957 and on 220 Mc. in 1959. Our contribution to the world-wide effort in the International Geophysical Year has brought and is bringing words of appreciation from people in many high places. And all the while v.h.f. occupancy has been growing by leaps and bounds. The number of amateurs has just about tripled in the postwar era, but the occupancy of the world above 50 Mc. has probably increased by a factor of 10.

This has been a good thing for everyone in the game, for if we are to continue growing at current rates, the new activity will have to be channeled into some part of the spectrum other than the frequencies between 3.5 and 29.7 Mc. There is still room for everyone in the bands above 50 Mc., and who can say what new developments await the hardy pioneers who will populate the bands now open to us, particularly those above 1000 Mc.?

If, in 1979, we can say that the occupants of the world above 50 Mc. have done as well in the second 20 years as they have in the first 20 of this department's existence, the cause of amateur radio as a whole will have been well served.

50-Mc. DX Prospects

Such is the nature of the current solar cycle that some 50-Mc. men who now qualify as veterans cannot remember a year when no world-wide DX was worked on 6. Cycle 19 (we have sunspot records back to 1750) has far eclipsed anything in previous human experience, and it still has plenty of life left.

Operation SHOTPUT Provides V.V.F. Reflector

The first successful firing in the Operation *Shotput* series, Oct. 28, demonstrated something of the potential of these metallized balloons for reflecting v.h.f. signals. This was the first test of what will eventually be an orbiting satellite, capable of reflecting v.h.f. and u.h.f. signals over very long paths. As such it was of more than ordinary interest to v.h.f. men.

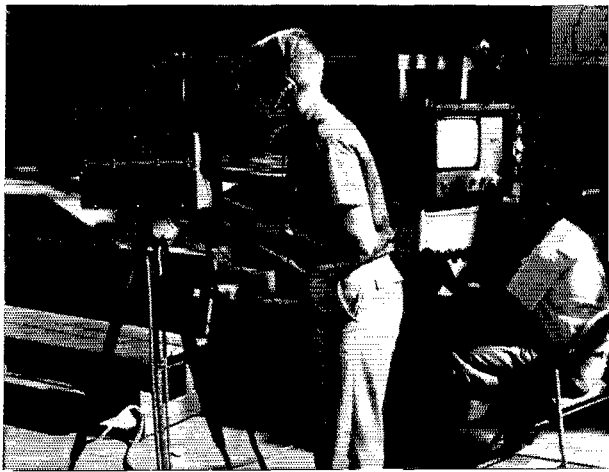
Word of the anticipated firing from Walloups Island at 1740 EST spread rapidly, and alert v.h.f. enthusiasts the length of the Atlantic Seaboard were ready for it. W4RMU, Jacksonville, Fla., W4FJ and K4EUS of the Richmond, Va., area, W4LTU, Springfield, Va., and W2CXY, Chatham, N. J., made 15-second transmissions in sequence, aiming at the anticipated trajectory of the 100-foot sphere. Nothing was heard by or from W4RMU, but all the others achieved positive results. Signals of various characteristics were reported. W4LTU heard W2CXY on some, but not all, of his transmissions, and at times noted something approximating auroral distortion on the signal. W3GKP recorded the entire test, including interesting doppler effects. K2LMG, Ithaca, N. Y., was able to copy W2CXY. Tests on 50 Mc. by W3OJU, Washington, D. C., and K2RRG, Upper Saddle River, N. J., were negative.

Three more rocket shots of this type are planned, before an attempt is made to put a balloon into orbit early in March. These will put ballons into the F_2 region of the ionosphere in a northeast trajectory, starting about 250 miles out over the Atlantic from the firing point, about 40 miles north of Norfolk, Va. Shots are planned for the last week of November, the first week of January, and the first week of February. Precise data on firing times, if available in time, will be put out on W1AW.

Cycle 18 was rated tops, but it provided only one good season of transatlantic 50-Mc. DX, the fall of 1947. The North Atlantic path was open just one day in 1946, the historic Nov. 24, when the first 50-Mc. work was done with Europe. In 1947 the band opened to Europe first on Oct. 25, and it was open frequently through November. There was no late-winter recurrence, however, and there was no transatlantic DX in 1948.

Contrast this record with Cycle 19. Our first transatlantic DX of this cycle was worked in November, 1956. It held into December, longer than the peak year, 1947. In 1957 — 8, 50-Mc. openings across the Atlantic were daily occurrences from Oct. 20 to the middle of February. It was almost as good in 1958–9. The m.u.f. hit all-time peaks of over 70 Mc. in November, 1958, though the season did not last quite as long as the previous year.

How about 1959–60? The first stirrings of fall DX are being observed as we write. European TV signals near the band edge, reliable indicators of DX possibilities, were heard first on Oct. 15. Indications point to at least marginal openings to Europe, probably peaking about the time this reaches the reader's hands in the latter part of November. The m.u.f. on most high-latitude paths is expected to be



K6KDU at the camera of his 440-Mc. TV setup, operating at a fair in Auburn, Cal. Seated at the control console is K6ARR. K6KDU is equipped with three cameras. Running the maximum permissible power at his home station in Auburn, Buz has been seen by W6OJB, Orangevale, K6GPB, Auburn, W6MYL, Camino, and several stations in the Bay area.

well down from a year ago, but north-south DX may actually be better than before.

The *QST* record shows that 50-Mc. DX was worked between this country and South America as late as 1951, 4 years after the cycle peak. The spring and fall periods of 1949 and '50 provided many good sessions. It is well known that m.u.f. peaks on north-south paths follow immediately on the heels of ionospheric disturbances, and it is currently held that auroral effects tend to lag the solar activity peak by a year or two. Thus we anticipate good north-south openings through this winter and possibly the next.

South American stations were worked this year from Southern Florida as early as Sept. 24 (see OES Notes). On Sept. 27, HC1JW and HC1FS, Quito, Ecuador, were heard in the Memphis area between 1315 and 1345 CST, according to K4PZJ, who reports that they were working 5s and 9s at the time. K5GPR, Pharr, Texas, worked them both at 1912 CST. W6PUZ, Pasadena, heard LU9MA and LU3EX Sept. 19, and worked them on the 26th. LU4HG LU7MAO and PY7BS were heard, all after 1900 PST, which looks like *TE* scatter. W3OJU reports that Argentina and Ecuador were heard in the Washington area Oct. 4, and Ecuador on Oct. 14. HC1JW and HC1FS worked into W1, 2 and 3 with surprising strength and duration Oct. 18.

A point worth noting is that these were all afternoon or evening openings, whereas in the past South American DX has been a morning phenomenon, except in the southern areas of the country. Most observers agree that the HCs appeared in the Northeast around 1400 EST on the 18th, remaining in for about an hour. There had been commercial signals from the south, just outside the band edge, and some signs of back-scatter on ham-band signals during the morning, but many DX-hounds (including your conductor) had given up when no amateur DX appeared by noon.

Late report: K6RNQ, Oakland, and K6GOX, Fresno, worked KH6s Oct. 25 for their 50th 50-Mc. state. K6RNQ already has 49-state WAS, so his is probably the first 50-50 WAS. This is also the first East-West F_2 of the fall season.

Here and There

Idaho will be on the v.h.f. map if these fellows have anything to say about it. We mentioned W6KUH/7, Idaho Falls, and his 50-Mc. intentions last month (November *QST*, p. 62), to which we add that Gordon is now K7JUK. His two principal operating frequencies are 50.115 and 50.38 Mc. Business on 144 Mc. can be handled by W7CJM, who operates from 7150-foot elevation near Boise, the site of KBOI-TV. George finds that mountain locations are not all v.h.f. DX and skiing. There is the matter of keeping antennas up, for instance. The top of his mountain is littered with pieces of aluminum from past arrays that couldn't take his special conditions, including 90-m.p.h. winds. Presently he has stacked 14-element vertical Yagis — vertical because the array is stronger that way, and because most of his 144-Mc. work is with mobiles.

W7CJM has worked W7RLA/mobile as far away as LeGrand and Burns, Ore., about 150 miles. His home-station DX includes W7AIB, Ogden, Utah, 270 miles, W7SSH, Kennewick, Wash., 235 miles, and W6WSQ via meteor scatter. George runs 500 watts input to a pair of HK-54s, and is planning to go to a full kilowatt soon. A horizontal array is also in the works. He welcomes DX schedules.

An answer to antenna polarization problems may lie in greater use of circular polarization. At least one company is now building beams for 50 and 144 Mc. with elements skewed to give circular polarization. Practically uniform response to vertical or horizontal polarization is claimed for these, and results thus far reported are interesting, to say the least. It is well known that there are very marked shifts in the polarization of waves transmitted over rough terrain. In such work the spiral array should be helpful.

W7MAH, Reno, Nev., and W6GDO, Sacramento, have found it so on their 110-mile mountain path. Their tests with vertical and horizontal arrays showed the latter to give more consistent results, though peak signals appeared to be higher with vertical. Then W6GDO put up a 20-element spiral array. A marked improvement was noted on his skeds with W7MAH, and the new array worked well with both vertical and horizontal stations. When W7MAH also put up a spiral array there was another gain, though he had been using a 30-foot Yagi 70 feet high before, and the new beam was only 30 feet above ground. Not only was there a marked improvement on the W7MAH–W6GDO circuit, and with other stations of either polarization, but both stations are now able to work mobiles more effectively.

Nevada was always a tough one for Easterners on 50 Mc. before the F_2 skip of the past few years. It may be rough again, as skip will likely be longer this year, but at least we know that there are stations on the band. One Nevada stalwart a year ago was K2YEB/7. John writes that he is staying in Reno, and will be on 6 regularly as K7ILB, with 200 watts and a 4-element array.

We don't want to take the edge off a story we hope to have soon on the work of KG1FN, but their results indicate that the far north is much more interesting for 50-Mc. work than might have been anticipated. Take the log of VE4TX, Winnepeg, for example. Cliff heard or worked KG1FN on Sept. 3, 5, 19, 20, 25, 26 and 27. The big surprise in this is the distance: about 2000 miles. There was evidence of aurora on Channel 2 on all these dates, and VE4TX finds this very

2-METER STANDINGS

Figures are states, U.S. call areas, and mileage to most distant station worked

W1REZ	32	8	1300	W5VY	10	3	1200
W1AZK	26	7	1205	W5SWV	10	3	600
W1KCS	24	7	1150	W5YYO	5	3	1330
W1RFU	23	7	1120				
W1AJR	23	7	1130	W6WSQ	14	5	1390
W1HDQ	21	6	1020	W6NLZ	12	5	2540
W1MMN	20	6	900	W6DNG	9	5	1040
W1IZY	19	6	875	W6AJF	6	3	800
K1CRQ	19	6	800	W6ZL	5	3	1400
W1AFO	17	6	920	W6MMU	3	2	950
W1AFR	17	6	675				
W1CLH	17	5	450	W7VMP	15	5	1280
				W7JRG	10	4	1040
W2NLY	37	8	1390	W7CJM	5	2	670
W2CXY	37	8	1360	W7LHL	4	2	1050
W2ORI	37	8	1320	W7JIP	4	2	900
K2GQI	32	8	1200	W7JU	4	2	353
W2AZL	29	8	1050				
W2BLV	27	8	1020	W8KAY	38	8	1020
K2IEJ	25	7	1060	W8SDJ	35	8	990
W2AMJ	25	6	960	W8PT	34	8	985
W2DWJ	23	6	860	W8IFX	34	8	980
K2HOD	23	7	950	W8LOF	33	8	1060
W2PAU	23	6	753	W8RMH	32	9	910
W2SMX	22	6	940	W8SVI	30	8	1080
K2CEH	22	8	910	W8SFG	30	8	1000
W2LW1	21	6	700	W8CHW	29	8	860
W2RXG	20	6	700	W8LPD	29	8	850
W2UTH	19	7	880	W8WRN	28	8	680
W2RGV	19	6	720	W8BAX	28	8	960
W2WZR	18	7	1040	W8NOH	26	8	975
W2ESK	18	5	850	W8DX	26	8	720
K2RLG	17	6	980	W8ILC	25	8	800
				W8JWV	25	8	940
W3RUE	30	8	975	K8AXU	24	8	960
W3FDF	29	8	1050	W8GFN	23	8	540
W3GKP	29	8	1020	W8LCY	21	7	610
W3KCA	28	8	1110	W8BLN	21	7	610
W3SGA	26	7	700	W8GTK	17	7	550
W3EPH	22	8	1000	W8NRM	17	7	550
W3BYF	22	6	660				
W3LNA	21	7	720	W9KLR	41	9	1160
W3NKM	20	7	730	W9WOK	40	9	1150
W3LZD	20	7	650	W9GAB	34	9	1075
				W9AAG	32	8	1050
W4HJQ	38	8	1150	W9RGM	31	8	850
W4HHK	36	9	1280	W9ZIH	30	8	830
W4ZXI	34	8	950	W9LVC	27	8	950
W4AO	30	8	1120	W9EQC	27	8	820
W4LTU	29	8	1160	W9ZHL	25	8	700
W4MKJ	28	8	850	W9BPV	25	7	1030
W4UMF	28	8	1110	K9YQP	24	7	900
W4VLA	26	8	1000	W9PBP	24	8	820
W4EQM	25	8	1040	W9OJI	23	8	850
W4WNH	24	8	850	W9LF	22	7	825
K4EUS	24	6	765	W9KPS	22	7	690
W4JCJ	23	6	725	W9CUX	21	7	800
W4VVE	21	6	720	W9PMN	19	6	800
W4TLV	20	7	1000	W9ALU	18	7	800
W4IKX	20	6	720				
W4OLK	20	6	720	W0SMJ	29	9	1075
W4AIB	19	7	840	WØIHD	27	7	890
W4CPZ	18	6	650	WØBFB	27	8	1060
W4RFR	18	7	820	WØQDH	24	9	1300
W4MDA	17	6	750	WØRUF	23	7	900
K4YUX	16	8	830	WØINI	21	6	880
W4RMU	15	7	1080	WØUOB	21	7	900
W4LNG	15	6	1080	WØTGC	21	7	875
				WØRYG	20	8	925
W5RCI	34	9	1215	WØIC	16	7	1240
W5DFU	25	9	1300	WØIFS	16	6	110
W5AJG	25	8	1360				
W5LPG	25	7	1000	VE3DIR	30	8	1330
W5KTD	23	8	1200	VE3AIB	27	8	1340
W5JWL	21	7	1150	VE3BQN	19	7	790
W5PZ	16	8	1300	VE3DER	17	8	1340
W5VKH	15	5	720	VE3AQG	17	7	1300
W5ML	12	5	700	VE3HW	15	7	1350
W5FSC	12	5	1300	VE2AOK	13	5	550
W5HEZ	12	5	1250	VE3BPB	14	6	715
W5FYZ	12	3	735	VE7FJ	2	1	365
W5CVW	11	5	1180				
W5NDE	11	5	625	KH6UK	1	2	2540

helpful in making contacts on 6, both by aurora and sporadic-*E*. A CQ on c.w. when he observed aurora on Channel 2 recently netted him a contact with VE6UV, Edmonton, Alta., the first time he has heard a VE6.

Some opportunities for work between the West Coast and Hawaii on the v.h.f. bands were lost during October, says W6NLZ. John has it from a Pan American Airways engineer that 128.1 Mc. has been open from San Francisco west as follows: on Oct. 12 to a point 250 miles west of the halfway point to Hawaii; Oct. 13 to about three-fourths of the distance first, and later to a point off the Island of Molokai; and on Oct. 15 to two aircraft near Oahu. The aircraft in question used 25-watt transmitters, and simple blade-type antennas!

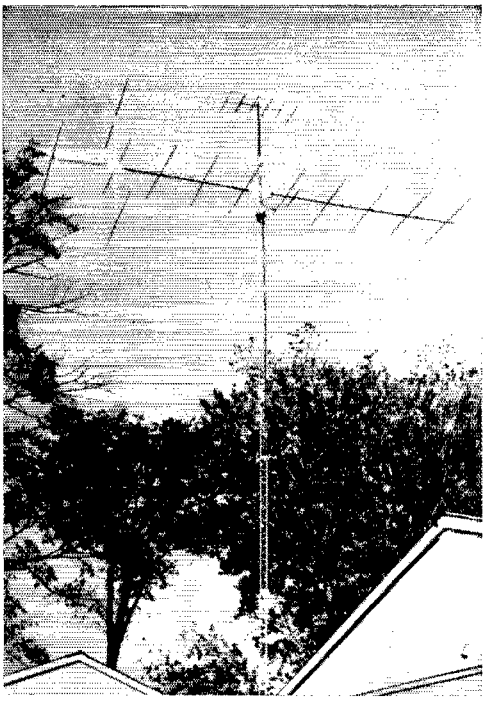
The Dismal Draconids

Gathering negative data never moved an aspiring v.h.f. enthusiast up a single rung in the states-worked boxes, but it can be an important job in certain circumstances. This is about the only consolation we can offer those who kept all-night vigils on 50 and 144 Mc. the week end of Oct. 9–10. On Oct. 6 we received word from W4PME, author of the material in October *QST*, on the Draconids shower, that latest astronomical information indicated a deflection of the shower. Prospects were considered poor, but there would be much scientific interest in amateur observations, negative or otherwise. We put this information on W1AW at once, warning any who might be listening not to expect too much from the 1959 visit of the comet Giacobini-Zinner.

K6GOX, Fresno, summed it up by saying that he heard some bursts from the north and east, but he thought these were above normal only because there were so many stations running tests. W6NLZ, near Los Angeles, reported nothing unusual. W5ZLV, San Antonio, monitored both 50 and 144 Mc., in the company of a number of v.h.f. men of the area. No meteor-burst signals were heard on 144 Mc. W5ZLV made frequent checks of WWI, Havana, Ill., on 49.72 Mc. Weak bursts were first heard from this station at 2255 CST Oct. 9. They built up in number and strength until about 0225 on the 10th, when a recording of the signal was made. A second recording was made at 0125 on the 11th. The signal had never been heard before, and it was not received in checks at similar times on the 12th and 13th. Most of the bursts heard were extremely weak, with only a very few hitting high levels.

W3TDF, Langhorne, Pa., kept 144-Mc. skeds with W5PZ, Ponca City, Okla., 1700 to 1730 EST, and W5HYZ in Louisiana, 2330 to midnight, Oct. 9, with no results whatever. Ray heard isolated pings after midnight, during which time he called frequent c.w. CQs on 144 Mc. He worked W4HJQ, Glendale, Ky., but apparently without help from meteors. He also kept a receiver running on WWI, and observed a large increase in the 49.72-Mc. signal whenever there was a pin on 144 Mc. Only 2 pings and one very short burst were heard from W5JWL while he was keeping a sked with K2IEJ.

Extensive skeds set up by WØIC, W4RMU, W1REZ, and other experienced meteor-shower workers produced little or no results. Your conductor was in Syracuse for the V.H.F. Roundup. We arranged to check 6 and 2 at W2RHQ, where a receiver was kept on WWI from about 1930 until 0100 EST. The signal was barely audible at first, and it showed only typical ionospheric scatter qualities until around midnight. From then until the end of our monitoring the signal built up, as did the number of bursts. It was nothing like the way the 6-meter band sounded the night of Oct. 9, 1946, however. No DX signals were heard on 50 or 144 Mc., in much careful tuning. It has been our experience in the past that major meteor showers such as the Perseids and Geminids always produce quite a few random bursts on 50 Mc., often with signals strong enough to catch snatches of conversation on voice.



The 50-Mc. array at K2IXN, Rome, N. Y., boasts 10 elements in line on a 35-foot boom, with trigonal elements above and below the driven element. The boom is 2-inch irrigation tubing. Small beam above is a 6-element 2-meter job.

From the PRP Reports

Propagation Research Project logs from U. S. observers showed little 50-Mc. DX in September, other than a few scattered instances of aurora and sporadic-*E* skip, but elsewhere in the world things were shaping up well. ZE2JV, Salisbury, Southern Rhodesia, found the m.u.f. to the north to be 70 Mc. or higher Sept. 3, 5, 6, 7, 8, 9 and 12. Ray observed again what he has termed an "equinoctial dip" in m.u.f. after Sept. 12, and what appeared to be one-way propagation on Sept. 20. On the latter date ZE2JV was able to hear no signals above 46 Mc., yet his 50-Mc. signal was copied on Cyprus by ZC4WR. Cyprus has a video channel on 48.25 Mc., but it was not heard in Salisbury. ZE2JV heard a weak phone signal, believed to be a U. S. 50-Mc. station, at 1850 GMT Sept. 25. Among his 50-Mc. contacts in September were VQ4FO and VQ5FS. ZC4WR missed hearing ZE2JV only on Sept. 4, 19 and 20.

On only two days in September (the 2nd and 4th) was VK4NG, Rockhampton, Australia, unable to hear Japanese stations. He heard or worked Hawaiians Sept. 3, 5, 7 and 19.

(*Continued on page 188*)

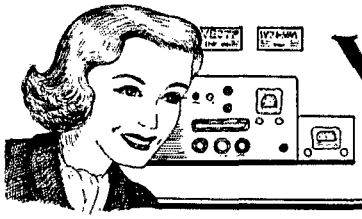
220- and 420-Mc. STANDINGS

220 Mc.

W1AZK	9	3	412	W4UMF	11	5	420
W1HDQ	11	5	450	W5RCI	8	5	700
W1OOP	12	4	400	W6NLZ	3	2	2540
W1RFU	11	5	480	K6GTG	2	2	240
W1UHE	11	4	385	W6MMU	2	2	225
W2AOC	13	5	450	K8AXU	8	5	680
K2AXQ	8	3	230	W8IJG	9	5	475
K2CBA	9	4	325	W8LPD	6	4	480
K2DIG	4	3	140	W8NRM	8	4	390
W2DWJ	14	6	740	W8PT	7	3	550
W2DZA	12	5	410	W8SVI	6	4	520
W3AHQ	4	3	180	W9EQC	8	4	740
W3LCC	8	5	360	W9JCS	5	2	340
W3LZD	15	5	425	W9JFP	9	4	540
W3RUE	5	4	225	W9OVL	5	2	290
W3UJG	11	5	400	W9UED	4	4	605
W3ZRF	5	3	112	W9ZIH	6	2	270
K4TFU	8	4	400	KH6UK	1	1	2540
W4UBY	7	5	320	VE3AIB	7	4	450

420 Mc.

W1HDQ	8	3	210	K2UUR	5	2	110
W1RFU	8	4	410	K3EOF	6	3	250
W1OOP	9	3	390	W4HHK	3	3	520
W1UHE	3	2	430	W4VVE	6	4	410
W2AOD	6	4	290	W5RCI	5	3	600
W2BLV	11	5	360	W7LHL	2	1	180
W2DWJ	6	4	196	W8HCO	3	2	355
K2CBA	5	3	225	W8NRM	3	2	390
W2DZA	5	3	130	W9GAB	7	4	600
W2OTA	5	3	150				



YL NEWS AND VIEWS

CONDUCTED BY ELEANOR WILSON,* W1QON

The DX YL

By Maxine E. Willis, W6UHA

ALTHOUGH we may pursue that elusive will-o-the wisp called DX just as eagerly as the OM, YL reaction to this engrossing pastime often proves to be widely divergent to that of the first operator. Of course, we do share the same pride of achievement in working a new or rare country and obtaining the QSL card. However, a DX YL is usually a truly imaginative person and vicarious traveler who finds she has ventured into a strange new world of endless delights.

Back in 1949 the most sought-after station was AC4YN — Lhasa, Buddhist sacred city of Tibet, the "Shangri-La" of James Hilton's *Lost Horizon*. On the morning when W6TS (the OM at W6UHA) worked Tibet for the first time he no doubt made this brief entry in the log: "managed to snag AC4YN today". The log of W6UHA read more like this: "What a thrill it was to meet the famous Reginald Fox of AC4YN! A very polite Englishman who expressed his surprise at finding a lady on the key." My glory was short-lived, however. A few weeks later in a conversation with Lou, W1MCW, I learned that she already had a QSL confirming her phone QSO with AC3SS! Almost invariably upon working a new country I discovered that Lou had been there first. (She is now K4HEF.) Well, competition always adds zest to the game as did local rivalry with long-time DXer Helene, W6QOG/MBD. And neither Reg Fox nor I could foresee the day when an attractive Czechoslovakian YL named Milada would create so much excitement among DXers with her outstanding operating as JT1YL in Ulan Bator, Outer Mongolia.

The past few years have brought many rewarding friendships with YLs and OMs in far distant places. It doesn't really matter whether or not the QSOs are on a.m., s.s.b., or c.w. An hour-long chat with Diana, ZS6GH, can be most pleasant. She was the first DX YL we met in person when she toured the U.S. and Canada in 1947. Likewise, a c.w. contact with a Russian YL operating a club station can seem as personal as a warm hand-clasp. In that brief moment we seem to overcome easily language barriers, difference of ideology, the separation of thousands of miles. We are real friends who share an interest in the same hobby.

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

How does one become a DX YL? I certainly do not pretend to know all the answers to that question. My DXCC and WAZ awards were issued in 1949, but after thirteen years of fairly consistent operation my country total is only 269 c.w./f, worked and confirmed. At least, I can set down a few suggestions for working DX.

1. Know the country prefixes. Obtain the ARRL Official DXCC Countries List. Exchange lists of countries needed with fellow DXers. Be ready and willing to jump out of a warm bed at 3:00 A.M. to work a new one.

2. Have an efficient transmitter, good receiver and beam. A great circle map centered on your home station will aid in mastering proper orientation of the beam. It is not necessary to have a high-powered station. With persistence, Carol, W6WSV, held frequent 20-meter c.w. skeds with Hub, FB8BR, Madagascar, running 50 watts and without benefit of beam. Of course, it is not quite such a struggle with six or seven hundred watts.

3. Become familiar with the use of GMT, Greenwich Mean Time. Almost all DX amateurs use GMT to avoid confusion in making skeds, QSL cards, etc. GMT clocks are available as are small, simple time computers. For your next birthday ask the OM to get Webster's Geographical Dictionary — more useful than a diamond bracelet.

4. LISTEN! Listen about 95% of your operating time. Observe the operating practices of the fellows who really work the DX. In my early days of DXing I learned a lot from those stern and unrelenting advisors Marv, W6VFR; Bill, W6SAI; and Chan, W6RDR. Make short calls. Don't hold

a DX station when others are waiting to work him. QSY off his frequency. Try never to call when the DX station is transmitting. Knowing when, where, and just how long to call — these abilities *may* be acquired after years of operation.

5. Exchange DX news with other DXers. YLs seem to have a strong tendency toward long-time friendships and repeat schedules. Fred, VE3AIU, and I have enjoyed regular skeds for almost fourteen years, but we don't visit when the DX is rolling in. His recent tip enabled me to catch VQ9AIW, Seychelles, on 15 meters after many frustrating attempts on 20.

6. Subscribe to the DX magazine published weekly at Burlington, Kentucky, and edited by W4KVX. It is an FB publication of reliable up-to-the-minute DX information.

Among the DX fraternity YLs are not merely tolerated. We are accepted on our own merit, provided, of course, that we observe the rules of the game, essentially those of good sportsmanship. As a charter member of the Southern California DX Club I have enjoyed the special camaraderie of many topflight operators who have made me feel welcome.

In the years following World War II the ten-meter band conditions were excellent and YLs began to appear on the DX bands. One of the first heard working many European stations was Ethel, VE3DTW, who lived at the Welland Canal Lighthouse in Ontario and was called "DX Mama" by her two teenage sons. While she and Louise, PAØZC, in Holland, chatted about Christmastime customs in their respective countries, Myrt, ZL4GR, described her annual open-house for a large group of children in Dunedin, N. Z. One did not soon forget a conversation with Iris, ZS2AA, of the ready wit and sense of humor. After an FB QSO with Jeanette, KH6AFN, that keen DXer who had an excellent signal from Hawaii, we might have heard Molly, ZE1JE, in contact with a VK teacher whose students listened attentively to her discourse on the wonders of Southern Rhodesia. Interesting women operators and able DXers appeared on all continents — Mary, LU4DMG, Argentina; Lucia, CR7LU, Mozambique; Marie, ZS6KK, South Africa; Paula, EA2CQ, Spain; Nell, G2YL, and Constance, G8LY, England; Hilda, W4HWR, was operating from Germany (she is now KA2HA, Japan). Soma, 4S7YL, Ceylon, put her small country on the DX map. Recently I have enjoyed meeting Pat, I5GN, Italian Somaliland; Pinkie, ZS4LB, Orange Free State; Carola, OH5-SM, of composer Sibelius' homeland — to name but a few. It would be almost impossible to list the many DX YLs who are active on the various bands on all continents.

Our hobby, besides being an extremely interesting one provides many opportunities for being of service to others. Maude, VE6MP, has an enviable record for aiding rescue missions and handling emergency traffic between Arctic stations and operators' families in Canada and the States. Lenore, W6NAZ, devotes many hours to this useful phase of the hobby. A few years ago Clara,

Top DXCC YL, with 269 countries confirmed, and author of our story on DX YLs, Maxine Willis, W6UHA, is surrounded by a sampling of her enviable QSL collection. Since 1941 when she was first licensed Maxine has made DXing her speciality, and her friendly QSOs have won her countless friends around the world. Maxine's OM W6TS was the first amateur to work across the U. S. on 20 and 40 meters (with IXAM and 2MU) in 1925. The Willises are both members of the Metro Goldwyn Mayer Studios ARC in Los Angeles.

W6TDL, and Sandy, W6YRL, kept very busy with traffic for service men in Japan, Okinawa, and Guam. DX YLs find time for many worthwhile activities among the handicapped. Thelma, ZL2JO, has long been an active worker in the League for Crippled Children, Wellington, N. Z. and Frances, G3LWY, devotes her energies to a British organization called the Radio Amateur Invalid and Bedfast Club.

The joys of DXing are ever-present. While neighbors visit over the back fence, the DX YL may enjoy an excursion to the Belgian Congo with Mony, OQ5GH, or to the frozen Northwest Territories with Margaret, VE8UC. Unexpected visitors from all parts of the world are always welcome at the QTH of a DX YL. Somehow or other a bridge table conversation seems unbearably dull after hearing the story of that holiday dinner party of December, 1957, in Beirut, Lebanon, where W6QYL, Martha, OD5CD, Lily, and W6GAI, Frances, met and became close friends. The latter's first love has always been working maritime mobiles, and Fran wrote her own chapter in YL history with the memorable world tour aboard the *Flying Enterprise II* with Captain Kurt Carlsen. In the summer of 1958 I spent six happy weeks touring Canada from VE2 land to VE7 land. Princess Margaret did not take note of the fact that our paths crossed in Banff National Park one Sunday afternoon in late July, but amateur friends rolled out that same red carpet reserved for royalty.

Enthusiasm for DXing may wane temporarily, but it usually returns. From seventeen to sev-

enty, from YL to OW, we experience the same sparkling expectation when we venture into the "World of DX" — the feeling that "Something exciting is going to happen today." Through DX, ideas are exchanged, cultures are shared, concepts are broadened. We can play at least a bit role in the promotion of international good-will. Having reached the end of log book No. 33, take it from one who is both proud and humble to say there's just nothing like being a DX YL!

An OM Calls On DX YLs

By R. E. Holloway, G3HUA

AMATEUR radio provides many forms of interest and entertainment, DX hunting, rag chewing, construction, design and etc. I feel that whatever the interest of an amateur may be, it is always and additional surprise and pleasure to hear the ladies on the air.

I have had many QSOs with YLs on various bands but the greatest thrill has been on the occasions that I have been able to visit them in person. Since I fly as a navigator with the British airline B.O.A.C. this is often possible.

The first YL I met was Eve, ZS6YY, who lived with her OM Geoff, ZS6YI, at Hartebeesteporte Dam near Johannesburg, South Africa. The location was perhaps one of the most beautiful in the world with the house situated on the side of a mountain overlooking the huge lake. The location, however, was poor for amateur radio and DX was achieved only with great effort. No main voltage was available, and the rig was supplied from batteries charged by a somewhat ancient and very noisy petrol engine driven generator, which often had to be switched off in order to copy weak signals. I spent many happy hours with Geoff and Eve before I ceased operating on that route.

B.O.A.C. routes, of course, are world wide and it was not long before I began operating to the Far East, and this again brought me in contact with other YL operators.

While visiting VS6CL in Hong Kong, I spoke to VS1ES, Jim, and his wife VS1AA, Joan, who invited me to visit them on the way home. Fortunately my schedule allowed me an overnight stop in Singapore, and I took the opportunity of visiting them in their flat. Joan had the re-issued VS1AA license during her stay in Singapore and she and Jim used a common rig. Soon after we met Jim and Joan moved to Germany and we have not met since.

Again as a result of QSO from the shack of VS6CL a meeting was arranged in Tokyo with Dave, KA2NS (W4UTB/3) and his charming wife Ev, W4VCB/3. This was the start of a lasting friendship. I was able to visit Ev and Dave at their home in Tokyo where I enjoyed Ev's American home cooking in a Japanese atmosphere. I visited them several times before they returned to the U.S., where I was to meet them again some years later.

In Colombo, Ceylon, I stopped over night and visited Soma, 4S7YL, and her husband Wicks. Arriving at Ratmalana Airport three hours late due to head winds on route from Singapore I, was met by Soma, Wicks, and many other amateurs from Colombo. Never was the saying "East is East and West is West and ne'er the twain shall meet" so completely wrong. Within minutes of arriving at Soma's house we were old friends, comparing DX notes and rag chewing with Jack, VS6CL, on 15 meters.

Another charming YL I met is Carola, OH5SM, whose husband is Axel, OH5NW. She and her husband visited England and during the course of their holiday they stayed three or four days in Southampton with my wife Christine and myself. At the same time we were visited by Jack, VS6CL and his wife, and Tom, VK2NN, ex-G3HSN, and his wife, which made up a most august DX gathering. This same group used to hold a round-table on 15 meters from our home QTHs, with everyone copying Q5. Carola lives in Mustila, Finland, a small village, which, according to VS6CL, is a most beautiful spot. In a little over a year Carola has notched 182 countries with 154 confirmed, which is good considering she has two small children to provide local QRM.

Perhaps the greatest thrill was during October, 1948, when I visited Philadelphia and met Dave and Ev again. Since then I have visited them several times, and we always have so much to talk about that the visits are all too short. During one visit I met Eleanor, W3BIW, who entertained me at lunch and again demonstrated so ably that American women are the perfect hostesses.

I hope that in the future I shall meet many more YLs on the air or in person, but meanwhile I must content myself with thinking about the visits I have had in the past. Perhaps *we* might meet on the air one day. 88.

Net News:

All YLs who operate s.s.b. are invited to participate in the new YL-SSB Net which meets Wednesday, 1300 to 1500 CST on 14,260 kc. K5BJU is NCS; K2MGE is alternate.

The Floridora YLs have started another net in addition to the three listed in last month's column. The new Business Gals net meets Tuesday at 2000 EST on 3950 kc. K4BAL is manager.

Correction on the Loaded Clothes Line Net: Meetings are Monday at 0900 CST on 7235 kc. KØMNI is NCS.

The Georgia Peach YL Net meets Thursday at 0900 EST on 7260 kc. K4DNL is NCS.

—•••—

With sorrow we record the passing of Ruby F. Word, W6WRT, of Burbank, California, on October 12, 1959. Licensed in 1941, Ruby was a long-time member of the YLRL and charter member and past secretary of the Los Angeles YLRC. She was the wife of W6UTZ and the mother of a fourteen year-old son.

COMING YL GET-TOGETHERS

Midwest YL Convention — The tenth annual will be held in Indianapolis, Indiana, May 20–21, 1960. Pre-registration is $2.00. W9RTH is chairman; K9IXD, co-chairman.

YLRL International Convention — June 17–19, 1960, at the Hotel Commander near Boston, Mass. WRONE is hostess club. Co-chairman are W1ZEN and W1SVN.

KEEPING UP WITH THE GIRLS

CLUBS:

Portland Roses — New officers are Pres. W7HPT; V.P. W7QKU; Secy. K7BII; Publicity W7NOK. W7RVM continues as custodian of the Portland Roses certificate.

(*Continued on page 188*)

Miss Oly Hopung, VP1OLY, El Cayo, British Honduras. One of two YLs in her country, Oly operates phone ten thru eighty meters.

Peruvian YL OA4EH formerly operated as CP1JK. Raquel is on 10, 15, and 20 from Lima.

The suggested caption for this photo, "What the ARRL Did For this Couple," was written by the bride's sister, Betty Sutton, W5ERH. Once upon a time, at the Eleventh National Convention of the ARRL in Galveston in June, 1959, two hams, one YL and one OM, met. Sgt. Paul Brown, W3UOL, was in charge of the Air Force MARS booth. Miss Hazel Sharp, K5SOK, was on duty at the Gulf Area Ladies Amateur Radio Klub booth nearby. The Sgt. stopped to see the GAYLARK display and left so impressed with one of the walking exhibits that they were married early in September.

From Beirut, Lebanon attractive Miss Lilly Chebab, OD5CD. Make a date with Lilly on twenty phone.

OQ5FH is QSL Manager for the Belgian Congo. Mony uses a home-built transmitter running 100 watts, the maximum power allowed in her country.

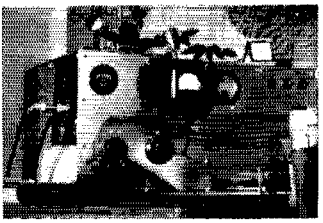
VQ2LB is a welcome check-in to the YLRL Hairpin Net whenever Lorraine's signal can be heard from Northern Rhodesia.

If you have worked any British YLs during the past twenty years, bets are high that one of your contacts was G8LY, Miss Constance Hall of Hampshire. Constance continues activity on ten phone and c.w.

EA2CQ is a call well-known to DXers since 1950. While accompanying her OM EA2CA on a recent expedition to Andorra, Paula operated as PX1DE at a ski lodge 7000 ft. in the mountains. *(photo courtesy W2KUW)*

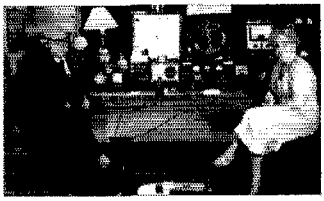
ZE1JE's call is synonymous with African YL DX. Ever happy to oblige with a contact from Southern Rhodesia, Molly has been operating since 1948.

(More photos on next page)

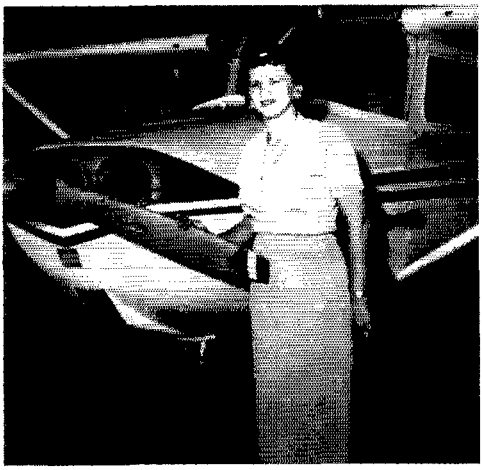


Two beautiful African homes and a famous DX YL in each. Left: OQ5IE, Jane Hiernaux, Stanleyville, Belgian Congo. Jane is on 14,330 s.s.b. daily between 2000 and 2200 GMT. Right: ZS2AA, Iris Hayes, Cape Province, South Africa, (and OM). Iris was organizing president of the South African Women's Radio Club.

A Mr. and Mrs. team from Johannesburg, So. Africa—Doreen and Bob Lambert, ZS6APG and ZS6AJX.



Another husband and wife team from South Africa—Mr. and Mrs. Harris of Port Elizabeth. Hal is ZS2LB and Eileen is ZS2MH.



Presenting two more YL pilots—there are enough of such air-minded YLs to perhaps warrant forming a special club of their own. Blonde Millie Doremus, W1SVN, on the left, followed her OM into flying, as she did with ham radio and golf. Millie, the mother of four boys and a policewoman in Lynnfield, Mass., says that her only regret is that she didn't take up flying twenty years ago.

Grace Dunlap, K5MRU, (right) now of La Feria, Texas, may be more quickly recognized as ex-KZ5DG. Grace was licensed in 1951 in the Canal Zone and for several years handled great amounts of traffic for the district. Off on a trip to Alaska at the moment, Grace expects to be at the YLRL convention in Boston next June and enthusiastically predicts, "Of course, we'll fly!"

A Merry Christmas to all

— W1QON

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How:

Last month we bored you with Operation Obligato, a playful proposition for hardy souls who dig their DX the hard way on 160 and 80. We swung on static, chief fly in the low-band DX ointment. Now what irksome insect can we take a swat at in similar unorthodox fashion for the orthodox 20-meter crowd? Well, discounting truly foul DX-hog types, what species of propagational skunk makes you the maddest through tragic waste of precious postage and midnight oil? Rare-DX-imitating bootleggers, perhaps.

A typical BL sequence goes thus: (1) VQ7XX suddenly appears on 14,015 kc. with mannerisms reeking of glorious rarity, (2) after the nut's first few QSOs the fun begins in earnest as the mob moves in, (3) victims with rotary beams swap rough bearings on either side of the pile-up but their immediate conclusions are usually inconclusive, (4) DX men and societies in the VQ7 vicinity are hurriedly consulted with the immediate verdict again in some doubt, and (5) with the passage of time, plus lack of evidence to the contrary, it becomes generally acknowledged that the whole episode was a dismal waste. There are variations in this routine according to the antics of the perpetrator but the outcome is always less than nothing, a ridiculous goose egg in a nest of useless QRM and QSLs.

The shrewd 200-country man recommends working everything one hears without hesitation, for one never can be immediately *sure* that this VQ7XX is a psycho on shipboard off Sandy Hook. He's right; there's no magic formula to quickly differentiate between the ungood and the good. But it would be nice to be able to establish the fraudulence of the fellow as soon as possible, an ability which later might become deterrent.

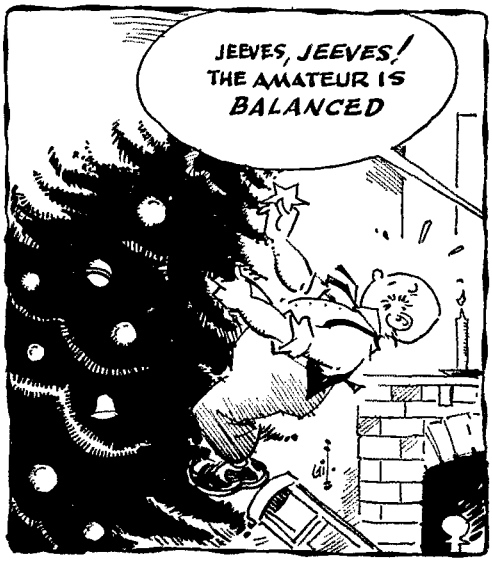
Carefully consider Step 3 in the chain reaction outlined above, a stage where rotary-beam boys often can throw heavy immediate doubt on a phony's authenticity. Here's a spot where FCC's DF net would be a boon, but FCC monitors can scarcely be expected to rush to the scene of every weird CQ, especially since most of this screwball stuff originates outside FCC licensing areas. *Question:* Could we DXers, with systematic organized approach, raise the efficiency of our own casual "Step 3" direction-finding network to the point where we could do ourselves such favors? The requirement here for dispersed yet integrated effort is unique. Teamwork between DX-minded individuals and groups from coast to coast, exchanging and developing data on prearranged DF-net frequencies, would be necessary to make the scheme pay off.

To be sure, vagaries of propagation make high-frequency triangulation a tricky undertaking even with optimum distribution of elaborate equipment, and the usual ham rotary, peaked for forward gain, leaves much to be desired as a DF sensory array. Its big lobe is broad as a barn door and its null often multiple and shallow. But it's something to start with; compensated cardioidal sniffers could come later. When your club's mood is ripe for a fresh departure we submit Project Pinpoint as a worthy challenge that sounds like fun.

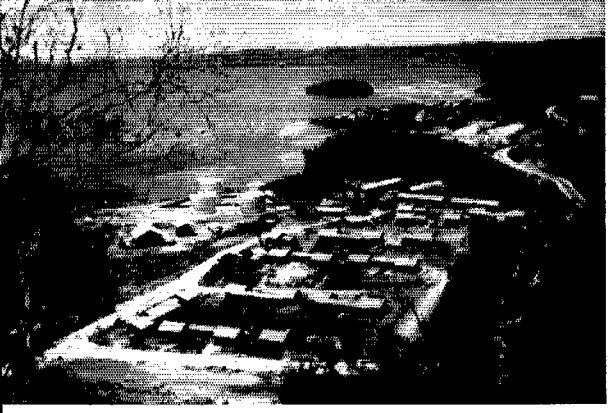
What:

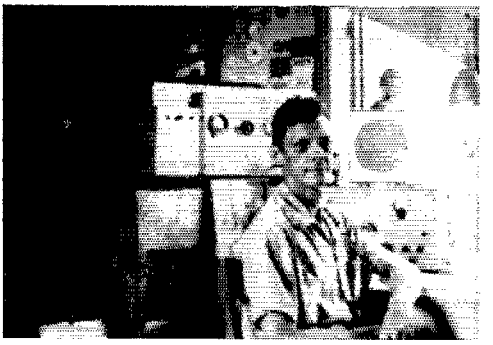
Self-policing is one word for it, and perhaps Pinpoint could help pinpoint the source of some of those hit-and-run commercial radiations that foul up a good DX band from time to time. . . . Consensus of "How's" correspondents confirms that conditions ain't what they uster be just twelve short months ago. Ten, 15 and 20 meters fold their tents like the HZ1s and silently steal away when darkness rolls in — even transequatorial stuff goes flimsy. Then Old Sol climbs his skywire after breakfast and the skip shortens up like a snapped spring, bringing with it an avalanche of rag-chew racket. But a sampling of logs from near and afar proves that increased effort can keep the average up. When those hot openings do come along, *move fast*. . . .

20 **c.w.** is back in the driver's seat of our "How's" Bandwagon with W1s DGL JGY, K1JFF, W2s GVZ (255), JBL 'GQ (64/30 worked/confirmed), K2s BMI DGT SFA UYG, WA2s FNA GWF (81/11), W4IUO (146), K4s IEX IGD QLJ RJN (143/115), TEA (117/87), TKM, K5s JZP (30/11), LLJ (32/12), TER (114/75), W6s JQB KG, K6s CJF DZJ HLL LXS, WA6CPI, W7s DJU LZF, K7s CTI HDB, W8s DAW (286), IBX (192/181), YGR, W9ZYD, K9s HLW KYR LIO, KØs OVR (59/26), SAJ, EL4A, KH6DGL, KL7PI, VE7CQ (202/170) and VE9NG (2/1) loading 'er up with **AP**4MD, **BV**1s US USC, **CE**9s AH AJ AK AS (14,090 kc.) 3 GMT, **CM**2QN, **CN**8BP, **CO**s 2QR 7AI, **CP**3s CD CN (44) 4, **CR**s 4AX 5AR 6AP (40) 4, 7CH (40), 7CS, **CT**s 1GK 2AI 2BO,



*4822 West Berteau Ave., Chicago 41, Ill.





JZØDA is a favorite target for the 14-Mc. c.w. gang. This clifftop view of near-by Hollandia harbor conveys some DXotic Dutch New Guinea atmosphere. *(Photos via KL7PI)*

CX2AC, DM2ADL, DUs 1OR (72) 23, 1VQ 7SV (90) 13, 9AC, EAs 6AF (40) 22, 6AM 8BF (70) 4, 8BX, FA3DU, FB8s CJ XX (40) 21, ZZ, FF8CI, FG7XC (7) 2, FK8AW, FO8AC (50) 4, FR7ZD (20) 17, FY7s YF (2), YG (50), GC2FMV, GD3FXN, HAs 1KSA 5KAG 7PL, HCs 1JU 2IU (32), 4IE (51) 11, 5CN (20), HKs 1FF 4JC 6JH, HP1GD, HRØAB (70) 6, I5GN, IT1s CDS TAI (76) O, JAs 1CJN 2DO 3API/mm 4AJ 4QL 7AD (23) 10, 8AA (50) 10, 8GS ØAD, JT1AB, JZØs DA HA, KA2LN, KC4USV (12) 0, KGs 1AQ 1BC 1BL 1DT on that soiled ice cake, 4AD 6AAY (21), 6CY (40) 11, KM6BT, KR6s HV MD (45), KV4s AA (80), BO, KW6CQ, KX6CO (23) 10, LAs 1NG/p (70) 23, 3SG/p (75) 22, 4CG/p 8FG/p (89) 2, LUs 1ZC (17) 7, 9ZV (80) 0, LZ1s AF KBA (33) 6, VK, MP4s BCU QAO, OA4IGY, OR4RW of the Belgian Antarctic, OX3s DL GA, OYs 1J (18) 0, 7ML (20) 22, PJ2s CP ME of Sint Marten, PY7SC of Fernando, RAEM of Moscow, SL2ZA just Sweden, SM2AQQ (5) 21 of rarer Sweden, SPs 5ADZ 5AP 5AZ 8HR 8KBM 9ACK, SU1s AL MS (20) 4, SVØWB, TF5TP, TI2s DN 3, PZ WR, UAs 1KAE and 1KAE/6 of Russia's southern polar region, 9CM 9DR 9JJ 9JR 9KAA 9KAG (55) 5, 9KCC 9KDD 9KDN 9KJF 9KQA 9KSA 9MD 9OM 9WG 9XE ØBD ØCI ØCN ØFG ØKAR ØKCK (36) 17, ØKCO ØKQB, UB5s DI FX KAA KAG KCD KIA TR UW ZE, UC2s AR CB KSA, UD6FA (10) 4, UG6AW, UH8KAA, UI8s AG KAE, UJ8s AC KAA (54) 15, UL7KAR (9) 15, UN1s AE AG, UO5s AA (68) 23, PK, UP2s NN NW, UQ2s AB AN AS, UR2s AO BU, VEs 1ADP of Prince Edward Isle, 8DM (30), 8DX (35), 8TO 8TU ØNM on shipboard, VKs 5NT of Australia's rare Northern Territory, 9GK 9MV (83) 11, 9VM (80) 10, 9XK (55) of Papua, ØCC of Macquarie, ØRH (82) 16 of Antarctica, VPs 2AR 3VN 4TF 4TR 5ME 7NA 7NM 7NS 7NW 8EG (18) 2, 8EP 9BO 9EC 9EP, VQs 2EW 2GW (73) 23, 4HT 5FS 5GK (40), 6LQ (50) 23, 8BBB, VRs 1B 2DK (25) 12, 3C, VSs 1EA (36) 15, 1FZ 1JW 4BA 5GS 5PM (29) 17, 9ANS 9OC (85), 9OM (29) 15, VU2s AK MD, W7YGL/KG6, XE1s A YF, XW8AP, XZ2TH, YJ1DL (40) 7, YO3s RI RW, YS1O (47), YV5s AFR BF FH HL 6, ZBs 1A 2I, ZDs 1FG 2HHT, ZEs 1JV 2JC 2JS (46) 17, 8JN 8JZ (65) 23, ZK1AK (55) 10, ZL3VB of the Chathams, ZP5s AY CF, ZSs 3T of Walvis Bay, 7M, 3A2BB, 4S7MG, 4X4s AD CK JN (28) 14, JO JR KK WF (38) 16, 5As 3TR 5TO 7G1A of Guinea, 8J1AA (15) 7 of Japan's antarctic outpost, 9G1BQ and 9M2GE.

15 c.w. steps right out for K1JFF, W2s GVZ JGQ, WA2FNA, K4s IEX IGD QIJ RJN TEA TKM, K5TER, W6s JQB KG, WA6CPI, W7DJU, K7s CTI (23/21), HDB, W8s IBX YGR YIN, W9ZYD, K9s HLW (93/80), KYR LIO, KØs LEQ OVR, EL4A, KH6DGL, KL7PI and VE7CQ to the tune of CEs 1AD 3NE 3WZ 9AF, CN8s CJ IT, CRs 5AR (1) 23, 6BX (51) 17, CT1NT, CX2BT, DM2s ACA AIL ALN AMG, DUs 1FM (52) 10, 7SV (82) 5, FA8BG, FQ8AP, FY7YF (40) 20, HAs 5BU 7KLL (48) 18, HC1IU 23, HKØAI 0-1 of San Andres and Providencia Archipelago, JAs 1IF 3AUQ (58) 23, 5FP 8OF (45) 4, ØAN (53) 23 KG4AU, KN4DPR/mm, KW6CQ (56) 23, LA3SG/p (70) 17, OAs 3A 3D (52) 13-17, 4HK 17, OEs 3AT 3RE 5GR 7AZ (55) 17, OD5s CI IG, OQ5s IG RH, PI1MID, SPs 1KAA 2YK/mm 6FZ 6NF 7YN 12, 9DT, ST2AR, UAs 1OS 3CN 9OM (70) 10, 9VB ØKUV (41) 10, UB5CK 12, UG2BB, UG6AW, UQ2AB, VKØTF, VPs 3ER (90) 1, 4LE 8CW 9EW, VQs 2GW 2WR 3CF 3HD (25) 19, VR3AC (80) 20, VU2RM, XE1s AAI PJ UU, XW8AJ (51) 10, XZ2TH, YO3UM (15) 18, ZBs 1AQ 2I, ZD7SA, ZEs 2KL (61) 17, 3JO (34) 17, 6JY (53) 10, 8JG 8JO (75) 23, ZS3T, 4X4s FU HA 1E (28) 18, IM (35) 18, 5A2CV (30) 18, 7G1A and 9G1CF.

15 Novice news is made by KN1KSH, WV2GHD, WV6s DNM FOL, KN8NHC (30) and KN9PNV (36/17) with the cooperation of CE3WZ, CN8GV, CR5AR, DM2AEH, DU7SV, EI4A, EAs 1GZ 2FQ 3HI 7IA, Fs 2MA 3II 7GH 8FV 8ZY, GMs 3NOV 6RI, HA5DH, HB9s EK KC OS, JA7AD, KG4s AR AU, KH6s CHM CXO, KL7DFY, KZ5s JN LLN WXN, LUs 3ADF 4JC 5DEL 8FBU, OH5SS, OKs 1CX 1KBG 2QK, ON4s PX RN, OZ2NU, PAØCE, PYs 1BTC 2BAU 4AO, SPs 1KAA 9RFC, UB5s JX SP, VKs 2ZR 3TX, VO2RH, VP9s EB EN, VQ3CF, WG6AIL, WP4s ARR ASK ATJ, YN9BM, ZB1LNW, ZE8JO, ZL2AXU, ZS1CO and 5A5TO.

20 phone was tapped for CN2BK, CT1s IR JH, CX2AI, EA8BC, EL4A, HB9QP/CR8* (310)15-16, KC4s USP/mm, USV, KM6BI, LA3SG/p* (328), PJ2AV, SP5WW, SVs 1AI ØWB* (323) 1, UA3FU, VKs 2FR* (328), 9AA 9AD, VP2AC, VS9OC (248), YU3YU, 4X4AS, 5As 1TR 5TO, 9G1CY and 9M2AW by determined W4HUO, K4RJN, WA6CPI, W8s DAW YIN* (263, 111 sideband), EL4A and KL7PI, the asterisks indicating s.s.b.

15 phone's faithful ganged up on CE9AF, CN8s GI IZ, COs 3IGY 8BS 8MW, CR6s AU DU, FQ8AF, GB3GPW just England, GC3CGK, HCs 1RL 2IU 6KA 6KW, HI8s CJY GA, HP1HC, HR1HP, HV1CN, KG4AW, KH6CV/KG6, KX6BT, MP4BCC, OA6Q, OY2Z, PJ2AN, PZ1s AP AX, SL5AB of Sweden, TG7CB, TI2NDK, UB5FG, UR2s BU KAE, VPs 2GS 2SL 3MC 4LQ 5JW 5ME 6ZX 9RR (208) 13, VQ4GQ, VS9OM, VU2NR, XE1CP, YSs 1MS 3TM, YNs 1HW 4CB, YVs 5ABH 5AFH 6BR*, ZDs 1PB 2FNX, ZE1KV, ZLs 1ART 2AAG, ZS3S and 9M2DW, leading to fattened logs in the shacks of K1s JFF LST (102), W2JGQ, K2SFA*, K4RJN, K5TER, WA6CPI, W8IBX, K9HLW, KØLEQ, LU2JV and EL4A — asterisks for sideband efforts as usual.

10 phone catches its breath after the autumn surge. K2SFA*, K4s RJN TEA TKM, K5TER, W6NKE, WA6CPI, W8YIN*, W9JFT (136/126 on 28-Mc. A3), KØLEQ and EL4A pounced upon CE3AGI, CN8IX, CRs 6CI 6LA 7ES, CX7CB, EIs 7E 9Q, EL4A, FA3LX, one FO8AC/Clipperton, HA8WS, HKs 2GO 3SO, HP2ON, JAs 1AAT 3EK, KB6BH, KGs 1DT* (180) 19, 6NAA (645) 23, KH6CV/KG6 (645) 23, KM6BI* (600) 20, KW6CW, KX6s AF BT (820), PJ2AZ, TG9AL (370), TI2OE, UA6KOB, UB5FG, UQ2AN, UR2BU, VQ8AV, YNs 1CI 1WW 4CB, YU3RB, YV5AJK (820), ZC4DP, ZLs 1AIX 3GS, 4X4FR and 9G1BM, specks for s.s.b.

10 c.w. finished its fall ball in sturdy fashion, K2SJF, WA2FNA, K4s IEX TEA TKM, K5TER, W6s HCS NKE, WA6CPI, K6CJF, W8s IBX YGR, KØOVR and EL4A clashing brass with CXs 2BT 6CB (70) 22, EL4A, GI3LSM, JAs 1ACA 1AKH 1ANP 1AYO (100), 1BCO 1BWA 1CMD 1CUD 1HS 1YL 2RP 2WE 2XH 3AG 4HM 8BP 8EX, KP4KD, SP5HS, SVØWC, TIs 2CMF (200) 1, 3LR, UA4IF (5) 15, UB5UB, VKs 2FU 4TY (110), 7UW (80), VP6UN, VR3V, VU2s JA RM, W2SGL/mm near ZD8, XZ2TH, ZB1A, ZC4s IP SR, ZD7SA, ZE8s JG JJ, ZLs 1AAM 1AH 1APQ 1AUM 1KG 2GZ 3VK, ZSs 1OA 2EO 6AVW and 9G1BM (21).

40 c.w. continues to come up fast on the outside. K1JFF, K2DGT, K4IGD, K5JVF, W6s KG NKE, K6s CJF STI, K7AYP, W8s GKB IBX, KH6DGL and EL4A document 7-Mc. code developments as follows: CO2WC 4, EL4A (6) 20, GD3UB (3) 6-7, HC1IE 10, HH2JV (18-25) 11, JAs AHK AHO ALS ANP ATF AUC BAU BNW BTG BTH BRK CID DH EF LF LR LZ OK, JA2s AAQ AFA AJP AQ HX UJ YL, JA3s AEB ALG AMY ANH IL

KM, JAs 6EU 7IC 7XC 8HK 8HO 8JC 8MG 9MI all in the lower 60 kc. of the band around breakfast time out west, **KG6**NAC, **KZ5**TD (7) 19, **LUs** 1**ZC** (5) 11, 7WC (46) 10, **OH0**NC of the Alands, OZ4LP/p near the Line Isles, **PY1**ADA (17) 19, **SV0**WI, **TF3**AK, **UAs** 1DZ 3XN 6FC 9CM **0**IK (15) 8, **UB5s** EZ FP IN KAO KBA KCD KIU MZ ND UK, **UO5**RO, **UP2**NL, **UR2AA**, **VE8**DM, **VKs** 2ASF 2ANK 2QL 3AYD 3MH 3YD 5KK 5ZC 7DS 7MZ 7UW **9**XK (13) 20, **VP4**WD of Tobago, **VR2**DK (10) 20, **YV4**AS, **ZE2**JS (44) 17, ZLs in quantity, singular ZM1BL (16) 10, **ZSs** 1O 2HI 3HX 5RM, **4X4**JR and **5A2**CV.

40 phone's bedlam fails to daunt W8GKB and EL4A who rammed through for items like **DL1**FF* 5, K3BUU/**KP4*** (296) 4-5, **KL7**GO* (205) 9, one **TI7**ORO* (296) 3, **ZL3**ID* (115) 10, **9G1s** CB CC CY and DF. We expect this segment of "How's" to enlarge significantly as higher-frequency phone bands gradually flame out.

80 c.w. is just beginning to move along at this writing-Europeans were reluctant to cross the pond in number till November showed, and the early returns have K2SJF, W8IBX and EL4A scoring advance-guard hook-ups with such specimens as **CO2**QR, **DJ4**ME, numerous Gs, **GM3**HLQ and old 3.5-Mc. reliable **ZL4**IE.

160 c.w.'s organized DX offensive gets under way this month with the announcement by W1BB of the Annual Transatlantic and World-Wide 160-Meter DX Tests. All hams authorized to work top band are invited to concentrate their long-haul efforts between 0500 and 0730 GMT on the following Sundays to come: December 6th and 20th, January 3rd and 17th, February 7th and 21st. During those periods special attempts will be made to contact European, Asian, African, and other 160-meter amateurs throughout the world. "Working DX on 'top band' is challenging and extremely interesting," writes Stew. "Interference by atmospherics, BC harmonics, loran, etc., calls for great patience, perseverance, a top-notch station and keen operating techniques. An active group of British and other overseas amateurs, in cooperation with U. S. operators, is behind this effort, a yearly DX activity since 1932. There still are new 1.8-Mc. countries to work and 'firsts' to be made. Most W/K/VEs will operate in the 1800-1825-kc. segment, while those in the West will use 1975-2000 kc. Overseas DX will be found mainly in the 1800-1875-kc. region, particularly 1800-1835 kc., but don't neglect 2000-kc. DX possibilities." W1BB recommends that W/K/VE stations call CQ DX TEST during the first five minutes of each hour, listen during the second 5-minute period, call for five more minutes, etc., until the DX ball starts a-rollin'. Send reports of results and observations to W1BB and/or Jeeves & Co. — good luck and go get 'em!

Where:

Oceania — VK3RJ, in WIA's *Amateur Radio*, lumps QSL hints concerning past and present Australian outposts: VK1s AC BS EG GA, VK**0**s AB EM IJ KT MC RH RT TC VH all via VK2EG; VK0s AF CJ to VK3SK; VK0AA to VK1ACA; VK0CC via VK4FJ; VK0PK to P. King, 15 Pine Ave., Golflands, So. Aus.; VK0PT to P. Turner, 3 Parsons St., Clayton, Vic.; VK0RO to Bob Oldfield, 4 Jessie St., Pascoe Vale, W. 8, Vic.; VK0RR to R. Arnell, Box 8, Ararat, Vic.; and VK0TF to VK3YS . . . . . From KM6BT: "For the most part I QSL only on receipt and would appreciate the usual s.a.s.e., or s.a.e. plus IRCs."

Asia — W8PQQ is designated as QSL headquarters for the imminent VU4-VU5-AC5 escapade of YA1IW & Co. . . . . According to the HL9TA gang, the KARL bureau is chartered to handle incoming QSLs for HL9 stations only, these at present limited to HL9s KJ KR KS KT and TA. "HL2 stations, licensed by several schools as experimental radio stations, still are forbidden to QSO foreign hams." . . . . VERON has KA0IJ operative Mark still answering to APO 815, San Francisco, Calif., and confirms ex-staffer Vince's availability at 2553 Parkwood Ave., Toledo, Ohio . . . . . The ex-VS5JA address to follow may not net you immediate Brunei QSL satisfaction, for Harry still needs his VS5 log and other records.

Africa — "I'm now handling QSL chores for ZD1AW," informs W3KVQ. "Please stress the need for self-addressed stamped envelopes." . . . . . W6ZRK, QSL agent for ELs 2AB 2AD and 8C, can hardly be blamed for accepting an opportunity to grab Mojave, Calif., Box 73 in lieu of old Box 29 . . . . . "K6VYU is not QSL manager for VQ2RB," advises K4RJN, scotching rumor to the contrary . . . . . ZL2AFZ, in WIA's *Break-In*, hints that W5HDS may be of assistance in QSL matters concerning FR7ZC, FB8XX and 3A2AF . . . . . Data via WGDXC: W0DVN, VQ9AIW QSL *charge*, was hoping that all applicants (1) include s.a.s.e., (2) adhere strictly to GMT and (3) refrain from duplicating earlier filings for their Seychelles cards till reasonable time has elapsed. Three good points for all QSL-seekers to keep in mind . . . . . Again from the Gulfers: ZS3T, who would like to see Walvis Bay become ZS0, finds his QSL output lagging somewhat but assures all contacts 100-per-cent confirmation . . . . . In VERON's *DX press* we see that SU1MS volunteers to act as Egypt's bureau . . . . . Proposes EL4A (W7VCB), "I will accept QSLs from any place in the world for any legitimate EL station. My work as a pilot enables me to get around the country so much that I'm in good position to distribute cards." Wowie — an airborne QSL manager! . . . . . VQ6AB assures VK3RJ of WIA that he intends a thorough QSL response from Hargeisa.

South America — W3JTC and others would be delighted to hear from ex-CP1CJ, now understood to be stationed at a military base hereabouts. Primary QSO-certification, you know . . . . . K5LLJ finds HC1JU gradually licking the backlog through the bureaus from Quito . . . . . The good offices of G8KS are back in action as QSL agency for Ron Pinder, VP8EG, of Signy Island, South Orkneys.

Europe — UR2BU regrets to hear that his QSLs are tardy in getting around but he insists he's doing his darndest to keep things current. "As an oldtimer since 1934 I QSL absolutely 100 per cent. IRCs help considerably in making cards move more quickly." Karl wonders if the "Zone 15, Oblast 091" wording on his QSLs could be causing confusion; this is not part of his address, having to do with awards data only. Anyway, UR2BU will gladly duplicate QSL shipments upon learning that cards sent earlier are overdue . . . . . ISWL's *Monitor* affirms, "QSLs from Antarctica's OR4RW will be dispatched upon the operator's return to Belgium early in 1960." . . . . . SP1JV is grieved by a stingy W/K QSLs return, his average running about 70 per cent for 1658 QSOs made since obtaining his ticket in November of '57. Slawomir did much of this on a mere 10 watts, most on 40 watts, and has DXCC with a 140/107 record. Gee, some of the stations he lists as non-QSLers are prominent DXers on this side of the pond. Do *you* check each incoming DX QSL to make certain that you QSLd first? . . . . . "LZ1AF completed filling out some 2000 QSLs for W/Ks and has forwarded them via bureaus," says K2UYG. "Dimiter answers cards direct only if IRCs are included, and may be able to help those in need of LZ1KAB QSLs." . . . . . ARRL DXCC Deskman W1WPO confirms that one Dimiter Sibirsky, known as LZ1DX, has been declared amateur *non grata* by the Bulgarian society. We mention this only because the chap's heavy output of mail to overly-receptive W/K DX hounds has long been cause for confusion in Balkans QSL matters . . . . . Spitzbergen's LA8FG/p tells W6KG his QSL debts will be paid off in full when he returns to Norway in 1960 . . . . . "SV0WP was operated by W3JTC from March 22, 1957, through July 15, 1959," writes Larry himself. "Anyone not satisfied with QSL for QSO between those dates should send a card to W3JTC. SV0WP sent QSLs to those who QSLd first." . . . . . Regarding HA0W/HV verifications, W6AWT intended to answer cards in the order received, s.a.s.e. appreciated.

Hereabouts — VE7CQ, who manages to get a good chunk of W1NJM's 60-w.p.m. code transmissions of a Sunday evening, declares, "The best bunch of QSLers I have found are the boys in the French colonies." . . . . . W6NKE commends YN1WW for answering all QSLs 100-per via air . . . . . W3GJY rolls up his sleeves to aid FG7XC's QSL cause and has ample blanks ready for the mill . . . . . KL7PI's procedure is representative: "I answer cards as received — except for new countries, of course. All QSLs are answered immediately, usually by the same route as received, direct or via bureau." Joe requests bureau-users to be patient, for QSL managers depend on systematic clearances to keep their task in hand . . . . . Now scoop

FK8AC enjoys 20- and 15-meter sideband work but also knows his way around on c.w. Felix has charge of government broadcast facilities at Noumea. *(Photo via W7KCN)*

A recent MARS-Fest at Aguadilla, Puerto Rico, produced this rare gathering of local DXCC talent. From left to right, KP4s RK KD YT WD and MV hover over KP4s ES and AIO. The latter will be recalled as prewar DXCC member W8OSL and operator of juicy TA3AA some years ago. Archrival KP4CC could not attend this clambake and there was widespread concern that Juan might nab some new ones before all got back to their shacks. *(Photo by KP4ALO)*

from the group and from here and there as space will allow. . . .

AP2BH (via W4ANE)
ex-CN8GK (to W6KYT)
CO7AI, Box 28, Camaguey, Cuba
CP5AD, P.O. Box 960, Cochabamba, Bolivia
CT2BO (via W6NJU)
DL4ME, E. H. Bort (K6YTF), Box 88, APO 171, New York, N. Y.
EL2s AB AD, via R. Moncrieff, W6ZRK, Box 73, Mojave, Calif.
EL2Q, % Bishop's House, Monrovia, Liberia
EL4O, Le Tourneau, Roberts Field, Liberia
EL8D (via W6ZRK as above)
F7GL, J. Gammon, Co. C, USA Sig. Svc. Bn., APO 58, New York, N. Y.
FB8CE, Box 730, Tananarive, Madagascar
FG7XC (via W3GJY)
FP8JC (to VE2ABE)
FQ8AW, P.O. Box 298, Brazzaville, Republic of Congo
FQ8HA (via REF)
FQ8HK, Box 919, Brazzaville, French Eq. Africa
HA8CZ, Janos Bahr, Danko Pista U. 14, Szeged, Hungary
HB9QP/CR8 (via W4IYC)
HC1JU, Box 2951, Quito, Ecuador
HC5BZ, K. Dorfzaun H., P.O. Box 790, Cuenca, Ecuador
HH2CC (to HH2HB)
HK3SO, F. Garbrecht, P.O. Box 2773, Bogota, Columbia
HR0AB (to HR1AB)
HS1C, H. Christensen, USA CAC Stn., Phil-Thai, APO, 146, San Francisco, Calif.
HS1E, APO 146, San Francisco, Calif.
I1ADW/HV (via W6AWT)
KA0IJ (see preceding text)
KC6JA, Koror, W. Carolines
KC6PE, % G. L. Countryman (W4JA), Page Comm. Engr. Inc., 1856 Kalakuaua Ave., Honolulu, Hawaii
KG1DT, Drift Stn. Bravo, APO 731, Seattle, Washington
KH6AHQ, Barbers Point ARC, Box 13, Navy 14, FPO, San Francisco, Calif.
KH6DGL (via KH6BA)
KH6JEM/KJ6 (to KH6JEM)
KK6AF (to KM6BI)
KL7AUG, R. Paulsen, Box 1392, Ketchikan, Alaska
KL7PI, J. Paquette, % FAA, Homer, Alaska
KR8AB, 237 Aza Daido, Daido, Naha, Okinawa
KW6CL, R. Drake, Box 26, Wake Island
LA5AD/p (via NRRL)
LA8FG/p (to LA8FG)
LA9JG, R. Aalberg, National Cash Register Co., Brochsgt. 1, Fredrikstad, Norway
LU1ZC, Valentin Alsina, Habana 424, Buenos Aires, Argentina
OD5CL, J. Koenreich, P.O. Box 1348, Beirut, Lebanon
SP9ADU, Box 606, Krakow, Poland
ex-ST2NG-ZD3G-VS9AG-MP4BCN (to VQ6NG)
ex-SV0WP (to W3JTC)
TG5HC, H. Patricio, Box 10, Huehuetenango, Guatemala
TG9AL (via W2CTN)
TI3LR, Box 8, Turrialba, Costa Rica
UA1s DG FE FT, Alekseev, Ul. Communa 15-1, Leningrad-Petrodvorets, U.S.S.R.
UA3YI, Evgenii Razbitnov, Ul. Dzerzhinskogo, Dom 78, Kaluga, U.S.S.R.
VE8DM (non-VEs via VE8JW)
VE0NM, HMCS *Cape Scott*, % FMO, Halifax, N.S., Canada
VK1s AC BS EG GA (see preceding text)
ex-VK9OK (to ZL1AJU)
VK0s AA AB AC AF CC CJ EM IJ KT MC PK PT RH RO RR TC TF VH (see preceding text)
VP2LO (via K3CFR)
VP2VA, R. Rowan, Tortola, B.V.I., B.W.I.
VP7VB (via KV4AA)
VP8BH (via RSGB)
VP8EG (via G8KS)
VQ2s DG PM, % Mrs. Donald Nehls, 1417 Prospect St., Watertown, Wisc.
VQ2VG, Box 599, Chingola, No. Rhodesia
VQ6NG, L. Grant, P.O. Box 27, Hargeisa, Br. Somaliland
VQ8BBB (via VQ8AD)
VR3AC (via VR2AS)
VR3V (via RSGB)
ex-VS1BJ (to VQ6AB)
ex-VS1HU-VS2FW (to G3MRC)
ex-VS5JA, H. McQuillan, Resident Geologist, % IOEPC, Gach Saran via Abadan, Iran
VS9OC (via RSGB)
VU2JA (via W4YWX)
W7YGL/KG6 (to W7YGL)
XW8AP, P.O. Box 87, Vientiane, Laos
YN1CK (via W1EQ)
ex-YN4CB (to TG5HC)
YV1CS, J. Azurza A., P.O. Box 19, Maracaibo, Venezuela
YV2BS, Maria Quinones, P.O. Box 238, San Cristobal, Venezuela
YV5AIP, P.O. Box 1542, Caracas, Venezuela
YV6BR, R. Barbanti Bassoli, P.O. Box 4109, Puerto la Cruz, Venezuela
ZC5AF (via W5QL)
ZD1AW (via W3KVQ)
ZD1PB, % Army P.O. 3000, Freetown, Sierra Leone
ZD2AMS, Box 524, Jos, Nigeria
ex-ZD8JP, J. Packer, High Knoll, Furze Close, High Salvington, Worthing, Sussex, England
ZD9AK, Weather Stn., Gough Island, Tristan da Cunha via Capetown, So. Afr. (or via SARL)
ZS1UM, 89 Hillside Rd., Fish Hock, Capetown, So. Afr.
9G1CX (via G3ELW)
9K2AL, P.O. Box 1947, Kuwait

Your encomium falls due to W1s AYG DF IKE JGY UED WPO, K1JFF, W2s DJT JBL, K2s BMI SFA UTC UYG, WA2GWF, W4IUO, K4s IEX IGD TEA TKM, K5s JVF JZP LLJ, W6s HCS KG, K6s CJF HLL LXS UFT, W7s DJU LZF, W8s DAW IBX KX, KN8NHC, W9FFD, K9s HLW LIO, EL4A, VO2AW, J. Howard, C. Morrow, A. Rugg, International Radio Listeners League, International Short Wave League, Japan DX Radio Club, Newark News Radio Club, Northern California DX Club, Southern California DX Club, West Gulf DX Club and Williamette Valley DX Club for any QSL speed you may gain from that glossary.

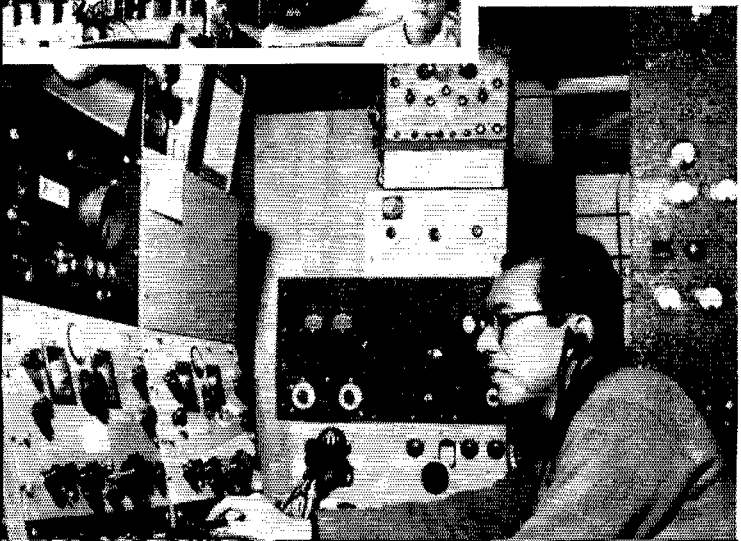
Whence:

Africa — W8DAW sends us word from VQ8APB (VQ8AP) who made such a splash from Cargados Carajos this August: "For the past three years I have operated portable on such trips but this is the first time I have had such success. It was because of previous disappointments that I made no DX skeds before my departure, relying instead on CQs. Coco Island, where I was established most of the time, is three miles long with a maximum width of 800 yards. Palms grow there as its name indicates, and there is also some brushwood. Fishermen, about twenty of them, have built five or six shacks plus storehouses for salted fish and provisions. Apart from this there were only sea birds, mice, and VQ8APB operating from the tent in which we lived. My power was supplied by a half-horsepower gaso-

Japan has become one of the world's ham radio strongholds, boasting an impressive body of capable communicators and technicians. This representative group of DX-chasing operators and stations includes, clockwise beginning top left, JAs 2JW 8AH 1AD 1SA 4AH 1CC 3SJ 2AE 2LC 2OJ; at upper and lower center, JAs 3DM and 5AI. *(Photos via Ws 1VG 7DJU, Ks 2OAH 6DV 6SXA and DU7SV)*


JA3AJ


JA2LC



line engine which charged a 12-volt battery. This gave light for the tent and was connected to a vibrator which fed 240 volts a.c. to a 350-volt power pack sufficient to operate my transmitter and receiver. My antenna was simply a long wire tied to two coconut trees. On phone I got very good reports as far as Madagascar, but the c.w. really performed wonders. W/K stations alone would have kept me busy for months! I used only the 7- and 14-Mc. bands because I brought no 21-Mc. coils for my HRO. My friend VQ8BBB now is active on Raphael island, twenty miles from Coco." VQ8APB's vibrator gave him a hard time. He would have repaired it, but the job required soldering, and soldering required the vibrator! . . . . W9JFT hears that CT3AF now lives in Sao Paulo with hopes of early PY2 DXing . . . . EL4A makes mention of a Ghana network on 7025 kc., phone and c.w., each Sunday around 0700 GMT with such 9G1s as CB CC CY and DF in attendance. The six-watter of 9G1CC gets out surprisingly well from Accra . . . . On the Liberian scene, EL4A (W7VCB) reports the activation of EL4M, a 12-year-old YL. Ken has a potent c.w. or phone signal on 10 through 160 meters and, with the help of EL2Z, soon will add 100 watts of d.s.b. "My QSO total for September was 874, making 6640 contacts here so far. Countries worked/confirmed: 137/75. For the time being I'm on 7006 kc. every Saturday around 0400 GMT, 14,012 kc. all other mornings at the same time, 21,030 kc. on even days of each month and 28,040 kc. on the odds, all this c.w. work. I'll have regular 80- and 160-meter hours beginning in November with a 600-ft. long-wire 125 feet high." . . . . ZE2JS schedules KH6DGL on 40 and the latter is told that Yanks are really crackin' through on 7 Mc. lately, especially the Fives . . . . More Africa offerings courtesy ISWL, WGDXC, WIA and VERON: Eight or nine ZD2s are to be found in a Nigeria net each Sunday on 14,100 kc. around 0900 GMT. . . . VQ6AB's husky 14-Mc. signal stems from a four-stage 40-watter and dipole. New neighbor VQ6NG, none other than ubiquitous Lee Grant, is eager to become more active upon arrival of the full complement of his gear from Bahrein. . . . W0AIW tallies his FB summer Seychelles VQ9AIW squeezings at close to two kiloQSOs. . . . ZS6IF intends to pass out ZS6IF/ZS8 contacts on the low edges of 15 and 20 meters over the middle week of this month. . . . In time to come, K4PDV hopes to make Ascension isle more workable. . . . SU1MS hungers for KH6 contacts (and doubtless vice versa) near 14,050 kc., 0400 GMT. . . . VE3AFE is nominated to replace VE3EGD/SU on Gaza Strip, and VE6QG/SU is reported homeward bound.

South America — Say, if a W/K/VE/VO works any five of PY3s ABA ADF ADG ADZ AFE AIO AIL AJU AJZ AKW ALV ANE APV AQO AUF AWB AWN AWS AYC HU NR PP and ZA this month he or she can qualify for the Sao Gabriel Century Diploma (DCSG) as issued by Delgado Municipal da LABRE, Dr. Celestino Cavalheiro St., 634, Sao Gabriel, RGS, Brazil. It's a phone-only function, and entries must be filed before January 31, 1960. The award is made in conjunction with centennial festivities commemorating the founding of Sao Gabriel. Inquire at the preceding address for full data. By the way, W2GVZ received his WAA diploma from LABRE in a quick six weeks . . . . W8YIN confirms that PY4TK can assist toward sideband contacts with Fernando Noronha's PY7SC . . . . Elisa of LU7AU is recommended by W6KG as a comely candidate for your global YL QSO collection . . . . LU2JV overcame the lack of a.c. mains in Concordia with spirit enough to work all United States and 65 countries in 1958. Jose's "high-power" rig runs 20 watts and his regular 6V6-6V6 line-up manages eight watts input from a six-volt source. LU2JV prefers 15-meter work and gives much credit to his 3-half-waves collinear array . . . . K4IGD collected rare Tobago where G3TA pounds 7-Mc. brass as VP4WD . . . . Ten-phone regular YV5AJK tells W6NKE that book-larnin' now cramps his DX style except for vacation periods . . . . LU1ZA keeps VP8EG company in the South Orkneys, 14-Mc. c.w. preferred . . . . NNRC has it that CE3DY, VEs 5RV and 7ZM are cooking up a DXpeditionary outburst in the San Felix or San Ambrosio Islands, specks about 600 miles north of Juan Fernandez and around the same distance west of Antofagasta, in time for the upcoming ARRL International DX Competition.

Asia — Nepal's 9N1s AA AB AC and AD are rarin' to go on 15 and 20, according to info via W8KX. "The only answer I am able to give to questions about methods of operation is that they will be working s.s.b.," writes an official of Cook Electric, the company responsible for brightening ham prospects over there. As mentioned previously, King Mahendra of Nepal now is 9N1AA, and K4RJN understands that 9N1AB is W3FEL . . . . K6LXS observes 9M2GE and spouse engaged in a spirited domestic contest to see which operator can work the most W/K stations before the pair returns to New Zealand. Let's have more such rivalry, eh? . . . . Cho Dong-in, HL9TA operator and secretary of the Korean Amateur Radio League, writes, "We tried for several years to get an amateur license and finally KARL headquarters has HL9TA active on 40 through 10 meters, mostly 20 phone, with 50 watts." So far HL9TA is the only ham station licensed to Korean nationals, and Cho adds, "Unfortunately there are no individual amateur stations here yet, but we believe we shall have them by next spring." Last month's column featured a photograph of HL9TA's staff, a group steadily growing . . . . UA0OM tells neighbor KL7PI of plans to visit Tannu Tuva early next year . . . . W8YIN notes that W8GCN is in the Arabian area on assignment . . . . The Prince of Sikkim, AC3PT, writes KH6DGL that he has been inactive for various reasons but that AC3NC is workable . . . . KA0IN tells K2QXG that KG6I is scheduled to become the all-inclusive Bonin-Volcano Islands prefix. In that event, KA0s IJ and IN would become KG6s IJ and IN . . . . K6CJF, endeavoring to amass 100 JA QSLs on 7 Mc., was doing fine until the recent typhoon season all but blew Japan off the map. "For ten days they were off the air, then gradually reappeared." . . . . Membership of the Japan DX Radio Club now includes JA1s AA AB AG AS BG BK CC CJ CO CR DM EF JM KF LL NP TD TJ VP AAW, JA2s AW BL DN JW LC UU, JA3s AA BG IW, JA5s AB AI, JA6s AD AO HK TA, JA8s AA AQ, JA9s AA AB AC BE, JA0s AA BR and CA. This gang's *DX Bulletin* ranges far and wide . . . . Additional Eastern items via JDXRC, NNRC and WGDXC: KR8AB, with four watts of phone near 14,150 kc., may be the first Okinawa national to hit ham bands since the '30s. . . . Son of 9M2DW, 9M2FX is a chip off the old DX block. . . . AC4AX reports all quiet on the Lhasa front and means to hook a rhombic to his BC-610 shortly. . . . YA1IW, VU2s AK and NR hope to launch their VU4-VU5-AC5 DXpeditionary sputnik on the 19th of this month with the assistance of W6UOU's KWM-1. What a juicy orbit!

Oceania — Another surge of Line Islands ham action — W6HCS bumped into VR3V of Christmas on 28,180-kc. c.w., 0100 GMT. VR3s W and X are also mentioned in dispatches, and VR3AC as well . . . . W8DAW recently completed his 11th year of regular schedules with friend ZL2AI. "I don't think there have been ten misses in that time due to conditions. This speaks mighty well for the reliability of old 14 Mc.!" And so it does — gosh, *what* would we do without old pro 20? . . . . KH6DGL and other Hawaii-based DXers report a terrific onslaught by 50th-state hunters. KL7s know just how it is . . . . KM6BT was delighted to receive his General on the day his Novice permit expired this summer. Since then Mort has

(*Continued on page 184*)

DL1BO, near the 250-country mark on the DXCC ladder, found time to excavate "DXCC²" No. 19 from his bulging QSL files at Karlsruhe (see page 69, July *QST*). Theodor's is the third such square deal from Europe and follows similar filings by W3GAU, VE2WW and W6TXL in that order. Nos. 20 and 21 are K2PIC and VE3HB.

I.A.R.U. News

QSL BUREAUS OF THE WORLD

For delivery of your QSLs to foreign amateurs, simply mail cards direct to the bureau of the proper country, as listed below. Cards for territories and possessions not listed separately can be mailed to the bureau in the parent country; e.g., cards for French Cameroons (FE8) go to REF in France; cards for VP8s go to RSGB in England. W, K, VE and VO stations only may send foreign cards for which no bureau is listed to ARRL.

For service on incoming foreign cards, see list of domestic bureaus in most *QST*s under "ARRL QSL Bureau."

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Argentina: R.C.A., Carlos Calvo 1424, Buenos Aires
Australia: W.I.A., Box 2611 W, G.P.O., Melbourne
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Bahamas: C. N. Albury, Telecommunications Dept., Nassau
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Bulgaria: Box 830, Sofia
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Canton Island: H. B. Johnson, KB6BA, **U.S.P.O. 06-50000,** Canton Island, South Pacific
Ceylon: P.O. Box 907, Colombo
Chile: Radio Club de Chile, Casilla 761, Santiago
China: M. T. Young, P.O. Box 16, Taichung, Formosa
Colombia: L.C.R.A., P.O. Box 584, Bogotá
Cook Islands: Ray Holloway, P.O. Box 65, Rarotonga
Costa Rica: Radio Club of Costa Rica, Box 2412, San Jose
Cuba: Radio Club de Cuba, QSL Bureau, Ayestaran 629, Altos Cerro, Habana
Cyprus: Mrs. E. Barrett, P.O. Box 219, Limassol
Czechoslovakia: C.A.V., P.O. Box 69, Prague I
Denmark: OZ2NU, Borge Petersen, P.O. Box 335, Aalborg
Dominica: VP2DA, Box 64 Roseau, Dominica, Windward Islands
Dominican Republic: **Jose de les S. Perkins, P.O. Box 157, Ciudad Trujillo**
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Ethiopa: Telecommunications Amateur Radio Club, P.O. Box 1047, Addis Ababa
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Greenland: (KG1s only): MARS Director, Directorate of Operations, Hq. 8th Air Force, Westover A.F.B., Mass.
Grenada: VP2GE, St. Georges
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Guantanamo Bay: Guantanamo Amateur Radio Club, Box 55, NAS, Navy 115, F.P.O., New York, N. Y.
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Haiti: Radio Club d'Haiti, Box 943, Port-au-Prince
Honduras: O. A. Trochez, P.O. Box 244, Tegucigalpa, D. C.
Hong Kong: Hong Kong Amateur Radio Transmitting Society, P.O. Box 541, Hong Kong
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Iceland: Islenzkir Radio Amatorar, Box 1058, Reykjavik
India: P.O. Box 534, New Delhi
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Lebanon: R.A.L., Ahmadi, B.P. 3245, Beyrouth
Liberia: (EL1s only) HARC, P.O. Box 32, Harbel
Libya: 4A2TZ, Box 372, Tripoli
Liechtenstein: via Switzerland
Luxembourg: **R. Schott, 35 rue Batty Weber, Esch/Alz. Luxembourg**
Macao: Via Hong Kong
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Paraguay: R.C.P., P.O. Box 512, Asuncion
Papua: VK9 QSL Officer, P.O. Box 204, Port Moresby

(Continued on page 186)

Correspondence From Members-

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

WHOSE OX?

Box 736
Balboa, Canal Zone

Editor, *QST:*

W3SUR's comments stirred considerable agitation if this column is indicative. Being run off the air appeared to be the biggest fear from 10 kw. ham (?) rigs. As long as ludicrous suggestions appear here's one: Re-examine every amateur in the code speed of the license held upon renewal. Why do I make this suggestion? Because I am a commercial operator with basic requirements of a 30–30 code speed. A precedent exists for code re-examination, at least sentimentally, since the ARRL Board — back in 1948 — voted en masse, to re-examine all applicants when converting from Class "B" to Class "C" and at, I believe, 16 w.p.m. . . .

Why don't I suggest re-examination on technical subjects? Because I am lousy on such subjects. For, as you see, it all depends on whose ox is being gored, to introduce an old saw that does *not* cut both ways.

— *Len Collett, KZ5LC*

CQ QRP

2238 Bolton Dr., N.W.
Atlanta 18, Georgia

Editor, *QST:*

I am trying to locate others who are low-power enthusiasts. Are there any low-power contests, get-togethers, etc.?

All this talk of super-power makes me laugh. Anyone can work the world with 100 watts or so. I've been on ten-meter phone with a five-watt Heathkit CB-1 Transceiver using a single dipole antenna. With this rig I work California and Central America regularly. Others are doing even better — for example, the ZL1AAX story on page 89 of the October *QST.*

— *Jack Gibson, W4SVH*

HITS . . .

707 Sheridan Road
Evanston, Illinois

Editor, *QST:*

I think the article, "Simplified Design of Inductively Coupled Circuits" by W2VLA in the October issue is outstanding among the aids provided to us, his fellow members.

Many of us have *had* the involved math of coupled circuits, but tend to shy away in ham radio from labor of the calculations. "Simplified Design . . ." was so good I have copied it out and am filing it with special "helps" in the shack.

— *Temple Nieter, W9YLD*

Box 88, APO 171
New York, New York

Editor, *QST:*

In my second year of Full Membership, I continue to find the League as much or more a part of my necessary requirements as a ham than ever. The monthly *QST* in the mail is only a very small part of this membership, though it is always eagerly devoured as soon as it arrives. Even more important to all hams (even those who for one reason or another do not choose to sign up for a membership) is the support that our organization gives every ham. This support is especially manifest this year in the excellent work that Mr. Budlong and his capable staff have accomplished regarding the coming decisions at Geneva. No matter what the outcome of the convention, here is at least one ham who appreciates this, and much more, less spectacular work, which is done in our behalf every day.

Thanks again for your many services, and hope to work W1AW sometime for the really big thrill.

— *Edward H. Bort, K6YTF/DL4ME*

4516 N. Stanley
Oklahoma City 12, Oklahoma

Editor, *QST:*

May all the rare DX call W1ICP! May his antenna never fall and his rig never fail. These good wishes in return for his article on "What Value Component" (*QST* October). Let's have more, more, *more* of those down-to-earth articles to help us newer hams understand what goes on. My thanks to W1ICP helping me "savvy" the theory in a practical way.

— *Albert B. Smith, K5PBD*

. . . AND A MISS!

809 East Lake Street
Petoskey, Michigan

Editor, *QST:*

K8GJM's article "Riding the Rails" in Oct. *QST* seems to me to have hit an all time low. It's rather sickening to keep reading about these moochers who want to promote an expedition providing some one else furnishes everything. By his own admission after one year of planning they didn't have enough money for car fare. If you insist on taking up valuable space in *QST* for such junk at least let's hear from expeditions that have something to offer.

— *Carlin Peck, W8BTX*

443 West 47 Street
New York 36, New York

Editor, *QST:*

Shame on all that participated in this *method* of operation, and on *QST* and its editor for publicizing same. Regarding the "No mention of successful railroad mobile transmissions" previously, wasn't W3WTE from the presidential car an amateur operation???

"We had hoped to get the railroad to sponsor the tickets . . ." Amateur radio is a hobby. Is it in the fraternity's interest that an amateur should be a beggar, a panhandler? In recent times we have seen plenty of cases of amateurs begging from other hams (dollar QSLs, etc.). Now these fellows in Ohio have gone further, even outside of the radio field, and have begged from a railroad. Being refused, they went further and begged from the general public, via newspapers, radio stations, and television stations. ARRL supplies aids and suggestions for getting *favorable* publicity for ham radio — but public begging cannot be considered favorable to the fraternity. Then, several small contributions were raised from local merchants. I am sure the merchants consider this more as a contribution to blackmail than as a contribution to a worthy cause.

Three days before the trip, no equipment was available. Some planning! So, more begging, in the form of an invitation to W8FAT to make the trip, because he "managed to borrow some excellent gear," apparently because of his work at Pioneer Electronic Supply. Are there rules in DX-peditioning that forbids one to supply one's own equipment???

Then the railroad had to install the antenna, and had to furnish the 1-kw. supply. As an *amateur* expedition, what had the amateur group planned to supply, the operators and log paper only??? Better to have stayed at home!

— *Clay Cool, W2EBZ*

. . . AT 60 W.P.M.

46 Whitmore Avenue
Toronto, Ont., Canada

Editor, *QST:*

Re Oct. 1959 *QST* page 64, article by KH6IJ. (c) Operating Technique — "Any DXer worth his salt is good for at least 60 words per minute."

Wonder if we have a typographical error here? The old time telegraph men in the office say it is virtually impossible

(*Continued on page 196*)

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coordinator
JOHN F. LINDHOLM, W1DGL, Communications Ass't.

ROBERT L. WHITE, W1WPO, DXCC Awards
LILLIAN M. SALTER, W1ZJE, Administrative Aide
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., Phone

Easy Steps to Accuracy in Our Traffic Work; About Use of QTB. We're indebted to W9TZN and "Watch Words" for the following ideas. Accepting traffic commits us to do our very best to see it through with little delay, and to maintain 100% accuracy in handling. A receiving operator should always ask for a repeat of anything in doubt. A good operator never objects to such requests. In fact, listen to traffic being handled by some of the best operators in any traffic net, and you will hear occasional repeats asked and given. It seems as though many a new traffic man is hesitant about asking for repeats, perhaps feeling that by so doing he is revealing that he is a poor operator. On the contrary! *Not* to ask for a repeat when needed is the sign of a poor operator. To *show* you are a good operator ask for that repeat when needed; also get a confirmation on anything doubtful. Then you will know you have done your best. To send your message in standard ARRL procedure likewise assists speedy accurate transmission.

The League's *Operating an Amateur Radio Station* booklet explains that the check of a message is a simple count of the number of words or groups in the text *as sent*. The signal QTB, in W9TZN's opinion, ought to be understood and used much more in amateur traffic handling. Sending each message carefully in correct form promotes accuracy. Difficulty over checks can be avoided, if the word space is sent twice as long as a space between letters within a word. The text can appear correct sometimes whether sent as one word or two. For example, an originator may send the word ARTCRAFT as one group in a message with check 18. If the relaying operator leaves a little extra space after ART, and the receiving operator copies as two words he gets a check of 19. The use of QTB will properly straighten this matter out in a hurry. Much time, however, can be saved if *carefully spaced* words are sent. Use this signal, whenever there is any doubt:

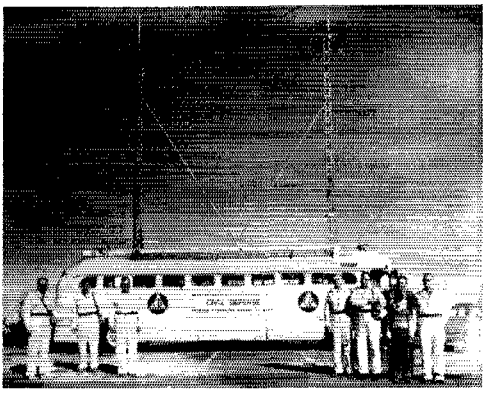
QTB? Do you agree with my number of words?

QTB I do not agree with your number of words; I will repeat the first letter of each word and the first figure of each number.

Two- and Six-Meter Nets on Increase. Late last year we found that there were *three times as many* six-meter nets registered, some 73 nets, as compared with one year earlier. Also the 68 two-meter nets registered were a similar increase in the same period. Any newly organized traffic or emergency nets should use ARRL form CD-85, to be registered in the new '59–'60 ARRL Net Directory.

It is working present-day ARRL policy for SCMs to give every encouragement to foster the growth of v.h.f. nets. Section coverage, increased fraternalism, traffic handling, and opportunities to train new amateurs are direct objectives. OES appointments will be granted to v.h.f. members who work consistently in such v.h.f. nets and report their work. SCMs will appoint PAMs to assist in the organization and maintenance of such nets wherever possible. Also, wherever such nets meet the criteria or standards established by SCMs, one can become eligible for a Section Net Certificate.

Among the early netters to start such operations this fall were the members of the *Auburn (N. Y.) Amateur Radio Association*. Their new six-meter c.w. net's first session on 50.7 Mc. was at 1900 September 21, following a showing of enthusiasm at the September club meeting. We mention this just as one current example in the course of presenting the merits of such operation. The net is one means to help all members get larger operating and fraternal value from time spent on the air. The AARA's bulletin-description of its six-meter c.w. net operation may well be applicable to every such net: "Come on fellows, and gals too, get in there and give the net a try. Experienced ops will tell you, the first time is the hardest but you're sure to enjoy it. For those of you who have never operated c.w. before, this net is the ideal place to get your feet wet. Our



The crew poses in front of the Winston-Salem (N.C.) mobile communications center. Left to right are W4YJG, an SWL, W4YSB, K4DVE (five-county EC), W4CPI, W4CAV and W4YLU.

chief purpose in this project is to provide practice and training in the art."

Two-meter nets also can now command the interest of *both* Novice and Technician members. We can quote FCC's thinking when evaluating its docket to permit technicians the use of 145–147 Mc. as pertinent and valid here: ". . . this would permit Technician and Novice to intercommunicate on the same band using voice or telegraphy; the two classes (of operators) could take advantage of this for the purpose of increasing their code speed and hence qualifying for General Class privileges." For leaders in areas *not* yet having the advantages of v.h.f. net operation but now interested, more how-to-do-it details may be gleaned from our operating booklet, mentioned above. See (on page 13) those sections on network operation.

ARL-Check Messages. The numbered-text message is primarily a tool to meet amateur emergency work and holiday needs. Personally, we always prefer individually worded radiograms, but this ARRL system has assisted amateurs to reach higher levels of public service in handling greetings and emergency traffic through the years.

Some cautions are in order concerning the handling of standard text messages that are identified by a number. ARL should be sent both in the check and in the text ahead of the *spelled out* number which represents a given text. More than one text can be sent by putting the ARL indicator directly ahead of *each* number, which is necessary to prevent running numbers together. If one gets such a message for delivery, it is his responsibility as receiving operator to expand the message fully for delivery, since the numbers are merely system designators within amateur radio, and otherwise convey no meanings to the addressee. A radiogram to ARRL will bring an extra copy of the list of standard texts (CD Form 3) so that it can be placed on your operating desk for ready reference.

Starting Holiday Messages. Thanksgiving and Christmas have special family appeal, and the exciting possibility of demonstrating one's hobby to exchange greetings always builds up our amateur traffic reports at this season of the year. New Net Directory listings appeared in these pages in November *QST*. Nets, especially those identified with the National Traffic System, are our organized means of routing communications to any part of the U. S. A. and Canada. It may be timely for us to set down for the benefit of newer amateurs those steps most essential for transmission of your holiday radiograms. International communications are prohibited in behalf of third parties, except with ten countries with which we have special agreement. However, we amateurs (under FCC Section 12.102) can freely handle traffic, holiday or other, as long as no compensation, direct or indirect, is involved in the performance of our station. Similar privileges are not generally granted within most foreign countries in view of the fact that radio communications are generally run as a government monopoly and are a source of revenue. But we started to tell you some of the essentials of making use of our message capabilities, and demonstrating your own ability as a communicator.

Routing Your Message. Setting up your message to send should be pure routine; just use an official ARRL message form and this will put all the parts of your message in the right order to send. Consult our operating booklet for full details. It explains the function of each part of a message, if you need more details. It's important to get the address complete and correct, otherwise it may be impossible to deliver the message. All the parts should invariably be sent in the same correct order, since it may give rise to errors if a message is sent in a haphazard manner.

We mentioned the NTS; your own local ARRL Section Net in practically all cases has connections through liaison stations and NTS to other sections and time zones. The Net Directory or in some cases *QST*'s Station Activities reports will help you ascertain the proper frequency and daily time of operation for a given net. You can then get on this net, indicating to the NCS that you have traffic. As you report in, indicate the number and destinations of messages; then stand by until the net control station tells you what station to give your traffic to. When, after sending

A.R.R.L. ACTIVITIES CALENDAR

Dec. 2: CP Qualifying Run — W6OWP
Dec. 17: CP Qualifying Run — W1AW
Jan. 7: CP Qualifying Run — W6OWP
Jan. 9–10: V.H.F. Sweepstakes
Jan. 15: CP Qualifying Run — W1AW
Jan. 16–17: CD Party (c.w.)
Jan. 23–24: CD Party (phone)
Jan. 31–Feb. 15: Novice Roundup
Feb. 3: CP Qualifying Run — W6OWP
Feb. 6–8: DX Competition (phone)
Feb. 9: Frequency Measuring Test
Feb. 15: CP Qualifying Run — W1AW
Feb. 20–22: DX Competition (c.w.)
Mar. 3: CP Qualifying Run — W6OWP
Mar. 5–7: DX Competition (phone)
Mar. 15: CP Qualifying Run — W1AW
Mar. 19–21: DX Competition (c.w.)
June 25–26: Field Day

OTHER ACTIVITIES

The following lists date, name, sponsor, and page of this *QST* in which more details appear.

Nov. 21/22: 21–28 Mc. Telephony Contest, RSGB (p. 69, last month).

Dec. 5–6: West Virginia QSO Party, Kanawha Radio Club (p. 170, this issue).

Dec. 6: Wisconsin QSO Party, Milwaukee Radio Amateurs' Club (p. 140, this issue).

Dec. 12–13: Massachusetts QSO Party, Merrimack Valley Amateur Radio Club (p. 156, this issue).

Jan. 9–10: WAE DX Contest (c.w.), DARC (next month).

your message, this station QSL's the message, it is successfully on its way.

Should you not be active on the air, it is possible to file your amateur radiogram with another local amateur, especially one who holds ORS, OPS, or OES appointments and has traffic connections. There is ever so much more satisfaction, of course, in sending the message from your own amateur station, so that your own call can rightfully go in the "station of origin" part of the message. It's possible, if one has lots of time and desires to make a project out of finding an amateur right at or near the destination, to comb the different bands for "actives" and try to work a dependable station there to handle your message direct. You are taking more of a gamble to locate a reliable man to assist in the relay in this case, unless you can confirm from a recent *Station Activities* report that your man is regularly engaged in traffic handling. Instead of "landing" a traffic-dedicated member, you may run into an amateur who has interests lying in other directions.

Thousands of amateurs, however, do experience a deep sense of satisfaction in delivering radiograms. It so often brings warm expressions of thanks from those receiving a message by telephone as well as letters from grateful recipients of messages.

Your station can be part of the traffic group all year 'round by once or twice a week participation in a net. Or you can just use the *system* as described for starting traffic on holidays or special occasions. The principle to bear in mind in the latter instance is that to insure *best* speed and accuracy your message should be placed in the hands of those amateurs who specialize day after day in the relaying and delivery of traffic and who consequently are best equipped in the know-how and the techniques to see the message through.

Club TVI-BCI Committees. We've been happy to report to the ARRL Board a decreasing trend in demand for ARRL TVI Kits in the previous year. This can be ascribed in part to better general amateur attention to this problem. We supplied about 200 sets of TVI information on specific club-and-committee request. Some other Kits were distributed to newly organized groups and placed where we thought good could be done in the public relations field. It is of course an individual responsibility to operate in ways that reflect constructive public service values in our Amateur Radio. This means that every amateur has to be technically and operationally on the ball.

It is well to mention again here the *availability of the ARRL TVI Kit.* This includes FCC information, sample publicity, committee outlines, service-shop poster and a bibliography of *QST* articles on the subject. It is an excellent guide in organizing TVI Committees and assisting both clubs and individuals. Radio clubs have top values to their members in any community where they help in meeting common local problems. The maintenance of a club interference committee which centralizes available test equipment, assists in public contacts and promotional work to assure good public relations and public understanding, arranges technical committee demonstrations to the club at some convenient meeting in the year, showing the effects of good and bad engineering in both the TV receivers and amateur equipments will be all to the good.

The League's Communications Department will supply on request the specific ARRL lithographs that cover (1) the bibliography of useful *QST* reading on TVI, (2) FCC general information releases on "TV Reception and Interference," (3) Committee Organizational Plans, (4) a service-shop poster with introduction to committee operation, etc. Amateur radio clubs may well be proud of their accomplishments in maintaining good operating conditions and public relations in this sphere. ARRL suggests that every club continue to organize and maintain the TVI-BCI committee mechanism to deal correctly with cases when they arise. By club organizational foresight we have found the means to forestall this kind of personal operating trouble. Our lithographs show how to attack and lick TVI. —*F. E. H.*

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

In this column, in January, 1957, *QST*, we pointed out that Technician and Novice licensees make good additions to AREC groups and should not be neglected or excluded. Apparently this advice was followed by quite a few groups to supplement their existing personnel. In a few instances, perhaps it was followed *too* well, because we have come face to face with the problem of whether or not Technicians can be appointed as ECs.

The Rules and Regulations of the Communications Department state that only amateurs of Conditional Class or higher can hold appointments, with the exception of the appointment of Official Experimental Station (par. 7). This rule applies to both station and leadership appointments and, we should think, especially to the latter. It was made not because we are "agin" Technicians, as some appear to think, but in considered judgment of the good of the organization.

The appointment of EC is a leadership appointment. He should be an amateur of broad experience and background with full amateur privileges and capabilities, able to command the respect of all within his organization as well as officials and others outside. Can a Technician meet these qualifications? Well, hardly — certainly he doesn't possess full amateur privileges, and it is difficult to see how he could have broad amateur experience and background. Some Technician licensees conceivably could command the necessary respect, but even here there could be trouble with General Class amateurs in the organization feeling that the

appointed leader is inferior to them. Respect for leadership is a part of leadership itself; if it doesn't exist, regardless of the reason, the leadership is ineffective. True, there may be exceptions, but you can't make effective policy on exceptions. The rule is a just and logical one.

We feel there is nothing discriminatory in this. The Technician licensee is a specialist. He may make an excellent sub-leader in his field, as an assistant EC for six or two meters — an increasingly important field these days, especially in the civil defense picture. Otherwise, the cloak of his specialty can be shed at any time through the simple expedient of acquiring a Conditional or General Class license.

— • • • —

On July 26 K2YEW found himself stranded in his cabin cruiser in Jamaica Bay, New York City. His call for assistance was answered by K2OZS/m on Long Island, who summoned the Coast Guard and immediate aid was dispatched. — *K2YEW.*

— • • • —

W6NMR/m, while in contact with W6UFJ and K6UAA/m, was witness to a serious accident on August 22. He immediately informed W6UFJ, who called for police and ambulance, both of which arrived at the scene within eight minutes. During this time, K6UAA/m arrived at the scene and operators of both mobiles used first aid gear they carry with them, to control bleeding on the part of one of the victims. Do *you* carry first aid equipment in *your* mobile? — *W6NMR.*

— • • • —

On Sept. 8 a forest fire literally exploded near Deadwood, S. Dak., when a trash burner threw a live flame into the dry grass and pine needles. What with high winds, high temperature and low humidity, the fire was out of control almost immediately. *WØs* DVB EQV YQR and ZWL established contact on 7225 kc. in anticipation of need, and were able to assist in the evacuation of Deadwood, especially the patients at the St. Joseph Hospital. Later in the afternoon another fire broke out in the Nemo area. KØKJR supplied the communication from this area, and W5DFQ/m and KØACJ/m also were of assistance, covering many miles of driving in the fire area. WØAPL was alerted by the Homestake Mine and released for the emergency, maintaining contact with Deadwood at all times. KØMMN operated from the college at Spearfish, handling much traffic. K7GDW of Sheridan, Wyo., was very helpful in relaying.

KØACJ sends us some details of his activities during the fire which are of interest. Early in the afternoon he was requested to go to Lead. On his way through Deadwood he contacted KØKJR/m and arranged a personal meeting in Lead. *WØs* DVB EQV, *KØs* KJR and ACJ met as planned and proceeded to the home of WØDVB/EQV to plan action. KØACJ attempted to get in the clear to the north of the fire, while KØKJR went south. After two attempts ended in being turned back, KØACJ finally found a route which placed him in position, where he contacted W5DFQ/m and WØDVB. Much traffic was handled, as all telephone lines out of Deadwood and Lead were out by then. Traffic was handled until 1930 from that location, when KØMMN took over the contact. KØACJ then returned to Deadwood and continued handling traffic until 0200.

Communications were conducted on 7225 and 3870 kc. The following is a composite list of participating stations not mentioned in the above account: *WØs* AEN CTC CTZ DQK EAL FKE GGP GMS HOJ MGV NEO OFP OOK OXN QGZ SCT SBG SLG VAM YOB, *KØs* BMQ BZX DFO DHA DTL HHV HVV INZ LXF LXH MMN MMR MRS QYB UDZ VFB YQB, *W7s* GSQ IOJ ION RJR YSF NOU, K7DNV. Thanks to *WØs* ZWL, DVB and KØACJ for these reports, and to SEC WØSCT for sending them in.

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The Cuyahoga County AREC provided communications for three parades in May and June. On May 1, a fixed station was used for the first time as control station for the Loyalty Day parade. The station was located at Cleveland Police radio, from which vantage point coverage of all mobile units with the parade was assured. Communications, all on six meters, were solid throughout the parade, which lasted 2½ hours. Eight amateurs took part.

Then on May 30 there was the Memorial Day parade. This one was handled on ten meters with six mobiles, one hand-carried unit and one base station. The hand-carried unit was in the lead car with the parade marshall, who through it was able to communicate with base or any of the mobiles. Base station was again located at the police station. Eight amateurs participated.

Hot on the heels of the Memorial Day parade came the Flag Day parade, on June 11. For this activity, six meters was used with five mobiles, one hand-carried unit and again the base station at police headquarters. The mobiles were spaced through the parade until they reached a certain location, then they pulled to the curb, giving reports as units of the parade passed, finally following the end of the parade. This created quite a spectacle as the mobiles all passed the reviewing stand at the end of the parade. Ten amateurs took part.

These activities were coordinated by K8ABA, asst. EC for parades, Cuyahoga County AREC.

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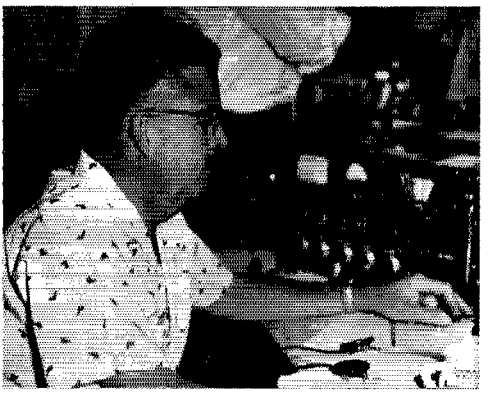
On Sept. 14 an 8-story boiler of the East Texas Pulp and Paper Co. blew up, causing death, destruction and disruption of communications over a wide area. K5HGZ, EC for Silsbee, nine miles away from Evadale where the scene of the explosion took place, was notified by K5HIA, who then took off in his mobile, getting through road blocks to Evadale to establish communication with K5HGZ. This was done by 1105, approximately one hour after the explosion. The single telephone line into the mill was jammed. Since medical help had already been summoned, K5HIA, being an employee of the mill, was put to work handling traffic to Silsbee and Beaumont naming the uninjured. W5STP handled the Beaumont traffic and W5RBQ/m did a good job of keeping the 3855 kc. frequency cleared. The emergency was declared over at 1210. — *K5HGZ, EC Silsbee, Texas.*

— • • • —

Lake Michigan storms don't often hit Evanston, but on Sept. 26 at about 1900 it was hit by a real dilly which lasted fifteen minutes and did extensive damage. Evanston radio officer W9BUK got in touch with K9IEB and instructed him to survey the situation in his mobile. The latter found quite a turmoil, and a desperate need for mobile communications facilities. Three RACES mobiles were put into action on two meters. Information was relayed to W9BUK, who relayed it to proper authorities. The mobiles assisted in directing traffic, marking blocked streets with flares, removing live wires and branches and running errands for the police. They worked at these jobs until 0500 and were congratulated publicly by the Evanston police chief for their work. Besides the two already mentioned, W9KZA and K9OER participated in this work. — *K9IEB.*

— • • • —

Mobiles in Western Michigan mobilized to conduct a search for a missing plane on Aug. 8-9. The plane left Muskegon on Saturday morning (Aug. 8) bound for Rockford and when it failed to show up, was listed as missing. Eight mobiles converged at Stevensville, south of Benton Harbor, to participate in the search, under Van Buren County EC K8IWF. They were operating on 75, 10 and 6 meters when the alert was called off. It was all a mistake.



The Los Alamos Amateur Radio Club (N.M.) participated in a test on the Sept. 12–13 week end to find out how much food, lodging and medical aid would be available in northern New Mexico in case of evacuation of Los Alamos This is W5GXU, shown operating club station W5DPO.

The plane had run into rough weather and had landed safely at Meigs Field, Chicago. — *W8YAN, SEC Mich.*

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Amateurs all over the country helped provide communications for the Thirteenth Annual Powder Puff Derby, July 4–8, 1959. We have detailed reports from W7OBH at the western terminus and from W2MTA at Binghamton, N. Y., the No. 1 stop point. W2MTA operated his home station with the assistance of two other amateurs, W2EWO from Owego with one additional operator, and at the Broome County airport K2OYX/2 was manned by eight amateurs. This took place on both six and 40 meters.

Operation at the Spokane terminus of the race was quite comprehensive. Stations were set up at Felts Field, at the Davenport Hotel, and supplemented by W7OBH and W7HCJ at their home stations. Each station operated on a regular schedule. In all, 33 operators took part. The station at the hotel, race headquarters, was operated 100% by YLs under the direction of W7GXI. The club call, W7NBR, was used. The station at Felts Field was operated under the call of K7AFE in the Air National Guard tower. W7OBH took care of the long-distance contacts as well as handling local traffic. Schedules were maintained with W7WMT in Helena, W7YUP in Miles City, W9BYN in Kokomo, Ind., and W1PFA at the starting point. A total of 63 messages were handled. W7HCJ was chief of communications and operated from his home station; he maintained contact with Bismarck, Fargo and Rochester as well as being in constant communication with Felts Field, the hotel, and W7OBH.

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We're pretty jubilant about the August SEC reporting record. We received reports from *twenty-nine* sections. This is an all-time record in number of sections heard from in a single month, and that it comes in a midsummer month is even more surprising. The total AREC members represented by these reports is also a record, *10,301!* Two sections, Michigan and Eastern Fla., record over a thousand AREC members. Two new sections, Md.-Del.-D.C. and South Dakota, make their appearance for the first time in 1959, putting the total different sections heard from this year at 39. This is past the half-way mark, fellows! It's a reflection of the clean-up campaign going on these days by SCMs and their SECs. Sections submitting August reports: S. Texas, Md.-Del.-D. C., Ore., E. Fla., Colo., Wyo., Mich., S. Dak., N. Mex., Tenn., W. N. Y., Nevada, Minn., Ind., San Joaquin Valley, E. Pa., Ga., N. Dak., E. Bay, Utah, NYC-LI, W. Va., Ala., Wis., Wash., Vt. Santa Clara Valley, Ont., W. Mass.

RACES News

Last month we promised to keep you filled in on results of the USCDARA conference in August. Complete details are still not available, but we can now state that the attendance roster shows delegates from 14 states attended, plus representatives of OCDM Regions 1, 4, 5 and 6, also from OCDM National Headquarters in Washington as well as from Operational Headquarters in Battle Creek, FCC, USNR, MARS-Army, the National Assn. of State and Territorial C.D. Directors, and ARRL. A complete report of the all-important Frequency Allocations Committee has not yet been received, but we understand one recommendation was that s.s.b. be used exclusively on all RACES segments below 28 Mc. after Jan. 1, 1961, and that frequencies be assigned only to states that could justify the use of radiotelephone for long-haul circuits. It points out that by the use of repeater stations many of the states can be adequately covered using the 6- and 2-meter v.h.f. channels; otherwise, c.w. or RTTY can be employed, although this mode will be used mostly for interstate and interregion coverage. However, one state dissented, the first time this has happened in the Alliance.

Speaking of RTTY, the Technical Committee's report dealt exclusively with recommendations for standards on this mode of transmission, in order that all equipment would be compatible. Details are available, but no space to reproduce them here.

More later, if or as we get it.

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A RACES plan has been drawn up for Boone County, Ark., and a net organized to meet on 3993 kc. K5UUJ is the radio officer and W5WEE controls the net, which meets three times per week. The c.d. director is also an amateur, W5OCY, which is a help. Plans are being made to work this net in with the radar weather tracking unit, with a kilowatt transmitter and control center at the National Guard armory.

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On August 25, the RACES repeater station in Los Angeles was used in an activity of the Los Angeles County RACES group aimed at providing communication for an attempted Catalina Channel swim by a certain Capt. Evans. Since K6IKH, the station on the boat following the swimmer, was very low power and used only a 19-inch whip antenna, the use of the repeater station, K6MYK, was required and made communication perfect. Initial contact was made when K6IKH was just offshore of Catalina Island, approximately fifty miles from the repeater. Reliable communications were conducted through K6MYK for twenty hours. Five operators worked in shifts at the control point of K6MYK. The group received excellent publicity on the project.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for September traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del*	*Total*
W3CUL	259	2414	1916	493	5082
W2KEB	314	1690	1251	421	3676
K2UTV	314	1410	1258	90	3072
K9AIR	22	1127	968	124	2241
W7BA	22	1053	1001	51	2127
K6MCA	45	960	990	11	2006
K5WSP	54	747	744	14	1559
W0LGG	398	556	506	51	1511
W0SCA	33	664	662	2	1361
K6BPI	25	659	629	30	1343
W0BDR	24	698	593	27	1342
W8UPH	24	613	538	74	1249
W6EOT	6	620	560	25	1211
K0ONK	124	520	502	15	1161
W0LCX	23	564	518	46	1151
W6GYR	212	460	456	12	1140
W9DYG	33	544	506	29	1112
W6RSY	24	561	371	97	1053
K4QIX	26	497	436	58	1017
W4PL	12	550	371	16	949
W9NZZ	262	310	0	310	882
W9DQ	18	414	368	64	864
K4AHA	21	416	380	30	847
K6HLR	23	428	335	30	816
K4SJH	135	347	298	29	809
K6YBV	38	376	345	31	790
K9DAC	17	374	359	15	765
W6WPF	2	381	373	8	764
K1CIF/1	186	281	231	16	714
VE2WT	579	77	49	7	712
W7BDU	1	344	341	1	687
W1PEX	12	330	326	2	670
K0CLS	15	325	315	4	659
K1BCS	98	277	212	57	644
W3VR	54	296	263	24	637
W3IVS	22	290	287	28	627
W7ZB	7	306	298	6	617
W5CFZ	13	308	227	20	568
K4QES	101	224	222	2	549
W9TT	25	250	195	55	525
K8JLF	8	256	233	21	518
W7DFW	14	256	241	4	515
K6IPG	12	265	213	19	509
W9BLI	1	251	247	3	502
K6OZJ	3	249	235	14	501
Late Report:					
K5WSP (July)	62	523	519	18	1122

More-Than-One-Operator Stations

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W6IAB	133	870	819	51	1873
K1GRP	39	269	259	10	577

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

K4CNY	169	K2SJF	116	K6TJG	106
W9PCQ	162	K7CLL	114	W8DAE	106
K9PLF	159	W0ANA	114	W0KJZ	105
W9ETM	140	WA6EEO	113	K3WBJ	104
K6GZ	125	K4IFB	110	K4YCG	101
K4SSA	121	W3TN	109	Late Report:	
K7BKH	121	WA2ALO	106	W4GXR (Aug.)	101
W5ZHN	118	W4BAZ	106		
W7AVN/5	118	K4ZKU	106		

More-Than-One-Operator Stations

K0HEA	422	K4WCZ	249	K5NAO/5	115
KG1DT	285	W3MFW	143	W0ERG	100

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: W1NJL, W6WPF.

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.

TRAFFIC TOPICS

Once in a while, just browsing around the band listening to the traffic nets, we hear an NCS say something like: "W9ABC please call WØXYZ and if O.K. up 5 kc. and clear Iowa tfc." Either that or the NCS will ask W9ABC if he can hear WØXYZ, whereupon W9ABC asks WØXYZ to QSV; then, if the answer is affirmative, the NCS instructs them to QNY to clear their traffic.

This is a time-wasting and roundabout procedure, but at the present time there seems to be no short-cut for it. It occurs to us that there ought to be some way devised to do this without all the detailed instructions. The obvious way would be use of a new QN signal, since it is a situation that often occurs.

Trouble is, all the QN signals, from QNA to QNZ, already have specific meanings. Now if we could alter the meaning of one of them to accomplish the above objective. . . . Looking down the list, we find the closest one to this meaning now is QNV, which means "Please request ..... to QSV." This isn't very close, but our experience indicates that QNV isn't used very often on the average net. We'll wager that a good many c.w. netters wouldn't even know what it means without looking it up.

Now suppose we altered the meaning of QNV to: "Call ..... and if O.K., move (up or down .... kc.) to clear ....." This leaves three blanks to fill in, and that's more than we like with a QN signal. But in the above example, the NCS could now say: "W9ABC QNV WØXYZ UP 5 IOWA." Is this a worthwhile shortening? We think it is, when you consider that the *normal* NCS instruction (in which he assumes that the stations can copy each other) would be exactly the same except for the QNV, which means, in effect, that they should check with each other on the net frequency before moving, in order to make sure they can copy each other.

We don't like to be forever making changes in the QN signals list, but thought we would mention this as a possibility that might be a real advantage. There are other possibilities, too, and if you think of any we'd be glad to know your thoughts — because if we make changes we ought to make them all at once, not have to change our literature again and again.

Another NCS instruction we have heard that is even longer and more cumbersome is one like this: "W9ABC UP 5 WAIT FOR WØXYZ TO FINISH WITH W5DEF THEN QNK IOWA." Can we do something about this, too? What other situations do we have that require frequent lengthy NCS instructions that are not covered by Q or QN signals that *could* be? Give it some thought, you traffic men.

—···—

Net Reports. Hudson Traffic Net reports 30 sessions, 302 check-ins, 251 messages for September. Early Bird Transcon Net had 30 sessions, handled 850 messages. The 7290 Traffic Net reports 651 messages handled by 1038 check-ins during 42 sessions. Eastern States Net had 30 sessions, 306 check-ins, a traffic total of 207.

—···—

National Traffic System. Get ready, we're going to do some more griping. First, however, lest you misunderstand, let it be said that constant listening shows the NTS nets to be, generally speaking, head and shoulders above most. Hang onto that bit of praise, now, while we enumerate some of the faults we have noticed.

First of all, the procedure is too long, too detailed, and often too fraternal, too casual. We're here to clear the traffic, let's clear it, *then* visit with each other. This point has been argued at many traffic gatherings, but we're still of the opinion that a traffic net should devote *all* its attention to handling traffic while it is QND (directed). Some of the gang may be in a hurry and not like to sit around while the NCS exchanges pleasantries with the net members or spells out an instruction that could be contained in one or two Q signals. Let's study ways of shortening our procedure, get the traffic cleared and out of the way; *then* we can chat with each other.

Too many net control stations think they are speed demons. Slow down! You're not gaining anything by sliding up the weights on your bug, and nobody is impressed. Your accuracy suffers and you have to repeat instructions because the net members can't understand you.

Net stations fall asleep. This may be the net control's fault for forgetting about them, but usually it is the individual's fault for not staying alert. When the NCS calls you, *be* there!

The net station that really drives the NCS crazy is the one who reports in with a wad of traffic when the net is almost over. Sometimes this is hard to avoid, but it *should* be avoided, somehow. If you intend reporting into the net, get there on time. Nothing can droop an NCS's spirits lower than an initial call-up that goes 100% unanswered.

Fellows, how about paying more attention to the little things about net and traffic-handling procedures? Use that separation sign ($\overline{AA}$) between the parts of the address! Use the ending signal $\overline{AR}$ at the end of the message. Make sure every message you transmit has a check — and a correct one, too!

Zero beat that NCS! This is easily and quickly done if you know how. Just switch off your b.f.o., turn on your transmitter oscillator, tune it until you can hear the NCS, and bring him to zero beat. You'll be right on him. Make a note of your v.f.o. dial setting, so you won't have to do this every time you come back to the net frequency during a session.

Use break-in. So many traffic men make a big deal out of this, but there is nothing to it if you are willing to sacrifice a little ear-comfort. High-efficiency traffic handling without break-in isn't possible.

Let's improve our accuracy. It needs it. All this requires is a little care. Don't let a slip of the bug (or tongue) go by uncorrected. If you miss something, don't guess at it; get it confirmed or repeated.

Bear in mind the formula for efficiency: $E = AS$, where A is Accuracy and S is Speed. NTS is out for *efficiency.* September reports:

Net	*Sessions*	*Traffic*	*Rate*	*Average*	*Representation (%)*
EAN	28	976	.685	34.9	98.2
CAN	30	983	.708	32.7	100.0
PAN	30	1368	.649	45.6	100.0
1RN	29	611	.574	21.1	88.2[1]
3RN	60	498	.316	8.3	78.3
4RN	60	594	.325	9.9	63.1
RN5	60	851	.437	14.1	94.2
RN6	60	1339	.393	22.3	94.2
RN7	60	592	.378	9.9	42.1
8RN	59	257	.152	4.4	——
9RN	52	1544	.776	29.6	77.4
TEN	60	855	.312	14.3	69.6
ECN	20	36	.113	1.2	60.0[1]
Sections[2]	959	7013		7.3	
TCC Eastern	59[3]	220			
TCC Central	60[3]	1123			
TCC Pacific	112[3]	1211			
Summary	1567	20071	9RN	11.2	CAN/PAN
Record	1442	15861	.882	15.4	100.0
Late Reports:					
PAN (July)	31	1459	.795	47.1	100.0
PAN (Aug.)	31	1675	.798	57.3	100.0

[1] Regional representation based on one session per day. Others are based on two or more sessions per day.
[2] Section nets reporting: BCEN (B. C.); AEN-O, AENB, AENP, AENP Morning (Ala.); TPTN, Gator, FPTN, FMTN (Fla.); BUN (Utah); NJN (N. J.); Iowa 75 Phone; QKS (Kans.); WSSN & WIN (Wis.); SCN (S. C.); GSN (Ga.); SCN (Cal.); ILN (Ill.); CPN & CN (Conn.); TLCN (Iowa); VFN (Va.); S. Dak. CW, S. Dak. 75 Phone, S. Dak. 40 Phone; NEB (Nebr.); MPN Evening, MJN, MSN, KMG, MPN Noon (Minn.); Tenn. Slow; WSN (Wash.); KYN (Ky.); HNN, Colo. CW (Colo.).
[3] TCC functions, not counted as net sessions.

Each month the substantial increase over the same month of last year in sessions and traffic shows the gain in system acceptance by the traffic fraternity. This does not (or should not) mean that those in the system should have to work harder. It should mean that more traffic amateurs in the system share the greater load. Where it has not worked out this way, recruitment of additional operators is required. Let each of us take our cue from that fact.

CAN is having troubles clearing its eastbound traffic, but getting it done. Lateness of PAN NCS in reporting to the manager has delayed PAN reports. Another attempt

is being made to run a second (late) session of 1RN; certificates have been awarded to K1s HAN HWF LSM and W1ISO. School and college is taking its toll of the young staff of 3RN, but the net is still holding its own. K5QNF is the new manager of RN5. RN6 is back on its winter (PST) schedule. RN7 certificates have been issued to W7KZ and K7BYC; *zero* participation by Alaska, Idaho, Alberta and Saskatchewan in September. W9ZYK has issued 9RN certificates to K9AIR, W5DTA/9 and K9PLF, all of Illinois.

Transcontinental Corps. There seems to be some question regarding the jurisdiction of TCC Directors over certain assignments of TCC functions. The TCC is set up for ten functions per day. Four of these functions are under the jurisdiction of the TCC-Eastern director, two under the TCC-Central director and four under the TCC-Pacific director. This is not set up arbitrarily or at random, but specifically and for good reason. The geographical location of the station performing the function doesn't change the matter of which director has jurisdiction; that is, if a station located in the central area is performing a function normally assigned to an eastern area station, the function is still assigned by the TCC-Eastern Director and its completion reported to him. Just to clarify this matter, here are the functions (with thumbnail descriptions) assigned to each TCC director (full details in CD-24): TCC-Eastern (W3WG, director) — Station A (takes from EAN, puts it directly into CAN), B (takes from EAN, gives to Station H), C (takes from CAN, puts it directly into eastern area NTS nets or into EAN), D (takes from Station J, puts it directly into eastern area nets or into EAN). TCC-Central (WØBDR, director) — Station E (takes from CAN, gives to Station G) and F (takes from Station I, puts directly into central area nets or into CAN). TCC-Pacific (W6EOT, director) — Station G (takes from Station E, puts it directly into PAN), H (takes from Station B, puts it directly into PAN), I (takes from PAN, gives it to Station F), J (takes from PAN, gives it to Station D).

Does that help to clear up the matter, or only make it more confusing? If the latter, see CD-24.

September reports:

Area	*Functions*	*% Successful*	*Traffic*	*Out-of-Net Traffic*
Eastern	59	88.1	976	220
Central	60	93.3	1829	1123
Pacific	112	92.9	2473	1211
Summary	231	91.8	5278	2554

The TCC roster: Central Area — W9CXY, WØBDR, WØLCX, WØSCA, WØLGG; Pacific Area — K6s OJV ZYZ HLR GID, W6s EOT WPF HC YHM CMA, K7CWV, W7s BDU GMC, WØs EDH EDK KQD ANA.

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 Nov. 18 at 2130 Eastern Standard Time. Identical texts will be sent simultaneously by automatic transmiters on 3555, 7080, 14,100, 21,075, 28,080, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted Nov. 5 at 2100 PST on 3500 and 7129 kc.

Any person can 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. Reference 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 audio oscillator and attempt to send in step with W1AW.

Date Subject of Practice Text from October *QST*

Dec. 1: *160 for Mobile?*, p. 26
Dec. 7: *Firing Up on 6 and 2*, p. 23
Dec. 10: *Riding the Rails*, p. 44
Dec. 14: *The Perseids Powerhouse*, p. 32
Dec. 22: *Balloon Mobile*, p. 62
Dec. 30: *The Story of KS4BB*, p. 74

This is W6EOT, director of the Pacific Area of the Transcontinental Corps (TCC), ARRL National Traffic System. Here is a station really set up for c.w. traffic handling. Transmitter is a much-modified DX-100. The tape recording equipment is not for hi-fi purposes; he can record either from his v.f.o. or the receiver, then play back through an automatic keying device. This system is used frequently for traffic work.

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

This Honor Roll is published as a special recognition for all affiliated clubs whose *entire membership* consists of members of the League. We are here pleased to present the second Honor Roll listing for 1959. See page 95 of June *QST* for the earlier listing of those affiliates with 100 per cent ARRL membership. Our honor list is prepared each time on analysis of data received in connection with each club's returned early-'59 Annual Report. This coming January or February a new survey form will be sent every active ARRL-affiliated radio club for the annual filings on which continued affiliation and our *QST* listings are based. These following Honor Roll clubs also now will receive our "100% ARRL Club" certifications following publication of this listing in *QST*:

Amateur Transmitters Association of Western Pennsylvania, Pittsburgh, Pa.
Avenel Radio Club, Avenel, N. J.
Bandhoppers Radio Club, Ferguson, Mo.
Beaver Valley Amateur Radio Association, Rochester, Pa.
Binghamton Amateur Radio Association, Inc., Johnson City, N. Y.
Central Texas Amateur Radio Club, Waco, Tex.
Coffee Dunkers, Detroit, Mich.
Colchester Amateur Radio Association, Truro, N. S., Canada
Helix Amateur Radio Club, Santee, Calif.
Lake Success Radio Club, Great Neck, L. I., N. Y.
Northeastern North Carolina Amateur Radio Club, Elizabeth City, N. C.
Order of Boiled Owls, Levittown, N. Y.
Orlando Amateur Radio Club, Inc., Orlando, Fla.
Ottawa Radio Club, Inc., Ottawa, Ill.
Radio Association of Erie, Inc., Erie, Pa.
The Reading Radio Club, Inc., Reading, Pa.
St. Louis Amateur Radio Club, Inc., Valley Park, Mo.
Scott County Amateur Radio Club, Scott City, Kans.
Smoky Valley Radio Club, Abilene, Kans.
Southwest Missouri Amateur Radio Club, Inc., Springfield, Mo.
Sunrise Radio Club, Inc., Cambria Heights, L. I., N. Y.
Sweetwater Amateur Radio Club, Sweetwater, Tex.
The Thirteen Amateur Radio Club, Burnaby, B. C., Canada
Tri-City Amateur Radio Club, Phillips, Tex.
Valley Radio Club of Eugene, Ore.
Wichita Amateur Radio Club, Wichita, Kans.

CLUB COUNCILS AND FEDERATIONS

Michigan Council of Clubs, Roland R. Beineman, W8QBA, Secy., 136 Guild St., N.E., Grand Rapids 5, Mich.

Ohio Council of Amateur Radio Clubs, Karl H. Kanalz W8THX, Secy., 225 Tibet Rd., Columbus 2, Ohio.

ELECTION NOTICE

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

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

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

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

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

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

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

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

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

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

— *F. E. Handy, Communications Manager*

Section	*Closing Date*	*SCM*	*Present Term Ends*
Yukon*	Dec. 10, 1959	W. R. Williamson	Mar. 17, 1949
West Indies	Dec. 10, 1959	William Werner	Aug. 10, 1958
Mississippi	Dec. 10, 1959	John Adrian Houston, sr.	May 29, 1959
Saskatchewan*	Dec. 10, 1959	Lionel O'Byrne	June 10, 1959
Manitoba*	Dec. 10, 1959	James A. Elliott	Aug. 9, 1959
Quebec*	Dec. 10, 1959	C. W. Skarstedt	Dec. 15, 1959
Eastern New York	Dec. 10, 1959	George W. Tracy	Feb. 10, 1960
Maritime*	Dec. 10, 1959	D. E. Weeks	Feb. 15, 1960
Maryland-Delaware-D. C.	Dec. 10, 1959	Arthur W. Plummer	Resigned
South Carolina	Jan. 11, 1960	Dr. J. O. Dunlap	Mar. 4, 1960
Ohio	Jan. 11, 1960	Wilson E. Weckel	Mar. 5, 1960
North Carolina	Jan. 11, 1960	B. Riley Fowler	Mar. 6, 1960
Georgia	Jan. 11, 1960	William F. Kennedy	Mar. 18, 1960
Arizona	Feb. 10, 1960	Cameron A. Allen	Apr. 15, 1960
Tennessee	Feb. 10, 1960	R. W. Ingraham	Apr. 15, 1960
Washington	Feb. 10, 1960	Robert B. Thurston	Apr. 30, 1960
Alberta*	Feb. 10, 1960	Gordon W. Hollingshead	May 1, 1960
Santa Barbara	Mar. 10, 1960	Robert A. Hemke	May 9, 1960
Louisiana	Mar. 10, 1960	Thomas J. Morgavi	May 31, 1960

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

ELECTION RESULTS

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

Utah	Thomas H. Miller, W7QWH	Oct. 28, 1959
Illinois	Edmond A. Metzger, W9PRN	Dec. 15, 1959
Western Florida	Frank M. Butler, jr., W4RKH	Dec. 15, 1959

In the Indiana Section of the Central Division, Mr. Clifford M. Singer, W9SWD, Mr. Raymond L. Hupp, W9CLF, and Mr. John Lamey, W9BDG, were nominated. Mr. Singer received 365 votes, Mr. Hupp received 205 votes and Mr. Lamey received 164 votes. Mr. Singer's term of office began Oct. 14, 1959.

NATIONAL CALLING AND EMERGENCY FREQUENCIES (Kc.)

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

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

The following are the National Calling and Emergency Frequencies for Canada: *c.w.* — 3535, 7050, 14,060; *phone* — 3765, 14,160, 28,250 kc.

YELLOWSTONE EARTHQUAKE

It seems there was much activity in Montana and Idaho in connection with the earthquake in the vicinity of Yellowstone Park on August 17. Many people were killed when a mountainside fell into a canyon and buried a camp ground on the Madison River west of the Yellowstone Park boundary, with communications thoroughly disrupted throughout the area. We have so many reports from so many different people that it is next to impossible to arrive at a sensible chronology of events. So let's paraphrase each report briefly:

W7ED (EC Gallatin Co., Mont., in which quake occurred): The quake occurred at 2342 on Aug. 17, causing a slide and burying some 20 people at the Rock Creek camping ground and threatening the Montana Power Co. dam on the Madison River. W7ED was on the air 20 minutes later, checking stations into the Montana Net on 3910 kc. First contact with disaster area was with W7AYG/m at West Yellowstone, through whom the amateurs were able to inform the sheriff, highway patrol and Red Cross that the Hebgen Dam was apparently undamaged, since the level of the lake was not affected. K7ICM, also at West Yellowstone, was contacted later, and it was primarily through this station that communication was maintained for the next 48 hours, at which time regular communication with the area was reestablished. After that, the net continued handling "worry" traffic and 100 messages for Western Union.

W7KUH (SEC Montana): First amateur radio contact with the disaster area was by W7ED to W7AYG/m. K7ICN in West Yellowstone contacted the outside 20 minutes after the quake, but this was by Weather Bureau facilities. K7ICM was on the air from West Yellowstone six hours after the initial quake, and most of the traffic was handled through this station. W7JPD flew in equipment to be used at K7ICM when the latter was having difficulty.

K7ICN: This station was first to establish contact with the outside. K7ICM was on the air later.

W7GGV (SCM Idaho): Assumed net control of Idaho Sixth District C.D. Net at 0715 Tuesday (Aug. 18). Five radio officers reported in. W7JDS monitored Montana Net frequency for information. Sheriffs, Chambers of Commerce and motels were contacted reference possible evacuation procedures. Other amateurs checked into the net. W7RKI informed he had been up all night. Only K7ICM was on the air from West Yellowstone, with low power. Later he increased power, better contact was made. The net moved to 40 meters at 0900. W7OA advised he had been operating all night under civil defense, in contact with both Idaho and Montana c.d. The net assisted W7OA in relaying traffic; several distant relays were necessary because of conditions on 40. W7DWE and W7RKI arrived in West Yellowstone at 1600 Tuesday, set up stations. W7JAU took over operation of K7ICM during the evening. W7HPH in Boise and W7YBA in Pocatello operated throughout the night Tues-

day. The emergency phase of the operation was terminated at 0830 Wednesday, but amateurs continued handling "worry" traffic for the Red Cross.

W7RKI: Shortly after midnight Tuesday, W7AYG/7 in West Yellowstone was heard trying to relay traffic to report damage on the Montana Net on 3910 kc. W7RKI broke in to assist in relaying, and his services were welcomed. W7ED took over as NCS and continued throughout the night. W7OA was called by civil defense and came on the air at 0300. Big question was status of the dam on the Madison River. Amateurs were able to report that the lake level was unchanged and apparently the dam was holding, thus quenching rumors that it had burst. K7ICM in West Yellowstone being hard to copy, W7RKI continued to act as relay station.

In the morning, W7RKI dismantled his home station, put it into his car and proceeded to West Yellowstone. Being unable to locate K7ICM, he set up the rig with a makeshift antenna at the airport, upon request of officials. Finding difficulty in getting out, his traffic was relayed by K7ICM, who by that time had been supplied with a better transmitter by W7ED. W7DWE arrived with his mobile rig at 1600. The station was dismantled at 1900 when there appeared no further need for it.

W7OA: Came on the air at 0247 Tuesday on the FARM Net frequency, but was unable to obtain any information. Located W7RKI, through him kept UPI informed as details unfolded. K7BJH established 2-meter link to c.d. headquarters in Boise and from there regular communication was available to Montana c.d. headquarters in Helena. W7OA operated continuously until 1930, at which time W7HPH took over his duties and, with the assistance of Boise amateurs, stood by until 0930 Wednesday at which time the services of the amateurs were no longer required.

WØIA: Colorado Weather Net members were asked to get information for two Denver broadcast stations on the actual situation in the earthquake area. WØURH and WØWUN established contact with the Idaho C.D. Net, which was

W7ED of Bozeman, Mont., EC for Gallatin County, the area in which the Aug. 17 earthquake of Madison Canyon and Yellowstone Park hit. Through this station the first contact to the stricken area was made through W7AYG and K7ICM and maintained some 40 hours.

being operated by W7OA and W7GGV and tied in with Montana C.D. through stations in Bozeman. Necessary to use 40 meters, as 75 meters was dead. Frequent relays required from Colorado stations. W7OA, by continued diligent efforts, did a most commendable job of arranging air evacuation of casualties.

Each of those who reported submitted a few calls of amateurs who did outstanding work. The following is a compilation of those in this category not already mentioned above: *W7s* GI FTD MM EOI YLC YLD CDG/m ZUQ, *K7s* ALA GHX. Much favorable publicity resulted from this amateur operation in an entirely unforseen emergency.

DX Century Club

The following list contains the call letters and countries totals of all holders of the Postwar DX Century Club Award as of September 30, 1959. The calls of new members as well as those receiving endorsement credit during the period September 1 through September 30, 1959, are included in this listing.

• 296
W6AM
ZL2GX

• 295
W1FH
W8HGW

• 294
W3GHD

• 293
W2HUQ
W6ENV
W6SYG
PY2CK

• 292
W2AGW
W4BPD
W8BRA
W8JIN
G3AAM
KV4AA

• 291
W1ME
W3JNN
W6CUQ
W6GFE
W9NDA
ZL1HY

• 290
W5ASG
W9YFV

• 289
W6DZZ
W7AMX
W7GBW
W7GUV
G2PL

• 288
W3BES
W3KT
W4DQH
W8BKP
W8DMD
W9RBI

• 287
W1CLX
W4TM
W6ADP
W6EBG
W6TT
W8UAS

• 286
W5ADZ
W6MX
W6NNV
W6TS
W8KIA
W9KOK
G4CP

• 285
W1GKK
W9HUZ
CE3AG

• 284
W2LPE
W3GAU
W9LNM
ZS6BW

• 283
W2QHH
W4TO
W6GPB
W6VE
W7FZA
LU6DJX

• 282
W1BIH

• 281
W2HMJ
W2JT
W2WZ
W6YY
W8DAW
W9FID
WØELA

• 280
W1JYH
G6ZO
VK2ACX

• 279
K2GFQ
W6TT
W7GXA

W8JBI
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• 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, Allen R. Breiner, W3ZRQ—SEC: DUI. PAM: TEJ. RM: AZA. The PFN Phone Net meets nightly Mon. to Fri. at 1800 EST on 3850 kc. The EPA C.W. Net meets each night at 1830 EST on 3610 kc. With the assistance of OY and BPZ the Lancaster and Reading sections are being covered by the traffic nets. BES is a new OBS in the Philadelphia Area on 53.5 Mc. QJG is the new EC for Schuylkill County. New club officers of the Oxford Circle RC are K3ALU, pres.; K3BFW, vice-pres.; K3ACD, secy. Officers of the Delaware Lehigh ARC are JNC, pres.; FVT, vice-pres.; GEU, secy.; EVY, treas. K3ALD made DXCC. FKE received the R6K Award. This is the Russian equal to WAS. The 807 Society Club station is K3GTZ. K3ATX got all counties for the W-DEL Award on 6 meters. CUL has a new beam and 60-ft. tower to assist West Coast traffic. MFW set up a booth at the Elizabethtown Fair and handled enough traffic to make BPL. NF added another 813 to QRO to 700 watts. Hurricane Gracie gave us all a scare but BUR and the Bucks County AREC were prepared for her. So was the PFN gang, with IVS standing a 20-hour watch on the net frequency. ZLP had a rough time of it making net skeds because of Daylight Saving Time. K3DSQ is going to be QRT for the winter months because of enrollment at the University of Dayton. DUI is sportin' a new HQ-145 receiver. K3s EGP and GFF report results good on phone. The Chester County Emergency Net Club is having its share of parades. The Downingtown Centennial and the Newark, Delaware Parades were handled in fine shape by ten of its members. K3HAI is now General Class. AHX and GOQ, father and son, won the first "WAWPRAM" certificates from the West Philadelphia Radio Assn. GOQ also made DXCC. VKQ and ADE received certificates of merit for the Armed Forces Day messages. The Bucks County ARC held a Corn Roast. DVB, ZJD and KN3HWG were VE1 visitors over the Labor Day holiday. I wish to take this opportunity to wish you all a very Merry Christmas. Traffic: W3CUL 5082, VR 637, IVS 627, HNK 191, AXA 160, MFW 146, ZRQ 96, KMD 89, K3DCB 75, DFS 57, W3FKE 47, NNL 42, NF 38, K3HLU 34, AHT 23, W3PYF 22, K3ANS 20, W3TTW 20, BFF 16, BUR 16, CUY 14, AMC 12, ZLP 8, WHK 7, K3ALD 6, W3JSX 6, K3DEM 5, DSQ 5, W3NQB 4, ADE 2, DUI 2, K3IAZ 2, W3OY 2, YLL 2.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—SCM, Arthur W. Plummer, W3EQK—Asst. SCM Delaware: P. R. DeCourcelle, 3DQZ. SEC: PKC. *Delaware Report:* K3GKF reports his DX now is 134/99. K3GEK reports K3DDE now has a power supply for a kw. John wants all to know the Delaware Amateur Radio Club meets the 2nd Mon. of each month in the Levy Court Bldg. on Capitol Trail, Wilmington, Del. CFA reports FB QSOs with 5 watts on 10 meters lately. FJF reports K3GAD and K3GHC dropped the "N" from their calls. FJF worked W6-Land twice on 3895 kc. with a DX-40. ZNW is working on a fixed 10-meter beam. *District of Columbia Report:* CN says his mobile work is keeping him off the traffic nets. EOV took part in MARS CPX Sept. 17-20 and also is trying a grounded-base antenna on the mobile rig. FRM still is DXing. KN3GJW is having a rough time with code speed. MBL has a TBS-50 but no time to operate. EOV thinks he has gotten all but one bug out of the mobile rig receiver. Ted is having trouble with the jr. YL operator, who monopolizes Papa's *QST* each month before he can get it and tells him she should have a copy too. K3ANA has been in California on vacation. AHQ has been doing a yeoman job as OO and I want to take this opportunity to congratulate him and tell him to keep up the good work. Russ also is in the Weather Bureau Net twice a month on 3935 kc. 9 A.M. Sun. BUD has less and less time for ham radio. *Baltimore Area Report:* K3DCP does a bang-up job of arranging entertainment for meeting nights for the BARC. He also worked hard in the Sept. F.M.T. and hopes to qualify for Class I or II. The BARCS had its Annual Dinner meeting Oct. 5 at Welsh's Black Bottle Restaurant. Thirty-five members and XYLs enjoyed the dinner and saw a recently released General Electric Co. movie on the manufacture of vacuum tubes called "The Teacher Wore White." KHA is back in college but expects to be active from GQF, Johns Hopkins U. station. JME and JAS alerted and activated BCEN during the "Gracie" alert and tied in with NAE and Anne Arundel Co. RACES. UE reports EAX, GQF, IWJ, UE, GJD and WZL were active during "Gracie" on TCRN. GQF, WZL, GJD and KHA operators were NCSs along with UE. No activity has been reported in the Frederick, Hagerstown or Cumberland Areas. What's wrong, fellows? Congratulations are in order for K3CXX, who has just received his 2nd-class radiotelephone and 3rd-class radiotelegraph tickets and is now studying for radiotelephone 1st and radiotelegraph 2nd. DCI, the Baltimore Polytechnic Institute Radio Club, at last has its 500-watt amplifier back on the air. MSR now has in operation a fifteen-element 2-meter beam with a TR4 rotor and new 2-meter Tapetone converter. JWN now is a member of TOPS (International C. W. Ragchewers) and will be QNI from now on from EAX, U of Md. station, which plans to up power from a Globe Scout to 500 watts. ECP reports CPM was elected president of the Washington Radio Club. *AUTOCALL*, the mouthpiece for the Foundation for Amateur Radio Clubs, Inc., now sends each newly licensed amateur in the D. C. Area a flyer on the area clubs and a free first copy of *AUTOCALL*. ZAQ worked with five members of the Aero ARC in W. Va. during the V.H.F. Party. IWJ is sorry he was not more active during the summer. Well, fellows, last but not least is our appeal for ECs for the counties that have none has drawn some blood. Montgomery County, Md., which is a very large suburb of Washington, D. C., and whose ham population is larger than that of the entire State of Delaware, has come up with some action! But we haven't heard anything from the other counties. What about it, fellows? Get in touch with PKC, your SEC. I would also like to take this opportunity to notify you all that I have resigned as SCM and turned the job over to BKE, of Washington, D. C. Tommy has graciously agreed to take over until an election can be held. Thank you one and all for your fine cooperation and interest. Please give Tom the cooperation you have given me and we'll put the Md.-Del.- D. C. section on the map. Traffic: W3UE 306, K3GJD 150, W3AHQ 149, K3WBJ 147, W3PQ 130, TN 130, COK 69, JWN 68, BKE 41, EOV 28, ECP 20, ZNW 13, BUD 12, CN 10, K3DCP 9, W3CFA 2, K3CXX 1, W3EAX 1.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: W2YRW. RMs: W2BZJ, W2IDW and W2ZI. New appointment: W2TQK, Pennsauken, as OES. The Gloucester Co. ARC elected the following directors: W2STW, W2SUA, WA2CUB and W2PAX. K2DEI, Maple Shade, continues his Arctic Coast Guard skeds. The Jersey Phone Net held its Annual Meeting and Banquet during October. K2CPR has installed a new trapped ground-plane antenna. W2KHW, Maple Shade, has a new mast and a new 6-meter four-element beam. K2HBA supplied the Southern Counties ARA information this month. Meetings are held in Northfield the 2nd Fri. W2ZK has just returned from a six-week trip to Greenland. NJN Net certificates have been issued to K2LWQ, W2SJB, WA2COO and K2ZHK. W2RXL, NJN Manager, advises that the annual meeting will be held in New Brunswick, Gloucester Co. ARC's paper, *Cross Talk*, is edited by K2JKA, who is assisted by K2HHJ. K2SOL, W2AQL, K2JKA and K2UUY operate the Gloucester Co. c.d. station each Fri. night. WA2EIE was selected "Airman of the Month" at the Andrews AF Base. W2JAV and W2PAU received a certificate of merit in a recent RTTY competition. K2MGZ is heard operating Maritime on 50 Mc. The SJRA Hamfest was bigger and better than ever this year. Over 1100 attended. W2TBD, W2JAV and K3GDI were the winners of the Hamfest 2-meter transmitter hunt. Remember K2HHO with a card during his illness. Continued support is needed by K2HOD and W2JAV in their efforts to secure

(Continued on page 134)

THOROUGHBRED

...New SX-111 Receiver...

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The team that designed the famous SX-101 now brings you an entirely new class of precision receiver at a moderate price.

Objective: bring the advantages of Single Sideband to thousands more *without sacrificing performance.*

Hallicrafters' answer: SX-111 . . . brilliant offspring of the incomparable SX-101—a receiver that *retains the essential performance characteristics of the acknowledged leader* but at a price that can put it in your shack tomorrow.

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- **CW • AM • SSB reception.**
- **Complete coverage of 80, 40, 20, 15 and 10 meters in 5 separate bands plus 6th band tunable to 10 Mc. for WWV.**
- **Hallicrafters' exclusive upper/lower sideband selection.**
- **Sensitivity: 1 microvolt on all bands. 5 steps of selectivity, 500 to 5000 cycles.**
- **Exceptionally high mechanical and electrical stability.**
- **Dual conversion. Crystal controlled 2nd converter.**
- **Famous Tee-Notch filter.**
- **Calibrated S-meter, series noise limiter.**
- **10 tubes plus voltage regulator and rectifier. Operates from 105-125 volts, 50-60 cycle A.C.**
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THIS SEASON— VIKING

NEW!

"6N2" THUNDERBOLT POWER AMPLIFIER—Rated at 1200 watts P.E.P.* input SSB and DSB, Class AB_1; 1000 watts CW input Class C; and 700 watts input AM linear, Class AB_1. Drive requirements approximately 5 watts in Class AB_1 linear or 6 watts Class C continuous wave. Continuous band-switched coverage on 6 and 2 meters—effectively TVI suppressed and filtered—wide range pi network output. Outstanding efficiency—losses on 2 meters held to approximately 5%, instead of common 25% losses experienced in some other 2 meter circuitry! This is possible due to the unique silver-plated Hi-Q coaxial line; silver-plated anode and other external metal portions of the 7034 tubes; silver-plated inductors; capacitors; and switch! With tubes.

Cat. No.		Amateur Net
240-362-1	Kit	$524.50
240-362-2	Wired	589.50

"6N2" TRANSMITTER—This compact VHF transmitter offers instant bandswitching coverage of both 6 and 2 meters. Completely shielded and TVI suppressed, the "6N2" may be used with the Viking "Ranger," Viking I, "Valiant," or similar power supply-modulator combinations capable of at least 6.3 VAC at 3.5 amp., 300 VDC at 70 ma., 300 to 750 VDC at 200 ma. and 30 or more watts of audio. Power input is rated at 150 watts CW and 100 watts AM phone . . . shaped keying results in excellent waveform. With tubes.

Cat. No.		Amateur Net
240-201-1	Kit	$129.50
240-201-2	Wired	169.50

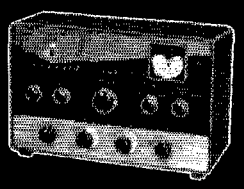
"6N2" CONVERTER—This compact Viking "6N2" Converter provides instant front panel switching from normal receiver operation to either 6 or 2 meters. Maximum sensitivity and low noise figure . . . excellent image and I.F. rejection. With tubes. Available kit or wired in either 26 to 30 mcs., 28 to 30 mcs., 14 to 18 mcs., or 30.5 to 24.5 mcs. ranges. Specify range desired.

Kits	Amateur Net $59.95
Wired Models	Amateur Net $89.95

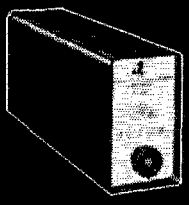
"6N2" VFO—Exceptionally stable and compact—designed to replace 8 to 9 mc. crystals in frequency multiplying 6 and 2 meter transmitters, including types using overtone oscillators. Temperature compensated and voltage regulated for minimum drift and high stability. Plexiglas dial calibrated from 144 to 148 mc., 50 to 51.5 mc., 51.5 to 53 mc. With tubes and pre-calibrated dial.

Cat. No.		Amateur Net
240-133-1	Kit	$34.95
240-133-2	Wired	54.95

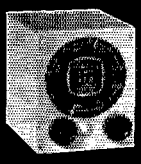
Other equipment for 6 and 2 meters!



"6N2" TRANSMITTER

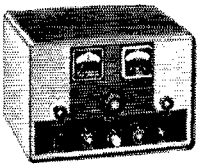


"6N2" CONVERTER



"6N2" VFO

OR ANY OTHER SEASON—YOU'LL FIND A TRANSMITTER IS YOUR BEST BUY!

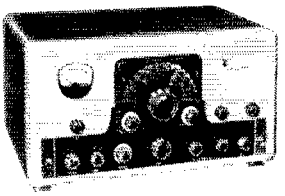


"CHALLENGER"—70 watts AM input 80 through 6, 120 watts CW input 80 thru 10—85 watts on 6. With tubes.

Cat. No.	Amateur Net
240-182-1..Kit	...$114.75
240-182-2..Wired	.$154.75

"RANGER"—75 watts CW and 65 watts phone input. Bandswitching 160 through 10. Built-in VFO. With tubes.

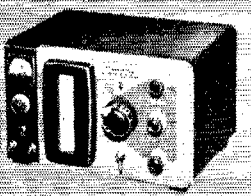
Cat. No.	Amateur Net
240-161-1..Kit	..$229.50
240-161-2..Wired	$329.50



"VALIANT"—Instant bandswitching 160 through 10. 275 watts input CW and SSB (P.E.P. with aux. exciter) 200 watts phone. With tubes.

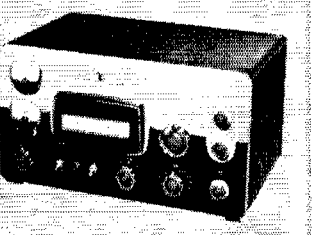
Cat. No.	Amateur Net
240-104-1. . . . . Kit	$349.50
240-104-2. . . . . Wired . . .	$439.50

3 feature-packed amplifiers!



"COURIER" AMPLIFIER—Class "B" linear rated 500 watts P.E.P. input with aux. SSB exciter—500 watts CW and 200 watts AM! Continuous coverage 3.5 to 30 mcs. Drive requirements: 5 to 35 watts. With tubes.

Cat. No.	Amateur Net
240-352-1. . Kit . . .	$244.50
240-352-2. . Wired .	$289.50



"THUNDERBOLT" AMPLIFIER—Rated 2000 watts P.E.P.* input SSB; 1000 watts CW; 800 watts AM linear! Continuous coverage 3.5 to 30 mcs. May be driven by "Ranger", or other unit of comparable output. With tubes.

Cat. No.	Amateur Net
240-353-1. . Kit . .	$524.50
240-353-2. . Wired .	$589.50

"KILOWATT" AMPLIFIER—This exciting unit is the only power amplifier available which will deliver full 2000 watts SSB* input and 1000 watts CW and AM! Continuous coverage 3.5 to 30 mcs. Excitation requirements: 30 watts RF and 10 watts audio for AM; 10 watts peak for SSB.

Cat. No.	Amateur Net
240-1000..Wired and tested.....	$1595.00
251-101-1..Matching desk top, back and 3 drawer pedestal..FOB Corry, Pa...	$132.00

**The FCC permits a maximum of one kilowatt average power input for the amateur service. In SSB operation under normal conditions this results in peak envelope power inputs of 2000 watts or more depending upon individual voice characteristics.*

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Yes, dollar-for-dollar and feature-for-feature you'll get more of everything in a Viking transmitter . . . that's why Viking transmitters outsell all others! Write for your free Viking Amateur Catalog and you'll soon see why your best transmitter buy is a Viking!

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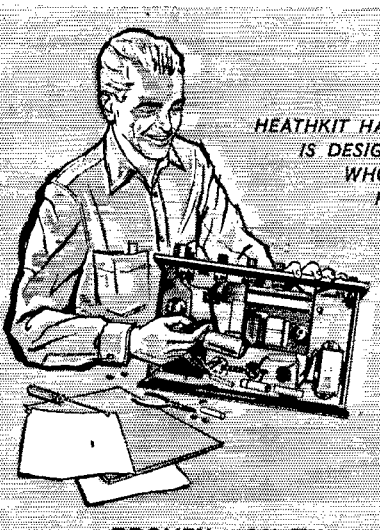

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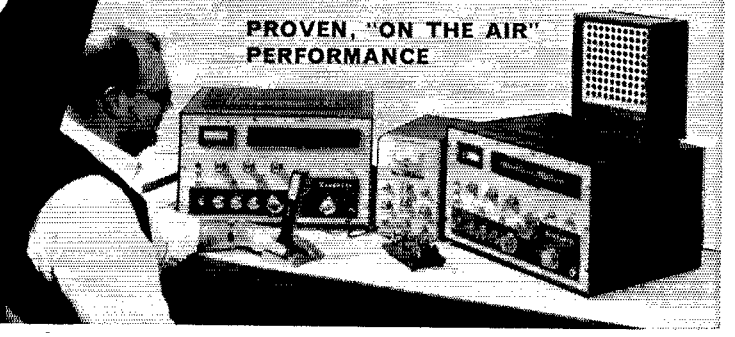

PROVEN, "ON THE AIR" PERFORMANCE

"SENECA" VHF HAM TRANSMITTER KIT

Beautifully styled and a top performer of highest quality throughout. The "Seneca" is a completely self-contained 6 and 2 meter transmitter featuring a built-in VFO for both 6 and 2 meters, and 4 switch-selected crystal positions, 2 power supplies, 5 radio frequency stages, and 2 dual-triode audio stages. Panel controls allow VFO or crystal control, phone or CW operation on both amateur bands. An auxiliary socket provides for receiver muting, remote operation of antenna relay and remote control of the transmitter such as with the Heathkit VX-1 Voice Control. Features up to 120 watts input on phone and 140 watts on CW in the 6 meter band. Ratings slightly reduced in the 2 meter band. Ideal for ham operators wishing to extend transmission into the VHF region. Shpg. Wt. 56 lbs.

HEATHKIT VHF-1 $159.95

HEATHKIT DX-20 $35.95

DX-20 CW TRANSMITTER KIT

Designed exclusively for CW work, the DX-20 provides the novice as well as the advanced-class CW operator with a low cost transmitter featuring high operating efficiency. Single-knob bandswitching covers 80, 40, 20, 15 and 10 meters using crystals or an external VFO. Pi network output circuit matches antenna impedances between 50 and 1,000 ohms. Employs a single 6DQ6A tube in the final amplifier stage for plate power input of 50 watts. A 6CL6 serves as the crystal oscillator. The husky power supply uses a heavy duty 5U4GB rectifier and top-quality "potted" transformer for long service life. Easy-to-read panel meter indicates final grid or plate current selected by the panel switch. Complete RF shielding to minimize TVI interference. Easy-to-build with complete instructions provided. Shpg. Wt. 19 lbs.

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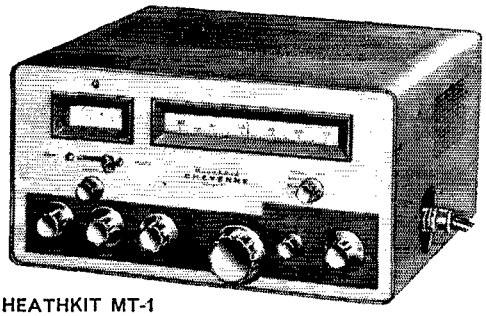
Mobile Gear...for the Ham on the Go!

"CHEYENNE" MOBILE HAM TRANSMITTER KIT

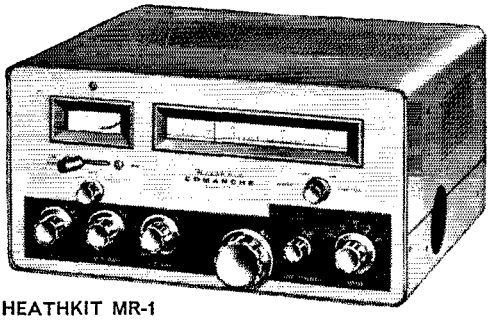
All the fun and excitement . . . plus the convenience of mobile operation are yours in the all-new Heathkit "Cheyenne" transmitter. The neat, compact, and efficient circuitry provides you with high power capability in mobile operation, with low battery drain using carrier controlled modulation. All necessary power is supplied by the model MP-1 described below. Covers 80, 40, 20, 15 and 10 meters with up to 90 watts input on phone. Features built-in VFO, modulator, 4 RF stages, with a 6146 final amplifier and pi network (coaxial) output coupling. High quality components are used for long service life and reliable operation, along with rugged chassis construction to withstand mobile vibrations and shock. Thoughtful circuit layout provides for ease of assembly with complete instructions and detailed pictorial diagrams to insure success. A spotting switch is also provided. A specially designed ceramic microphone is included to insure effective modulation with plenty of "punch". Plan now to enjoy the fun of mobile operation by building this superb transmitter. Shpg. Wt. 19 lbs.



HEATHKIT MT-1
$99.95

"COMANCHE" MOBILE HAM RECEIVER KIT

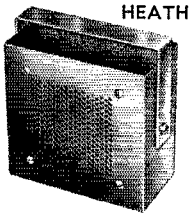
Everything you could ask for in modern design mobile gear is provided in the "Comanche" . . . handsome styling, rugged construction, top quality components . . . and, best of all, a price you can afford. The "Comanche" is an 8-tube superheterodyne ham band receiver operating AM, CW and SSB on the 80, 40, 20, 15 and 10 meter amateur bands. A 3 mc crystal lattice-type IF filter permits the receiver to use single conversion without image interference, and at the same time creates a steep sided 3 kc flat top IF bandpass characteristic comparable to mechanical type filters. The neat, compact and easy-to-assemble circuitry features outstanding sensitivity, stability and selectivity on all bands. Circuit includes an RF stage, converter, 2 IF stages, 2 detectors, noise limiter, 2 audio stages and a voltage regulator. Sensitivity is better than 1 microvolt on all bands and signal-to-noise ratio is better than 10 db down at 1 microvolt input. One of the finest investments you can make in mobile gear. Shpg. Wt. 19 lbs.



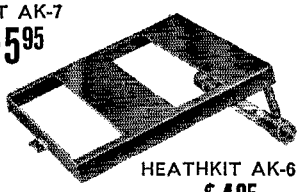
HEATHKIT MR-1
$119.95

MOBILE SPEAKER KIT

A matching companion speaker for the "Comanche" mobile receiver. Housed in a rugged steel case with brackets provided for easy installation on fire wall or under dashboard, etc. Uses 5 PM speaker with 8 ohm voice coil. Measures 5" H. x 5" W. x 2½" D. Shpg. Wt. 4 lbs.



HEATHKIT AK-7
$5.95

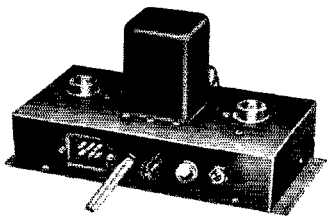


HEATHKIT AK-6
$4.95

MOBILE BASE MOUNT KIT

The AK-6 Base Mount is designed to hold both transmitter and receiver conveniently at driver's side. Universal mounting bracket has adjustable legs to fit most automobiles. Shpg. Wt. 5 lbs.

HEATHKIT MP-1
$44.95



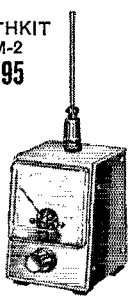
MOBILE POWER SUPPLY KIT

This heavy duty transistor power supply furnishes all the power required to operate both the MT-1 Transmitter and MR-1 Receiver. It features two 2N442 transistors in a 400 cycle switching circuit, supplying a full 120 watts of DC power. Under intermittent operation it will deliver up to 150 watts. Kit contains everything required for complete installation, including 12' of heavy battery cable, tap-in studs for battery posts, power plug and 15' of connecting cable. Chassis size is 9 1/16" L. x 4¾" W. x 2" H. Operates from 12-14 volt battery source. Circuit convenience provided by self-contained relay which allows push-to-talk mobile operation. Shpg. Wt. 8 lbs.

POWER METER KIT

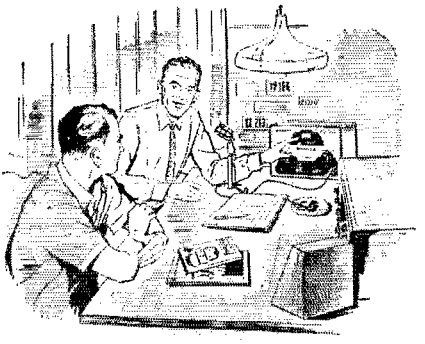
This handy unit picks up energy from your mobile antenna and indicates when your transmitter is tuned for maximum output. A variable sensitivity control is provided. Features a strong magnet on a swivel-mount for holding it on a car dashboard or other suitable spot. Has its own antenna or may be connected to existing antenna. Sensitive 200 ua meter. Shpg. Wt. 2 lbs.

HEATHKIT
PM-2
$12.95



HEATHKIT®

COMPANION UNITS

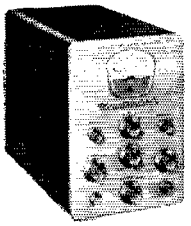


HEATHKIT TX-1 $234.95

"APACHE" HAM TRANSMITTER KIT

The many features and modern styling of the "Apache" will provide you with just about everything you could ask for in transmitting facilities. Emphasizing high quality the "Apache" operates with a 150 watt phone input and 180 watt CW input. In addition to CW and phone operation, built-in switch selected circuitry provides for single-sideband transmission using the SB-10 External adapter. The newly designed, compact and stable VFO provides low drift frequency control necessary for SSB transmission. A slide rule type illuminated rotating VFO dial with full gear drive vernier tuning provides ample bandspread and precise frequency settings. The bandswitch allows quick selection of the amateur bands on 80, 40, 20, 15 and 10 meters. This unit also has adjustable low-level speech clipping and a low distortion modulator stage employing two of the new 6CA7/EL34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation. The final amplifier is completely shielded for TVI protection and neutralized for greater stability. A cooling fan is also provided. The formed one-piece cabinet with convenient access hatch provides accessibility to tubes and crystal sockets. Die-cast aluminum knobs and control panel escutcheons add to the attractive styling of the transmitter. Pi network output coupling matches antenna impedances between 50 and 72 ohms. A "spotting" push button enables the operator to "zero beat" an incoming frequency without putting the transmitter on the air. Equip your ham shack now for top transmitting enjoyment with this outstanding unit. Shpg. Wt. 110 lbs. Shipped motor freight unless otherwise specified.

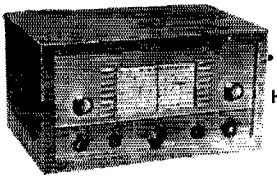
HEATHKIT SB-10 $89.95



SINGLE SIDEBAND ADAPTER KIT

Designed as a compatible plug-in adapter unit for the TX-1 "Apache" transmitter, this unit lets you operate on SSB at a minimum of cost, yet does not affect the normal AM and CW functions of the transmitter. By making a few simple circuit modifications, the DX-100 and DX-100-B transmitters can be used, utilizing all existing RF circuitry. Extremely easy to operate and tune, the adapter employs the phasing method for generating a single-sideband signal, thus allowing operation entirely on fundamental frequencies. The critical audio phase shift network is supplied completely preassembled and wired in a sealed plug-in unit. Produces either a USB, LSB or DSB signal, with or without carrier insertion. Covers 80, 40, 20, 15 and 10 meter bands. An easy-to-read panel meter indicates power output to aid in tuning. A built-in electronic voice control with anti-trip circuit is also provided. 10 watts PEP output. Unwanted sideband suppression is in excess of 30 db and carrier suppression is in excess of 40 db. An EL84/6BQ5 tube is used for linear RF output. Shpg. Wt. 12 lbs.

MODIFICATION KIT: Modifies DX-100 and DX-100-B for use with the SB-10 Adapter. Model MK-1. Shpg. Wt. 1 lb. $8.95.



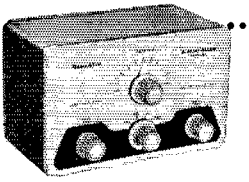
HEATHKIT AR-3 $29.95

(less cabinet)

ALL-BAND RECEIVER KIT

A fine receiver for the beginning ham or short wave listener, designed for high circuit efficiency and easy construction. Covers 550 kc to 30 mc in four bands clearly marked on a slide-rule dial. Transformer operated power supply. Features include: bandswitch, bandspread tuning, phone-standby-CW switch, phone jack, antenna trimmer, noise eliminator, RF gain control and AF control. Shpg. Wt. 12 lbs.

CABINET: Opt. extra. No. 91-15A. Shpg. Wt. 5 lbs. $4.95.



HEATHKIT QF-1 $9.95

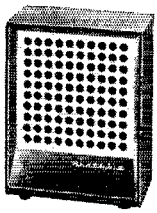
"Q" MULTIPLIER KIT

Useful on crowded phone and CW bands, this kit adds selectivity and signal rejection to your receiver. Use it with any AM receiver having an IF frequency between 450 and 460 kc that is not AC-DC type. Provides an effective "Q" of approximately 4,000 for extremely sharp "peak" or "null". The QF-1 is powered from the receiver with which it is used. Shpg. Wt. 3 lbs.

OF DISTINCTIVE QUALITY

ACCESSORY SPEAKER KIT

Handsomely designed and color styled to match the "Mohawk" receiver this heavy duty 8" speaker with 4.7 ounce magnet provides excellent tone quality. Housed in attractive ⅜" plywood cabinet with perforated metal grille. Speaker impedance is 8 ohms. Shpg. Wt. 7 lbs.

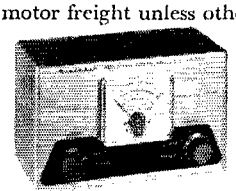


HEATHKIT AK-5
$9.95

HEATHKIT RX-1 $274.95

"MOHAWK" HAM RECEIVER KIT

Styled to match the "Apache" transmitter the "Mohawk" ham band receiver provides all the functions required for clear, rock-steady reception. Designed especially for ham band operation this 15-tube receiver features double conversion with IF's at 1682 kc and 50 kc and covers all the amateur frequencies from 160 through 10 meters on 7 bands with an extra band calibrated to cover 6 and 2 meters using a converter. Specially designed for single sideband reception with crystal controlled oscillators for upper and lower sideband selection. A completely preassembled wired and aligned front end coil bandswitch assembly assures ease of construction and top performance of the finished unit. Other features include 5 selectivity positions from 5 kc to 500 CPS, bridge T-notch filter for excellent heterodyne rejection, and a built-in 100 kc crystal calibrator. The set provides a 10 db signal-to-noise ratio at less than 1 microvolt input. Each ham band is separately calibrated on a rotating slide rule dial to provide clear frequency settings with more than ample bandspread. Front panel features S-meter, separate RF, IF and AF gain controls, T-notch tuning, T-notch depth, ANL, AVC, BFO, Bandswitch tuning, antenna trimmer, calibrate set, calibrate on, CW-SSB-AM, receive-standby, upper-lower sideband, selectivity, phone jack and illuminated gear driven vernier slide rule tuning dial. Attractively styled with die-cast aluminum control knobs and escutcheons. No external alignment equipment is required for precise calibration of the "Mohawk". All adjustments are easily accomplished using the unique method described in the manual. An outstanding buy in a communications receiver. Shpg. Wt. 66 lbs. Shipped motor freight unless otherwise specified.



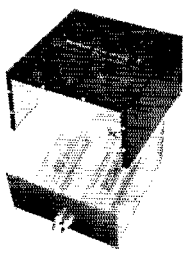
HEATHKIT AM-2
$15.95

REFLECTED POWER METER KIT

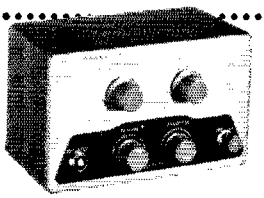
The AM-2 measures forward and reflected power or standing wave ratio. Handles a peak power of well over 1 kilowatt of energy and covers 160 through 6 meters. Input and output impedance provided for 50 or 75 ohm lines. No external power required for operation. Use it also to match impedances between exciters or RF sources and grounded grid amplifiers. Shpg. Wt. 3 lbs.

BALUN COIL KIT

Match unbalanced coaxial lines, found on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance with this handy transmitter accessory. Capable of handling power input up to 200 watts, the B-1 may be used with transmitters and receivers covering 80 through 10 meters. No adjustment required. Shpg. Wt. 4 lbs.



HEATHKIT B-1
$8.95



HEATHKIT VX-1
$23.95

ELECTRONIC VOICE CONTROL KIT

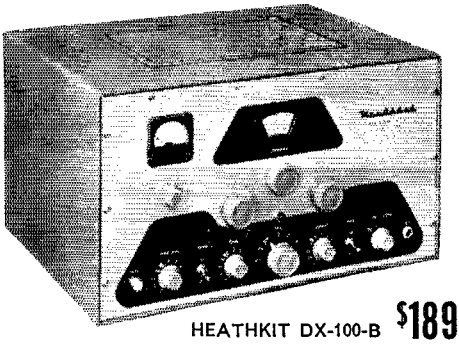
Eliminate hand switching with this convenient kit. Switch from receiver to transmitter by merely talking into your microphone. Sensitivity controls allow adjustment to all conditions. Power supply is built in and terminal strip on the rear of the chassis accommodates receiver and speaker connections and also a 117 volt antenna relay. Shpg. Wt. 5 lbs.

HEATHKIT VF-1
$19.50

VFO KIT

Far below the cost of crystals to obtain the same frequency coverage this variable frequency oscillator covers 160, 80, 40, 20, 15 and 10 meters with three basic oscillator frequencies. Providing better than 10 volt average RF output on fundamentals, the VF-1 is capable of driving the most modern transmitters. Requires only 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a. Illuminated dial reads direct. Shpg. Wt. 7 lbs.

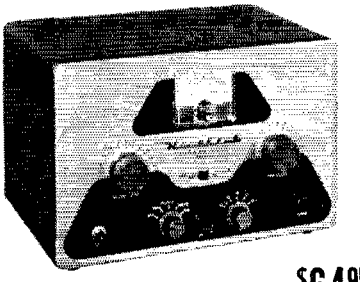
Save 1/2 or more...with Heathkits



HEATHKIT DX-100-B $189.50

DX-100-B PHONE AND CW TRANSMITTER KIT

A long standing favorite in the Heathkit line, the DX-100-B combines modern styling and circuit ingenuity to bring you an exceptionally fine transmitter at an economical price. Panel controls allow VFO or crystal control, phone or CW operation on all amateur bands up to 30 mc. The rugged one-piece formed cabinet features a convenient top-access hatch for changing crystals and making other adjustments. The chassis is punched to accept sideband adapter modifications. Featured are a built-in VFO, modulator, and power supply, complete shielding to minimize TVI, and a pi network output coupling to match impedances from 50 to 72 ohms. RF output is in excess of 100 watts on phone and 120 watts on CW. Band coverage is from 160 through 10 meters. For operating convenience single-knob bandswitching and illuminated VFO dial on meter face are provided. A pair of 6146 tubes in parallel are employed in the output stage modulated by a pair of 1625's. Shpg. Wt. 107 lbs. Shipped motor freight unless otherwise specified.

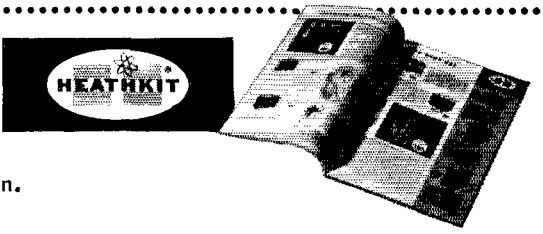


HEATHKIT DX-40 $64.95

DX-40 PHONE AND CW TRANSMITTER KIT

An outstanding buy in its power class the DX-40 provides both phone and CW operation on 80, 40, 20, 15 and 10 meters. A single 6146 tube is used in the final amplifier stage to provide full 75 watt plate power input on CW or controlled carrier modulation peaks up to 60 watts for phone operation. Modulator and power supplies are built in and single-knob band-switching is combined with the pi network output circuit for complete operating convenience. Features a D'Arsonval movement panel meter. A line filter and liberal shielding provides for high stability and minimum TVI. Provision is made for three crystals easily accessible through a "trap door" in the back of the cabinet. A 4-position switch selects any of the three crystals or jack for external VFO. Power for the VFO is available on the rear apron of the chassis. Easy-to-follow step-by-step instructions let assembly proceed smoothly from start to finish even for an individual who has never built electronic equipment before. Shpg. Wt. 25 lbs.

Free *Send now for latest Heathkit Catalog* describing in detail over 100 easy-to-assemble kits for the Hi-Fi fan, radio ham, boat owner and technician.



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IS K6INI THE WORLD'S CHAMPION DX OPERATOR?

Judge for yourself! Read his letter and count the DX he has worked—with only 65 watts and a $16.95 Gotham V-80 Vertical Antenna.

2405 Bowditch, Berkeley 4, California
January 31, 1959

GOTHAM
1805 Purdy Avenue
Miami Beach 39, Florida

Gentlemen:

I just thought I would drop you a line and let you know how pleased I am with your V-80 vertical antenna. I have been using it for almost two years now, and am positively amazed at its performance with my QRP 65 watts input! Let me show you what I mean:

I have worked over 100 countries and have received very fine reports from many DX stations, including 599 reports from every continent except Europe (589)! I have also worked enough stations for my WAC, WAS, WAJAD and ADXC awards, and I am in the process of working for several other awards. And all this with your GOTHAM V-80 vertical antenna!

Frankly, I fail to see how anyone could ask for better performance with such low power, limited space and a limited budget. In my opinion, the V-80 beats them all in its class.

I am enclosing a list of DX countries I have worked to give you an idea of what I have been talking about.

Wishing you the best for 1959, I am

Sincerely yours,
Thomas G. Gabbert, K6INI (Ex-TI2TG)

List of 105 countries/stations worked with 65 watts and a V-80 vertical

BV1US	KG4AI	VK3YL
CE3DZ	KG6FAE	VK9XK
ZL5AA	KH6IJ	VK9AT
CO2WD	KL7BUZ	VKØCJ
CN2BK	KM6AX	VP2KFA
CN8FB	KP4ACF	VP2AY
CR9AH	KP6AL	VP2DW
CT1CB	KR6BF	VP2MX
CX2FD	KS4AZ	VP2LU
DL1FF	KV4AA	VP2SW
DU7SV	KW6CA	VP5CP
EA1FD	KX6AF	VP5BH
EI4N	KZ5CS	VP6TR
F8VQ	LA3SG	VP7NM
FB8ZZ	LU2DFC	LU1ZS
FG7XE	LZ1KSP	VP9BK
FK8AL	OA4AU	VR2DA
FM7WT	OE9EJ	VR3B
FO8AD	OH2TM	VS1HC
G3DOG	OK1FF	VS2DW
GC8DO	ON4AY	VS6LN
GI3WUI	KG1AX	XE1PJ
GM3GJB	OZ2KK	XW8AI
GW3LJN	PAØFAB	YN1JW
HA5KBP	PJ5AA	YU3FS
HC4IM	PJ2ME	YV5HL
HC8LUX	PY2EW	ZC5AL
HE9LAC	PYØNE	ZE1JV
HP1LO	SM5AQB	ZK1BS
I1MV	SP6BY	KH6MG/ZK1
JA1ANG	TI2LA	ZK2AD
JZØHA	UA1AU	ZL1ABZ
W1AW	UAØKKB	ZL3JA
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- If K6INI can do it, so can you.
- Absolutely no guying needed.
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- Only a few square inches of space needed.
- Four metal mounting straps furnished.
- Special B & W loading coil furnished.
- Every vertical is complete, ready for use.
- Mount it at any convenient height.
- No relays, traps, or gadgets used.
- Accepted design—in use for many years.
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- Simple assembly, quick installation.
- Withstands 75 mph windstorms.
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- Ideal for novices, but will handle a Kw.
- Will work with any receiver and xmitter.
- Overall height 23 feet.
- An effective modern antenna, with amazing performance. Your best bet for a lifetime antenna at an economical price. ONLY $16.95.

73,
GOTHAM

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W2BBS
W2SSC
W2YTH
W3DKT
W3MFW
W4CYY
W5ALA
W5HDS
W5HJA
W6CAE
W6GMF
W6HX
W6IBD
W6ULS
W6WWQ
W6YK
W7AH
W8UPN
WØBCI
VE1PQ
CR6BX
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W4AZK
ON4PA

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W2UVE
W4TFB
W5TIZ
W9QIY
SM7MS

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W3CPV
W3RNQ
W3VKD
W9KXK
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W2EMW
W2NSZ
W2QJM
W3ZAO
W4SRT
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W5FNA
W6AMA
W6BIL
W6SQP
W7AUS
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HB9MQ
PAØTAU
SM5CO
SM5WI
TG9AD

• 219
W3GRF
K4BVQ
PY1AJ

• 218
W3LMM
K6LGF
WØYCR
VE2NV
YS1O

• 217
W3AXT
W6MEL
VE3AIU
CM9AA
ON4DM

• 216
W3EYF
W3SOH
W6EHV
W9RQM
VE7ZK
CE3HL
G8IG
IT1TAI
SM5CCE
SM5KX
TI2TG
ZP5CF

• 215
W1ELR
W3AYD
W5GNG
W6KYT
W7AJS
W7ASG
W9PQA
DL7AP
OZ7BG

• 214
W3LMO
W3NCF
W5EB
KH6AYG
W9KA
OH3RA
PY1DH

• 213
W1GYE
W2JB
W5VU
W6BUO
OH2RY
OK1CX

• 212
W1IJB
W2DEW
W2GFW
W2GNQ
W2HZY
W2REF
W2UFT
W3AYS
W5QVZ
W6MHB
W6OSU
W8BTI
W9JIP
W9YNB
WØGUS
VE3DKY
G6XL
HB9KB

• 211
W1LOP
W1TS
W2BJ
W2DSU
W3ELZ
W4UXI
W6KBC
W6KEK
W6KUT
W6LN
W6PLK
W7QGF
W8TJM
W9GFF
W9ROU
WØAJU
WØPNQ
G6BS
ZS2X

• 210
W1BFT
K1DLT
W1EQ
W1WY
W2AGO
K2FC
K2LWR
K4HRG
K5ADQ
W5DA
W5DMR
W5JC
W5KUJ
W5LGS
W5PM
W6ATO
W6JK
W6MJB
W7HQC
W8ONA
W8WT
K9ECO
W9FJY
W9HCR
W9VP
VE3QD
DL1GU
DL3RK
EI9Y
I1XK
KZ5CP
PY4IE
SM5AHK

• 209
W4KLB
W6OBH
W7AHX
VE7HC
DJ2AE
YV5AE

• 208
W2OBX
W4AIT
W7DJY
WØUQV
CT3AN

• 207
W2AQW
W3EBG
W5VIR
W9WYB
DL1QT
PY1AHL

• 206
W1AB
W3GHS
W4NNN
W8DUS
W9GIL
W9HKL
CP5EK
OE1RZ

• 205
W1BAV
W5LW
W8EYE
WØBSK
WØMKF
HB9GJ
HB9MO
PAØBW
ZP5ET

• 204
W1KQF
W2HHF
WØAGO
DL3DU
KZ5WZ
ZS2AT

• 203
W1NHJ
W1RAN
W3AOH
W3BQA
W4NBV
W4OPM
W6LDJ
W6TPJ
W7YGN
W8CDT
G3FXB
KP4YT
SM5WJ
VK3YL

• 202
W3JKO
W4IFN
K4LPW
W4RBQ
K5LIA
K6CYO
W6PZ
W9TKV
W9WFS
W7DL
CX1FY
JA8AA
OY7ML
PAØRLF
PY1HX
PY2OE
SM3AKM

• 201
W1BGW
W1ODW
W2DKF
W2ICO
K2JYH
K2VFR
W3GEN
W3VOS
K4CTU
K4GEZ
K4HNA
W4JFE
W5DGV
K6AYA
W6FZL
W6PQT
W6VDG
KH6BA
W8HMI
W8UMR
W9FNR
W9GDI
WØUOX
CR6AI
KP4WD
LA5YE
OZ3Y
OZ8SS
PY4ZG
PY7VG
ZS1RM

• 200
W1JNV
W1QMM
W1WK
W2ALO
W2BUI
W2FXA
W2PZI
W2TQR
W3DBX
W3LEZ
W3MLW
W4BRB
W4HYW
W4JAT
W4JII
W5DML
W5WZQ
W6BUD
K6EDE
W6EPZ
W6GAL
W6MVQ
W6PB
W6RBQ
W6SUQ
W7DAA
W7FAW
W7RT
W8DX
K9AGB
W9BQE
W9MQK
W9QYW
W9WIO
VE3AAZ
VE3PK
VE6VK
VE7VC
F3FA
G6QB
GI3IVJ
I1AIV
I1ZFD
JA1CR
KR6AC
ON4QF
SM5BCE
VS6AE
ZL1BY
ZL3GU

• 199
W1OOS
W2AYU
W2IYO
W6EAY
W6NXP
WØDXE
JA6AO
VK2NS
ZE1JV

• 198
W2ROM
W3ALX
W6BYB
W9ERU
W9PIO

• 197
W1CH
W2CGJ
W3RPG
DL3FM
ZS1OU

• 196
W5MCO
W6FUF
W7AQB
EA1BC
ON4KT
JA1AA

• 195
W2ZVS
W6KG
W8LAV
WØDMA
VE8AW

• 194
W1FTX
W4HVQ
KH6LG
W7PGS
W9EHW
W9HQF

• 193
W1OGU
K9ATZ
WØVBK
VE7YR
EA4CR
F8CW
OE1FF
ZL4BO

• 192
W1DEP
W2ITD
W3GRS
W4PN
K4PTL
W8HFE
W8SZS
WØRBA
VO6EP
DL6YK
DL7EN
DL8AX

• 191
W3FMC
W3LPF
W4AAW
W5CFG
K6RWO
W6ZMX
W9HTY
W9LI
W9UZS
WØGUV
CN8MI
F8PQ
G3EMD
I1KN
OH2LA
OQ5RA
SM3EP
YV5FK

• 190
W1JMI
W1MB
W2IOP
W2VYX
W3AS
W3KFQ
W3MJF
W3SWV
W4EO
K4HFS
W4IEH
W4JBQ
W4NWW
W4UKA
W5BRR
W6BIF
W6CG
W6ETJ
K6KII
W6OMC
W6UCX
W7ACD
W7FBD
W7IQI
W8AJW
W8CVU
W9OTS
DL1DX
ET2AB
F9IL
G3AIZ
G3DOG
OZ3FL
PAØNU
YV5BZ
ZL1AJU
ZL4GA

• 189
W1CKU
W1ICW
W4EEO
W8OGV
W8ZJM
G6VQ
VK2BA
VS1FJ

• 188
W1QM
W2CWE
W6IPH
W9IOD
WØIEV
EA2CB
FA8DA
OZ7PH
VQ2DT

• 187
W1ZDP
W9AND
VE7JB
F9RM

• 186
W8DLZ
PY4RJ

• 185
W1WLW
W1RY
K2IRO
W5MMD
WØCPM
VE5RU
CT1JS
JA1AB
OE3WB
YU1AG

• 184
K2JGG
W2SHC
K6KJR
W7GUI
W9IRH
W9MXX

• 183
W6CIS
W7IAA
WØLBB
DL9PX
I1OJ

• 182
W1AW
W2GDX
W2GTL
W2IWM
W2QKJ
W3MWC
W3WDC
W4NNH
W5MET
W6MUF
W6SRU
WØIJW
G3HCL
HB9CX
HB9NU

• 181
W1KGH
W1ORP
W1OTX
W2CKY
W2MLO
W2OTC
W3CA
K5BGT
W6OF
W6RAN
W6SWG
W7CSW
W7OCL
W8JSU
W9NN
WØFNN
VE2YU
DL3SZ
DL6MK
G6RC
GM3CSM
HP1BR
I1FO
LA6U
PY1ADA
SM5ARL

• 180
W1DQH
W1LQ
W1OOA
W1YPK
W2ABM
W2BMK
W2IMU
W2PCJ
W2PDB
W2RDD
W3AFU
W3JNM
W3MDO
W3WPG
K4DRO
W6EAE
W6EYR
W6GSL
W6OUN
W6RM
W8MWL
W8NJC
W9ALI
K9CLO
W9QGR
WØCDP
WØEYR
KØHGB
WØTKX
VE3IR
VE4XO
VE6JR
VE7VO
CX1BZ
DL1YA
DL7CW
F8EJ
G2EC
OK1KTI
ON4JW
PY1ANR
VK5RX
ZK1BS

• 179
W2CSO
W2GWE
W3KZQ
W4COC
W4GJW

• 178
W1AUR
W1MDO
W2COK
W2FXE
W6NIF/4
W5LHP
G2WW
VK3BZ

• 177
W1JEL
W2RDK
W4AIS
W4CYU
W4TAJ
W8BOJ
CT1FY
KG4AF
LA5Q
ON4MS
ZL1PV

• 176
W3QJV
W4BWP
W4ECI
W4JDR
K5ABW
W6BJU
W6CYI
KL7PIV
W8GCN
W8VLK
W9AEH
FQ8AP
G2AKQ
G4TM
KP4AIO
PAØHP

• 175
K2SHZ
W3NA
W3NOH
K4JVE
W6BAM
W6TKX
KH6QH
W9UX
WØYPQ
VE2II
G3AIM
LU5AQ
OK1JX
SM5DW
VQ4KRL

• 174
W1ATE
W1DSF
W1NI
W5RIO
KH6VP
W8GB
W8RDZ
W9TJ
W9ZTD
WØMCX
EI4X
F8LF
MF2AA
ON4FL
SM7TQ
VP7NM

• 173
W2MZB
W2PTD
W3ZQ
W4LQN
W5VGR
W8MCC
W8PWH
W8TUO
VE5JV
DL1BS
DL9RK
G3COJ
I1ALU
I1IT
I1UA
JA1DM
JA6AD
PY4AJD

• 172
W3EOB
W4NT
W4TP
W5BUK
K5KBH
W8RVU
K9CJK
W9IHN
WØAIH
KØDMY
VE3IJ
DL4ZC
G3ABG
G3DCU
HB9QU
OH1QE
PY5UG
PY7LJ

• 171
W1EIO
W1HRI
W1PKW
K2BSM
W2FZY
W2LJR
W2PWP
W2RGV
W2TP
W3ARK
W3EEB
W3RSR
W4DKA
W4HKJ
K4LTA
W4PLL
W5RX
W5TPC
W6DUB
W6WTH
KH6WW
W8FJN
W8LY
W9WJH
KØGXR
CR7LU
G3BNC
GI4RY
OH2QQ
SM3AKW

• 170
W1ACB
W1CUX
W1WAI
W2AXR
W2BXY
W2FJH
W2NOY
K2OPJ
W3LVF
K4EJO
W4GHP
K4HXF
K4KOY
W4QT
W4VE
W6FHR
K6GLC
W7NRB
W7QON
W7WVE
W8AE
W8AYS
W8DEN
W8PCS
W8SCU
W9LTR
W9WHY
WØOAQ
VE1HG
VE2YA
DJ3JZ
G2IO
G6GH
HB9NL
IS1AHK
IS1FIC
KZ5DG
OH2TM
PAØLB
PAØZL
PY2NX
PY7WS
SM5KV
ZS6A
ZS6OV

• 169
K2ERC
W2PUD
W4AUL
W4CYR
W8IBX
DL1EE
F3AT

• 168
W2UWD
W3JYS
W6JU
W8JXY
DU7SV
G3AJP
I1AY
SP7HX

• 167
CT1DJ
EI3R
HB9FU
PAØHJK

• 166
W1LQQ
W4AWS
K4CLT
W6PCS

(Continued on page 122)

MULTI CHANNEL

GONSET G-12
CITIZENS BAND COMMUNICATOR

Now . . . G-12 . . . complete two-way station with 4-crystal controlled channels, transmitter and receiver . . . for fullest operational flexibility. Change channels instantly if interference is present. Also different channels can be used for units in a system as—office to car, truck, boat or plane.

No tuning—select channel by panel switch. Press-to-talk control. Tuning indicator monitors output and modulation. Superheterodyne receiver has RF stage, automatic noise limiter, adjustable squelch. Built-in speaker and 2½ watt audio channel. FCC type accepted.

Universal power supply, 12V DC and 115V AC is built-in.

G-12 is sturdily built for heavy-duty industrial or commercial use. Gimbal-type bracket for desk-top, under-dash, bulkhead mounting. Compact: 4½"H, 7"W, 10"D, weighs only 11 pounds.

G-12 CITIZENS COMMUNICATOR COMPLETE WITH PRESS-TO-TALK MICROPHONE AND CRYSTALS FOR ONE CHANNEL . . . **149.95**

ALSO AVAILABLE, G-11 SINGLE CHANNEL UNIT AT 124.50

HUNDREDS OF USES!

Units may be operated together as a system. Examples: Business, inter-floor, inter-building. Industrials, storage yards, warehouses, factories, mills, branch businesses. 2-way contacts between fixed stations and pick-up/delivery vehicles . . . trucks, tractors, earth-moving equipment . . . tugboats, tow boats, pleasure craft, boat-to-boat or boat-to-shore.

THE IDEAL TWO WAY RADIO . . . for farming . . . ranching . . . forestry . . . mining . . . pipe lines . . . construction . . . special events . . . sports . . . fishing . . . hunting . . . boating . . . clubs.

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KØDQI
DJ3KR
VS6CG

• 165
W2BUY
W3KA
W3KHU
W3LBG
W5ACL
WØDEI
DL3TJ
G2BXP
G3CEG
GM3CIX
KT1EXO
LA5S

• 164
W1BGY
W1DX
W2AOX
W2GTP
W4DXI
W4EFX
W4SIB
W6AGO
W6CLS
W8ELL
W8OCA
W9BBU
W9LQF
G4FN
G5LP
OH3NY
ON4AZ
PAØNIC
SM6ID
VP9BM

• 163
W1MIJ
K2QHL
W3JZY
K4GSS
W5WW
KH6BLX
W9EXY
W9UXS
WØERI
VE3HB
EA2CR
G3BYM
HB9MU
I1RC
ON4GU
ZS6KK

• 162
W2OST
K2QXG
K2VUI
W3CPB
W4RNP
W4VCB/3
K6OYE
W7BA
W8ILG
W9PVA
WØEWH
WØSNL
DL1LH
EI5F
G2AJ
HB9AO
JA1CJ
VK6SA
YV5ABD
ZL3CC
ZS2AG
4X4BX

• 161
W1IKE
K2MIO
W2RA
W3AFW
W3BYI
W3TXQ
W4CKB
W4HZZ
W4KYI
W5BLA
W6GHU
W6WKU
W8AZD
W8EKK
WØQBA
EA1AB
G2FYT
G2YS
GM3AVA
HB9DO
HB9KU
KP4WN
KV4AQ
OK1LM
OQ5LL
PA6LOU
PAØRC
ST2AR
VK5QR
YV5AK
4X4CJ

• 160
W1JDE
W1VAN
W1YZG
W2ADP
W2BAC
W2GUR
K2KCE
K2MGR
W2OGE
W2ZY
W3KVB
W3LUD
W3MQC
W3MSR
W3ZAL
W4DKP
K4IEX
W4WM
W4ZD
K5DGI
W5OVE
W5LV
W6LVN
W6MUM
K6OXU
W6QDE
W6YMH
W7ATV
W7DET
W7WH
W8AJH
W8TTN
W8YHO
W8ZZU
W9BYN
W9NZZ
W9OVF
WØZYB
VE2WA
VE3EU
DL1HA
EA7CP
G2AJB
G2FSR
G3CBN
GM6MD
I1CJW
I1KDB
ON4GC
OZ7SN
SM6HU
VK3XO

• 159
W1IUU
W3HER
W3KDF
W6APH
K6SXA
W6VOE
WØDGH
EA3KB
G6LX
GW3ZV
I1IR
OH1TM
OH2YV
OK1VW
SM3ARE
VQ2GW

• 158
W3QQL
WØGDH
VE1EK
GM3EOJ
SP8CK
VQ8AD
ZL3IS

• 157
W1NS
W1QPN
W1UMC
K2AAA
W1JXM
W1YK
W6NIG
W8VTF
WØTJ
G3FUR
G3IDC
GM3BCL

• 156
W1EFQ
W2SAI
W6AFI
W6NZ
W8PHZ
K9DNR
WØJSN
WØLLN
I1CZE
JA2DN
ON4TX
ZS6EU

• 155
W3RZL
W4LDL
W4WSJ
W5QN
W6BAG
W6ITH
K6IYJ
W8MFB
W8YCP
DL9TJ
G2AJF
G3JKF
G6GN
I1BLF
I1VS
PY4OD

• 154
W1ZD
K2DsV
W2QCP
W3KJJ
W4AIX
W5FJE
W8FPR
W8ZCK
VE7EH
G3CSL
G3VA
HB9UL
KP4JE
VP9G

• 153
W1GDY
W1JSS
W1QF
W2CDP
W5RHW
W7KVU
WØDSP
WØFLK
WØLPA
WØNGF
VE3ZW
VE5VL
VE6KX
CE3AE
CR7AF
DL1JW
DL1ZN
DL7FW
HB9NT
OH2LX
OH2NB
OH3TH
OZ5PA

• 152
W1APA
K1CJV
W1JTD
W1MUN
W1RWS
W2GSN
W2MYY
W3WSF
W4ARR
W4BFR
W6FLT
W6JZP
W6LMZ
KL7MF
WØGBJ
VE3ADV
DL3BK
DL7CS
DL9SN
EA5BD
G2HAP
G3HJJ
G8UG
LA2B

• 151
W1FQA
W1HWH
W1KXP
W2BBV
K2IAD
W2JVZ
W3BVL
W3EIS
W3FLH
W3IPO
W4ZMC
W5AUJ
W5CGC
W8HUD
W9MZP
W9PGW
W9VZP
WØIDI
KØLFY
WØSMV
VE2BV
VE3BHS
VE5KG
DL3DP
F8TM
G3DQC
G3LP
GW3FSP
ON4TA
PY2AJ
SM5DZ
VK3JE
ZL3BJ
ZL3IA

• 150
W1APU
W1CTW
W1JOJ
W1ZDZ
W2GBX
W2GVP
K2JFV
W2PJM
W3AZG
W3DYU
W3LXN
W3LVJ
W3MVQ
W3MZE
W3RBW
W3SKQ
W4FID
W4FYI
W4PVD
W4WDI
W4YMG
W4YWX
W5CEC
W5TTB
W5UUK
W6CGQ
W6EAK
W6DE
W6MJP
W6PBI
W6VX
KH6MI
W7KWO
W7ZAS
K8IKB
W8KZT
W8PXP
W9CIA
W9GHK
W9OAN
W9ROK
WØDST
VE1KJ
CN8DJ
CR7BC
DL3ZI
EA4BH
G2VD
G3AKU
G3ESY
G3FKH
G3GIQ
G6VC
G8KU
G8PL
GW3BNQ
HB9IM
HK3CK
I1BDV
OH1ST
ON4HB
OZ7EU
SM5CXF
SM6VY
VK4EL
XE2FL
ZC4XP
ZL3GQ
ZL4CK

• 149
W1AZW
W2UE1
W4YGZ
W8YPT
W9DWQ
W9PCF
DL1YQ
EA3CF
F8SK
G3JNX
PAØIF
ZL2QM
4S7NX

• 148
W2RUJ
W3QMG
K5ALA
W5TJ
K8BOD
W8BWC
DL1ME
G2AFQ
G8RC
FA9RW
HB9CE

• 147
W1AH
W6CHL
K6CTV
W6UYW
W8DFQ
G5JU

• 146
W4IBB
W4IUO
W3RCQ
W5MY
W6LV
W7VMP
W8CKX
W8LQA
W9TGY
VE7CE
G3BDS
G6RB
PY2BAU
SM5BRO

• 145
W2PXR
K4DKE
W6HJ
W8MFW
K9COS
CN8GU
CR5SP
F9DW
G3BI
G3GFG
JA2KG
PAØNOL
SM7VX

• 144
W1DGT
W1FTJ
K2QQQ
W3VXE
K6TXA
W7GPP
W8TQY
WØBMM
VE3EHR
EI2T
EI9Q
EA9AP
G4QD
JA6FB
3V8AB

• 143
W1WKW
W3HDZ
W3HEC
W4IKL
K5BEU
W7BE
K9ENB
W9PSR
W9RH
W9YRO
WØIUB
VE1NH
DL1FI
F3MS
I1BAF
LU3DH
NY4CM

• 142
W1NW
W2BTA
W2KXK
K2UPD
W4HQN
W4JUJ
K4QIJ
W4SHX
W4SXE
W5LVD
K6QXF
KH6RR
W7PJK
W8IB
W8OKB
W9AHP
W9ZRG
WØJMB
WØOBW
WØVIP
WØVFE
VE3DCI
VE4DB
DL6GL
DL7CX
EI4Q
G3KHE
G4JZ
G8GB
KZ5IP
OA4FM
VP5FR
VR2BZ
ZE3JO
ZS5CU

• 141
W1ALK
W2KMZ
K2LGN
W4IKM
W5GAI
W5KTD
W6YC
W7AYJ
W7SFA
W8BWS
W8ESR
K9ALP
W9GGO
W9CU
W9YZB
DJ1VS
F8GB
G5LH
GM5RH
HB9MX
I1IZ
KP4ADX
MP4BBE
OE3FS
OH2OJ
PAØFAB
SM5XP
SM7AKG
TA3GVU
XZ2TH

• 140
W1EKO
W1FVF
W1HGT
W1IKB
W1JMT
W1QXQ
W2AQN
K2CF
K2DGT
W2FLD
W2NIY
W2OCI
W2OMS
K2PFC
W2QDY
W2QQ
W2RQH
W2STJ
W2ZA
W3CDG
W3EQK
W3ILA
W4IZR
K4JOU
W4KAC
W4YHF
K5BDO
W5CK
W5IGJ
W5VNL
W6DQH
K6GCF
W6JH
W6RZS
K6SHJ
KH6DKA
W7HJC
W7YOA
W8BQV
W8CXN
W8FJL
W8HEV
K9BCK
K9CAZ
K9CUY
W9ESQ
W9FYM
W9LJU
W9LSV
W9PNE
WØBTD
WØGKS
WØOJW
WØOUH
WØSLB
WØUYC
VE1EX
VE2BK
VE2DR
VE5QZ
CE3ZO
E8VK
F9AH
G3JLB
G5YV
G8DNH
I1UB
I1ZQ
JA2JW
KZ5KQ
OH2VZ
OK1AEH
PAØLR
PAØVO
SM5AQB
SM5LN
SP3PL
ZL1QW
ZS2CR
ZS2U
ZS3K

• 139
W2EGG
W3FUF
W4PHJ
K6CU
W8IQS
DL1SO
F8PM
G3AWP
G5FA
G6QX
OZ7CC
PY7AN

• 138
W4LHT
W6FSJ
K9BHD
WØDRG
CX1CX
G3GSZ
G5CG
LA5HE
LA7XE
OZ5KQ
ZL3AB
ZL3LR

• 137
W2GZZ
W4FZO
W6PHN
W8SDD
W8YGR
EA3KI
HB9DB
PAØCE
PY3QX
ZS8S

• 136
W6WLY
KH6PY
W7WDM
W8CJ
W9ZPT
W1CBZ
W2BHU
W4JZQ
VE2AYY
VE7AIH
CR9AH
F3ZU
G3AH
G3RB

• 135
W1AF
W1OHA
W3LXE
W3YPI
W4DCW
W4KKG
W4OMW
W6KXG
W6SIJ
W6ZY
W7BAJ
W9ONB
WØCKC
WØMAF
EA5AF
G5DJ
G5OO
G6XA
OH3RS
PAØDA
PAØOI

• 134
W1GET
W1GVZ
W3HUS
W3KBC
W3LNE
W4CYC
W5CPI
W5DXW
W7MCK
DJ3WA
G5VQ
I1DV
OH1TQ
OH6RC
OZ7KV
PA0GT
SM5AJU
SM5BPJ
SM6ACO
VU2JP
ZE2JN
ZS5YF
ZS6JZ
ZS6LW
5A5TE

• 133
W1CJK
W1KWD
W2AW
K2EDL
K2GNC
K2HXL
W2KIR
W2MEL
W2PUX
W4DIA
W5LCI
W7PEY
W8ERA
K9CTX
W9CYT
W9CYU
W9DO
W9GVZ
W9MPX
W9TGT
WØJFI
CX4CZ
F8WK
G5SR
GM3CMB
KV4BK
OD5LX
PY7VBG

• 132
W1AIN
W1YNP
W2DBG
W2TJF
W2YLS
W3CLP
K5JZY
W5ZZR
W6CEM
W6QPM
W6RRG
W7AEA
W7CMO
W7PZ
W8JRG
W8KAK
WØWAN
CX9AJ
DL1EV
EI4AB
F3TP
G6UI
G8TS
GM2DBX
HA4SA
HB9KC
KP4MV
LA7Z
SM5AQV
SMTBEM
VK5LC
YU3AC
ZE6JY

• 131
W1DEO
W1RYJ
W2AFO
W2GND
W2NIN
K2YOR
W3RBE
W4EJN
W4EV
K4RXQ
W5DNF
W6CBE
K6DNH
W6MHH
W6RLQ
W7EY
W7HDL
W7QNI
W8AAI
W8MQR
W8PCQ
W8VOW
K9CAN
W9MBF
W9UNG
W9WNB
VE1PA
CR6AU
ET3S
F3CT
HB9QO
SM5RC
SM5VW
UB5DW
VP7NG

• 130
W1BRX
W1CSC
W1DHO
W1MLG
W1NF
W1UCA
W1UWB
W2ABS
W2ATE
W2BBK
W2CZO
W2LTP
W2PZM
I1CHJ
PAØSPR
W3BCY
W3DDV
W3DJZ
W3HOX
W3HXA
W3QLW
W3VRJ
K4AL
W4AVY
K4BCN
K4BZL
W4HTV
K4ICK
W4IYT
W4JCH
W4JJL
W4KL
K4OMR
PAØJQ
W4OSU
W4TK
K4TWK
W5CDP
W5CPW
W5II
W5OEN
K6GXG
K6IEC
W6LER
W6NUQ
W6OBD
K6OWQ
W6OXS
W6WJX
KH6ER
W7ABO
W7RFE
W7TMF
W7TPE
W8VVD
W9CMQ
W9DGA
W9IWX
K9IYW
K9KDI
W9MUJ
VE3CIO
VE3SR
VE3TB
DL4RI
DL8CM
EA9AI
F3RA
F9QU
G2BQC
G3IFB
G3GNM
G3KZI
G8FW
HB9OA
HB9RS
H18BE
I1LT
I1RMO
KP4RK
LA1K
OH2PK
OH4NF
PAØXE
SM3AZI
SM5AJR
SM5KG
SM5OW
SM5WZ
UC2CB
VK3YD
VP7NS
VQ2DH
ZS6CZ

• 129
W1ODU
W1OJM
W4BGO
K4GIB
W7OEV
W8UUS
W8ZMC
W9CMC

• 124
W9WBL
W9YYG
WØAUB
CO8DL
CR7BN
DL1KV
DL3XS
DL4EA
FS7RT
I1CHJ
PAØSPR
OK1SV
ON4JU
OZ5Z
VQ4SGC
ZL1MR
ZS6AJQ

• 128
W2VRE
W3SW
W4DRK
W7BTH
W8LOF
W9PZT
WØTGQ
G6BB
G8VB
PAØJQ
VK4RF
VP2LU

• 127
W1RZD
W1TSL
W3JOR
W3MFJ
W3TLN
W4WOG
W6MI
W6YX
W8QQH
W9FKH
VE2IL
EA6AF
G5PP
I1BNU
OE8KI
OZ4FF
ZL2AHA

• 126
W1BDS
W3WJD
W4AMC
W5GZ
W6OHX
W6RDR
WØDJE/9
WØPDN
DL1ES
DJ1KR
DL3TG
EA3CK
FF8AG
HB9HZ
VP6CDI
ZC1CL
ZE3JP
ZL1NG

• 125
W1AWE
W1MTG
W2BLS
W4TVQ
W6TMX
W9TPA
KØESH
VE5GF
VE8PB
CN2AO
DJ2KU
DL3AR
DL9PF
F6TX
G2FRL
HA5KBA
I1BEY
JA3BB
LA1MB
OK1WX
PY1HQ
VK3PG
4X4KK

• 124
W2IVS
W2WMG
W3KQU
W3RBF
W4CQI
W4FNS
W6CEO
W6IDY
W8RSW
WØCDV
CE7AA

(*Continued on page 124*)

THE ANSWER TO DX . . .
GONSET SSB EQUIPMENT

Any owner of the Gonset GSB-100 SSB transmitter/exciter and the powerful 1000 watt P.E.P. linear will have the pleasure of answering plenty of DX cards . . . and calls! This is SSB equipment of advanced design—stable, dependable—entirely non-critical, puts every desirable operating convenience at your fingertips.

Consider the GSB-100 transmitter/exciter:

● An exclusive filter-phasing system for improved SSB quality ● Unwanted sideband suppression of 45 db ● Quartz crystal carrier elimination filter avoids need for critical carrier balancing ● SSB with selectable sidebands, AM, PM, CW. ● Excellent CW keying characteristics ● Flexible pi network output and quick band change on 80-40-20-15-10 meters ● Built-in heavy-duty AC power supply ● VOX, voice operated control circuit complete with anti-trip circuit. Biasing voltage available for linear amplifier cutoff when receiving ● Frequency control by fixed quartz crystals and exceptionally stable VFO ● Transmits both sidebands when on AM, avoids distortion present at high modulation percentage when carrier-and-one-sideband signals are received on conventional AM receivers

and—the GSB-101 linear amplifier: ● 1000 watts P.E.P. input! ● Grounded grid circuit allows driving power to appear in final output—efficiency up to 65%! ● Linear is driven easily by GSB-100 or similar transmitter in the 100 watt class ● full bandswitching with flexible pi network—coverage 80-40-20-15-10 meters.

By themselves—or together as the brightest SSB combination on the market—these fine Gonset units represent BIG, BIG value! See them at your Gonset dealer.

GSB-100 transmitter/exciter....#3233.....499.50

GSB-101 linear amplifier.....#3262.....459.50

GONSET **GONSET** *Division of Young Spring & Wire Corporation*

801 SOUTH MAIN ST., BURBANK, CALIFORNIA

G3GQS
G5VU
OA7I
OK1SK
OK2AG
ZS6BJ

•123
W1GKJ
W1KKP
W1YRO
K2PKT
W3HTF
W3MYL
W4ITR
W4WHN
K5IIX
W5JBD
W6UZX
K8DYX
W8QZA
W8ZNO
W9FBI
W9GWK
VE3KP
W1LRK/VO1
DL3JV
DL6OS
DL7BC
DL8CH
DL9GH
EA4GA
G3DQO
JA3FT
OH1TI
OH3SE
PA0MZ
SM6AKC
VS1JF
ZL4JA
ZS6GI
4X4DF

•122
W1DIT
W1JLN
W1QV
W2CC
WA2CCC
W2FBA
K2IXP
W3ZBF
W5GSE
K6GJS
W6IFW
W7JYZ
W7CWE
KL7BHE
K8EZU
K8IQQ
K9BLY
W9DSO
W9POB
CT1SQ
DJ1UR
DL4TL
DL6FT
F3CB
G5IV
HZ1HZ
JA1GC
LU9CK
OZ8U
SP5HS

•121
W1HPI
W1WTF
W1YQC
W1YXD
W2AFU
K2DBN
W2QCF
W3DGM
W3MQY
W3WUH
W3YDF
W3YZI
W3ZHQ
W4BEY
W4FFV
W4GF
W4KET
W4PBH
W4PDP
W4SNR
K4SXR
W5PYU
K6CEF
K6EIE
W6KYV
W6WQT
W6ZBY
KH6BTX
W7KWC
W7LEV
K8CVQ
W8NOH
W8ZPX
W9BRD
W9GIH
W9TMU
WØGTU
WØQPL
CN8EJ
DL1DA
F9DN
G2HIO
G3BXN
HK3PC
I1DCO
KG6AI
KP4ADS
OE6RP
OH1SS
OH5PE
OK1GL
ON4KR
OQ5HP
PA0CP
PA0XM
PJ2AV
PY2AJK
SM5BO
SM5FA
YU3EU
ZD6RM
ZS1FR
4X4BR

•120
W1BDI
W1DBM
K1DMG
W1BTE
W3EVT/1
W1MRP
W1PEG
W1PPN
W1PWK
W1RLV
W1RST
W2ABL
W2AWH
W2BTG
W2BYN
K2EDH
K2EQD
W2IP
W2MOF
W2OXR
K2UKQ
K2USA
W2WPJ
W3AOO
W3GGT
W3KQD
W3MNO
K4CIA
W4DPE
W4EJH
K4EME
W4GQE
K4IGS
W4NPT
K4SXO
W4TFX
W4WGB
K5BGB
K5EJC
W5URU
W5WI
W6BLZ
K6BX
K6CQF
W6GEB
W6JFV
W6PYE
W6YZU
KH6EQ
W7VIU
KL7IT
W8DUA
W8DWP
W8SWG
W9AZI
W9IGK
W9VFZ
W9YFD
WØBBS
WØDIB
WØQAZ
W6WLY/Ø
VE1OM
VE2BR
VE3AGC
VE3IG
CE4AD
CN8AF
CO3YP
DL3LB
DL3TP
DL4EAC
DL6CL
EA8BC
F3GL
G2HNO
G3BQ
G3CCN
G3IOR
G3JHZ
G3TK
G5PQ
G6XX
HB9FE
I1NT
JA5AA
KP4TF
LA4KD
LA7X
LU3EB
OE8SH
OH1PZ
OH9RD
OK1AW
OK1RW
ON4FP
PA0CB
PA0NLC
SM5ARR
SM5DX
SM5VN
SM6DA
SM7ANB
SP8AG
SV9WT
VK3NC
YU3BC
ZD2DCP
ZL1MB
ZS1NQ
ZS4AK
4X4GY

•119
W2AWF
K2MDL
W2QZI
W3AZQ
W3NQC
W3UDN
W4GUV
W4OG
W4UHC
K6CWS
W6JKJ
K6LAE
K9BGL
W9RUB
WØRZU
WØYZO
VE7KC
DJ2BO
DL7AB
F9EP
G4QK
G8DR
HB9P
HB9RM
G3LET
LU6AX
OH1PN
SM7BHF
SM7BY
VQ2RG
ZL1OA
ZS2IW
ZS4MG

•118
W1AJZ
W6AJJ
W6YET
W9VAG
WØNWX
DL3GZ
DL9OH
FK8AO
G3COL
KZ5BB
ZS1KK

•117
W2BOT
W2PQJ
W3JNQ
W3MOT
W4GOG
K6COP
W6LS
W6SR
W7ITN
W7UDG
W8BIE
W9NRB
VE7ZZ
DL3OC
DL3WV
F3DM
F9DZ
G2HHV
G3JAF
G5UF
OZ7SM
SM5WC
SM7AVA
VQ5EK
ZS2EC
ZS6WS
4X4FQ

•116
W1LQO
W2AGU
W2AUH
W3HVM
W3TIF
W3TVB
W4LCY
W4YZC
W5UCQ
W6DIX
W7BD
W7FLD
W7LVI
W7PB
W8ZWX
W9JID
W9QWW
WØETV
DL7EM
F8OQ
FA9OW
G2BFK
GI3DQE
OZ2PA
OZ9DX
SM5BAF
VQ3CF
ZE1JY

•115
W1QQV
W1QXX
W2BWC
W2LNB
W2LWI
W2NCI
W2NFR
W3POE
W6NKR
W7MWR
W7TML
W8JFC
W9CQG
K9GTK
W9KMN
W9LNH
VE2CK
VE3EEM
VE3LET
VE3XY
CT1NT
DL1CS
DL1HH
DL1IA
DL1MF
DJ2LM
EA5FC
EI9F
F9KQ
G2CDI
G2CNW
G3IMV
G3JHI
G3KBH
G3LPA
GI6TK
GM3CFS
W9ELA
W9LVR
WØLWG
WØMVO
VE3BZ
DL1FE
DL1FZ
DJ3EN
DL7BK
I1LD
I1WP
LA4DD
OH1PW
OH3UN
PY6BN
SP5KAB
VK4RC
VU2RA
ZE5JE
ZS6HO

•113
K2OLS
W2TUD
W3BYX
W3JVA
W4RKB
K5AUX
K5GOT
W6HAL
W6WPI
W7LIO
W9QLD
WØEMG
VE1DB
VE3ACS
CN8EG
CX2AM
G8OJ
JA5AF
ON4SS
OX3MG
OZ7BZ
SM3AGD
SM5ANY
TF3EA
UC2AR
VQ3HJP
VU2AJ
ZB1BF
ZE3JJ
ZS5BS
ZS5LA
ZS6J

•112
W1AJO
W1CPJ
W1MX
W2CJM
K2IQP
W3BEN
W3PBD
W6AUT
W6CEI
K6LXS
W6JTB
W6KIG
W6OKD
W6SQX
W6TCQ
W6WII
W6WLI
K7GIE
W7LBN
W7LVR
W7TVF
W7YAQ
W8KBT
W9AZP
W9YZA
VE1CU
VE3XY
CT1NT
DL1CS
DL1HH
DL1IA
DL1MF
DJ2LM
EA5FC
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F9KQ
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G3KBH
G3LPA
GI6TK
GM3CFS
HB9IL
I1BVP
OH1RT
OH3TT
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OZ1JW
PY2WB
SL5AX
TG9AZ
UR2AK
VP5BL
VK5FM
ZS6WJ
4X4CR

•111
W1AWX
K1CCA
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W1GZP
W1LVQ
K2EUH
W2KOY
W2KTU
W2MA
W2UAT
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W3HUV
W3ZN
W4BBR
K4GOZ
W4LIM
W4REZ
W4YHD
K4ZCP
W5CRK
W6GBG
K6HFA
W6KNM
W6TWI
W7BDW
K7FAE
W7PSO
W7WFJ
W8GFH
K8GHG
W8HRC
W8PNT
W8TTO
W8TTS
W9DFV
K9DJN
W9DUR
W9HUV
WØCAW
WØSBE
WØZVJ
VE2APH
CR7IZ
CT1CF
CT1GE
DJ1WT
DJ1XW
DL3AO
DL3BL
DL4UZ
DL7AQ
F3SM
G2FFO
G2IM
G3FPK
G4AR
G4AU
GM3EFS
HB9MC
HP1LA
I1PG
JA3AA
JA3BP
LZ1KSZ
OH2KQ
OH2VF
OH3RU
OH4NT
PAØKE
PAØRL
PY2AK
SM2OS
SM5NG
SM7AOO
VK5KO
VQ2AB
VS1HU
VS6CO
YV5GY
ZP9AY
ZS4IO
ZS5AM
ZS6ASW

•110
W1EQY
W1KYK
W1YYM
W1YYR
K2CQP
W2GVU
W2HAZ
K2RNN
W2WDP
K2ZKU
K3AXH
W3GJY
W3TBP
W3VZD
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W4EXO
W4KWC
K4RJN
W4WSF
W5FDL
K5JKH
W5JPC
K5KES
W5KWY
W5NXF
W5RDL
W5VSS
W6AAO
W6AOD
W6AX
K6BFC
W6DBT
W6MUB
W6PHF
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W6SEO
W6UYX
W6ZUI
W7DZO
W7IAM
W7OQO
W7RYS
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W9SWR
W9TJG
W9UKG
W9YKJ
WØCXC
WØDVZ
KØITF
WØLLU
WØNGM
WØRIA
WØSRX
VE5TK
CO2WD
CR7AD
DL1AO
DJ1DF
DL1VU
DL6HJ
DL6XW
F9BB
F9MS
G2DPY
G2HKU
G3APN
G3CCO
G3CDG
G3CMB/A
G3CUG
G3DNZ
G3GNR
G3HXZ
G3KAA
G5CW
G5MN
G8IL
G8US
HA5BI
HB9DK
HB9FI
I1ADW
KP4VUH
OH2NQ
OH2UD
ON4JD
PAØAGR
PAØUW
PJ2AN
SV1AA
UC2AA
YV5FL
ZS1M
ZS6IF
ZS6SG
ZL1AMO
4X4FV

•109
W1RCQ
W1ZFV
W2PVV
K3BQB
W3GKY
K4KOR
W4VB
W7EMY
W7GS
W7MCT
K8BPX
WØRSZ
VE1KM
VE7AHG
WØMCF/C1
CO6AJ
DL6IC
EA3FL
EI5C
ET2US
F3DA
F8SW
F9ER
FA3JY
FA8CF
FA9VE
G2DC
G2DHR
G3AMM
G3GGS
G3JFB
G8GP
G8IH
HB9BN
HB9EI
HB9KO
HZ1AB
KA2BE
KG6ABI
LU8EN
OE5HE
PAØPN
PY1FT
PY1RW
UA6UI
VQ2VZ
VS1DZ
YV5BS
ZL2CU
ZS1EB
4S7GE

•108
W1EZ
W2AAU
W3GCW
W5GAH
W6LGD
K6LSG
W6PUZ
K6RTK
W7MQY
W8ESG
W8IZQ
W8MKY
W8PYX
W8WBV
W8WHQ
W9BGS
W9TLT
WØMJM
WØRKL
WØSVC
WØZKE
VE6GD
CR6CZ
DL1LD
DL1MN
DJ2YL
DL3ZA
F7SHP
F9FY
F9IF
FF8AJ
G2AOL
G2BOZ
G3AGN
G3FJU
G3ISV
G4LX
G5GK
G6KS
HC1LW
KZ5KS
LU7AS
LZ1KPZ
OE5PP
OH1NK
OK1AWJ
OK2DD
PAØOK
PY6DU
SM5KB
SM7BVO
SP3DG
SU1XZ
VQ4EI
YU1AA
ZD6BX
ZD9AA
ZL1LZ
ZS2JA
4S7FJ

•107
W1DDO
W1KLY
W1PDF
W2HIQ
W2JBL
W3BTQ
W3EFZ
W3ISD
W3KVQ
W4BTU
K4ELK
W4MS
W5BJA
W5LBC
WA6AMZ
W6CUL
W6ERB
WA6EYP
W6NDP
W6PWR
KH6YL
W7CED
W7HNY
W8BNA
W8DDK
W9CKP
W9GNU
W9LJX
W9YT
WØYTL
VE1ZZ
CT1CB
DL1FK
DJ1VP
DJ2KS
DL2YU
DL3UE
F9RO
G2BVN
G2KU
G3ASG
G3CSP
G3KXT
G8IP
G8QZ
HB9IH
HB9IK
HB9MW
HB9PM
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JA3AA
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OH3RY
OH5NJ
ON4PZ
PJ2AA
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SM6RS
SM7YO
SP6FZ
ST2NG
VK7CH
YV5HL
YI2AM
ZD6RD
ZE5JJ
ZL3OA
4X4CW

•106
W1EXY
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W2OWX
K2UTC
W3HTO
W4CS
W4FPK
W4KE
K5JCC
W5LAK
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DL1UE
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•105
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VE3YV
VE6AO
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CN8FL
CT1ER
DL1SD
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DJ2SK
DL3BJ
DL3FL
DL7FU
DL9PR
F3QJ
FA3OA
FE8AE
G3FIU
G3GYH
G3HLY
G3ID
G3JEQ
G3JW
G5US
G6CB
G6IC
G8QW
GI3AXI
GM6MS
GW3JI
HB9AT
HB9BZ
HB9PV
HP1LB
HR1AT
HZ1KE

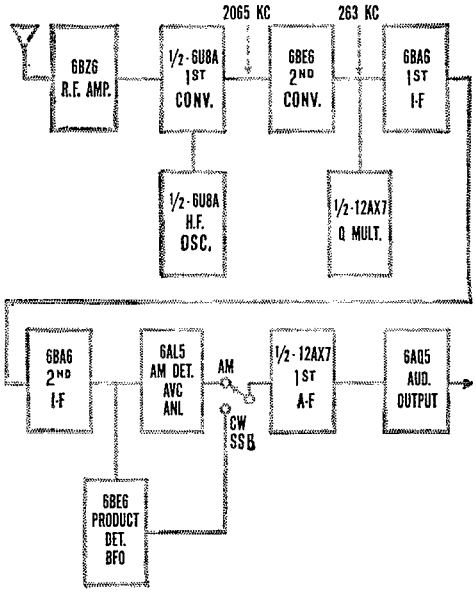
(Continued on page 128)

new

amateur communications receiver

GONSET G-63 RECEIVER

G-63 BLOCK DIAGRAM



Gonset presents . . .

G-63, designed to give you the greatest number of features obtainable in any amateur communications receiver within its two hundred dollar price bracket.

G-63 gives you six amateur bands, 80 through 6 meters . . . each separately viewable on calibrated drum dial scale . . . every band . . . *including 6 meters* . . has excellent sensitivity and signal-to-noise ratio!

The receiver features double conversion for high image rejection . . . multiple, band-pass tuned circuits in the second I-F for optimum shaping of I-F selectivity curve . . . a new peaking-type "Q" multiplier provides variable band width down to near 100 cycles. *Two* second detectors—*diode* for AM and a *product detector* for SSB and CW reception. Stability and drift-factor of both high frequency and beat frequency oscillators is excellent. Refer to the accompanying block diagram for further circuit details and tube lineup.

Available at your Gonset distributor during March, 1960.

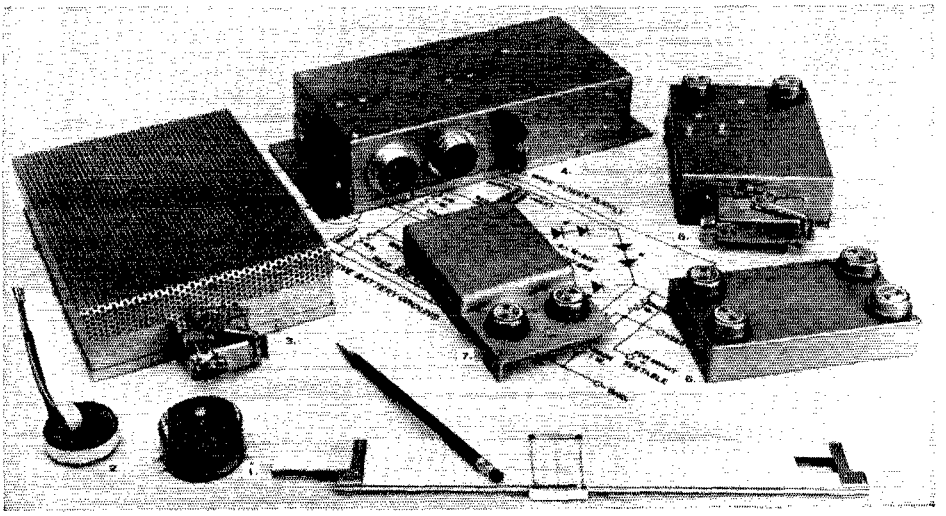
GONSET **GONSET** *Division of Young Spring & Wire Corporation*
801 SOUTH MAIN ST., BURBANK, CALIFORNIA

EXPORT SALES: WESTREX CORP., 111 EIGHTH AVE., NEW YORK 11, N.Y.

CHOOSE SUNAIR for VERSATILITY!

Custom Power Supplies and Transformers

SUNAIR has expanded its staff and plant facilities to give you the advantages of special power supplies and transformers. SUNAIR will design to your requirements, manufacture to your specifications, and conform with Military specifications. Pictured below are a few of the many special items SUNAIR has designed and manufactured.



KEY:

1. Encapsulated toroid supplied manufacturer of FM Mobile Units.
2. Unencapsulated toroid used for missile telemetering device.
3. Multiple voltage transistor power supply unit designed and manufactured for Military Agency. 12 VDC input, 400 VDC @ 200 ma, 250 VDC @ 200 ma, 200 VDC @ 200 ma, 150 VDC @ 200 ma, -60 VDC @ 100 ma, 5 VDC @ 6 amps, 3 VDC @ 3 amps, all simultaneous.
4. Dynamotor replacement used on famous SUNAIR HF transceiver, 500 VDC @ 250 ma, 250 VDC @ 100 ma simultaneous outputs.
5. Power Supply. Power unit used on microwave surveying device. 260 VDC @ 60 ma, -235 VDC @ 15 ma, 6.1 VDC @ 3 amps, 6.3 VAC @ 1 amp.
6. DC-DC Converter. 100 watt. Output voltage to 500 v. maximum. Available in 6 v., 12 v. or 24 v. input.
7. DC-AC Converter. 400 cps, 115 v., 1.5 amp AC output. Available in 12 v. or 24 v. input.

Choose SunAir To Meet Your Requirements . . .

SUNAIR

- TO YOUR SPECIFICATIONS • TO MIL SPECS
- TO OPERATE -50°c to +85°c

SUNAIR ELECTRONICS, INC.
BROWARD COUNTY INTERNATIONAL AIRPORT
FORT LAUDERDALE, FLORIDA, U.S.A.

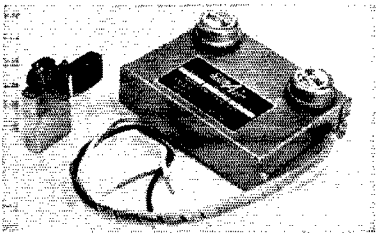
CHOOSE SUNAIR for QUALITY!

Utility Transistor Power Supplies*

NOTE: ALL ITEMS ON THIS PAGE ARE NORMALLY AVAILABLE FROM STOCK

*Complete Units

D SERIES (Standard)



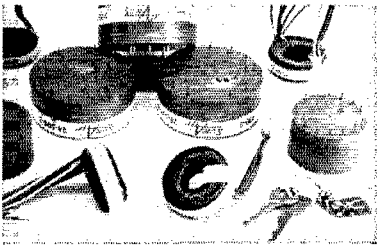
Continuous operation at 30 watts. Selective taps at 200, 250 and 300 volts; intermediate voltage at ½ selective taps. Both voltages can be drawn simultaneously if total power does not exceed continuous ratings. Positive or negative ground operation. Input and output filtering included except for intermediate tap. Size: 4⅜"x 3¼"x 1⅛". Wt.: 10 oz. 6- or 12-V Input: **$39.95** 24-V Input: **$61.95**

DA SERIES

Continuous operation at 45 watts. 450 volts and 225 volts simultaneous if total power does not exceed continuous ratings. Intermittent duty to 90 watts, 450 volts at 150 MA, 225 volts at 100 MA (5 min. on, 20 min. off). Positive or negative ground operation. Input (primary voltage) filtering; partial high voltage filtering provided. Size: 4⅜"x 3¼"x 1⅛". Wt.: 14 oz. 6- or 12-V Input: **$57.50** 24-V Input: **$79.50**

Toroid Transformers for Transistor Power Supply Application

H SERIES



H-6-450-1 Input: 6-VDC. Output: 450-VAC center tapped... 450 and 225 VDC from bridge rectifier... 45 watts.

H-14-450-12 Input: 12/14-VDC. Output: 450-VAC center tapped... 450 and 225-VDC from bridge rectifier... 55 watts.

H-28-450-15 Input: 24/28-VDC. Output: 450-VAC center tapped... 450 and 225-VDC from bridge rectifier... 65 watts.

H-6-100-125-150-D Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 100 MA.

H-12-100-125-150-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 125 MA.

H-24-100-125-150-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 150 MA. Without Encapsulation (2 ozs.) 1 - 10 units: **$12.00** ea. With Encapsulation (3 ozs.) 1 - 10 units: **$14.50** ea.

HD SERIES — 2000 CPS

HD-14-225-300-2-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

HD-28-225-300-2-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

Without Encapsulation (3½ ozs.). 1 - 10 units: **$14.50** ea.

With Encapsulation (4½ ozs.). 1 - 10 units: **$17.00** ea.

HDS SERIES — 2000 CPS

HDS-14-225-300-3-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

HDS-28-225-300-3-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

Without Encapsulation (3½ ozs.). 1 - 10 units: **$17.00** ea.

With Encapsulation (4½ ozs.). 1 - 10 units: **$19.50** ea.

400 CYCLE SERIES

14-115-1.5-400 Input: 12/14-VDC. Output: 115-V at 1.5 amp.

24-115-1.5-400 Input: 24/28-VDC. Output: 115-V at 1.5 amp.

Dim: 3" dia. x 1" thick. Without Encapsulation (12 ozs.). With Encapsulation (16 ozs.). Per Unit: **$57.00.**

OEM *Prices on Request*

All fully performance tested, 100% guaranteed. Manufactured by makers of world-famous SUNAIR H.F. Aviation Transceivers.

SUNAIR ELECTRONICS, INC.

BROWARD COUNTY INTERNATIONAL AIRPORT

FORT LAUDERDALE, FLORIDA, U.S.A.

JA3UI
JA7AD
MI3ZJ
OE1WH
OE2SP
OE3VP
OE6FD
OH1OY
OH2IK
OH3NA
OH3PB
OH3UD
OH6NZ
OK1FF
OK1PD
OK2XF
OK2OS
OK3EA
ON4IV
ON4LB
ON4TQ
PA0ALO
PA0JV
PY1MK
PZ1AH
SM3BNL
SM4AWW
SM5EC
UA6UF
UO5AA
VK2ADE
VK2PV
VK6DX
VP5DC
YN1PM
YU2CE
YU3OV
YV5AO
ZE6JL
ZK2AA
ZL1RD
ZS4PB
ZS6ATA
ZS6QF
ZS6SB
ZS6XQ
4X4FA

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W1AFB
W1BPW
W1DF
W1ECH
W1IJO
W1NYA
W1TBY
W1ZTQ
W2BUV
W2BXC
K2EGI
W2OCL
W2RWN
W2TSL
W2ZXL
K3CIO
W3IBT
W3ITW
W3KQF
W3OVU
W3RXM
W3VDV
W3ZKB
W3ZKH
W4EPL
W4FNQ
W4IPR
W4KR
W4MOF
W5JSB
W5JUF
W5OFM
W5OJL
W5TOU
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W6EYB
W6JVA
W6KRI
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W8GMK
W8WWU

W9AKH
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KØBIT
WØDAO
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WØGYL
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WØSQO
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DL1PV
DL1SF
DL3ND
DL4IH
DL9VR
FR7ZA
G2DUP
G2CLL
G2FQP
G2RF
G3APX
G3AZ
G3CEP
G3CQF
G3FJ
G3GCD
G3HHV
G3HQ
G3IEW
G3ISX
G6FB
G8PW
GM3ASM
GW3DOF
KG6GU
KP4AOO
KZ5IF
OA4C
OE3RE
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OH3TY
OH7OU
OH9OB
OK1NS
OK1OP
OK1PN
OK1XQ
PAØZV
PY2DV
PY4ZI
SM2ALU
SM2CAA
SM5AQW
SM5AWJ
SM5BGS
SM5CHG
SP2AP
SP9DT
SP9EU
SP5GX
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TA3AA
TF3SF
TF3SG
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UA3BN
UA6AJ
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VS1BB
VU2MD
VU4AU
ZL3HC
Z35U

• 103

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W1HMP/3
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W4KVX
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K4OYR
W4UG
WV VBR
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OH2MQ
OH2WW
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OH9PF
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OK1NC
OK1VA
OK2SO
OK3JA
ON4FU
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PA0LY
PI1RRS
SM5AFI
SM5AOI
SM5HH
SM6AMR
SM6AOU
SM6AWE
SM7BIP
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W9VL
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KØBIB

• 102

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• 102

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• 101

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W1ORG
W1VFK

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GM3RL
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GM8CH
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GW3AHN
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HA5DH
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JA2AT
JA2BL
JA4BB
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JA9AA
KG6GC
KG6GD
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KZ5AU
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LA4ND
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• 101

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W4HBK
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F3YP
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KH6LF
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G3LVC
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G4LP
G5RM
G6XY
G8CD
G8DI
G8NV
GC3AAE
GM2TW
GM3GJB
GW3CX
HB9BX
HB9EW
HP1EH
HP1GD
11AFQ
JA1ACA
JA8AQ
KA2NY
KM6BL
LA6O

W8HRV
W8PM
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W9VTI
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WØCWW
KØDRR
WØEIB
WØFBT
WØIEL
WØLVA
KØPIE
WØSYA
WØVDC
WØZQV
VE1BV
VE1OK
VE2AID
VE5DR
VE6MN
VE6MZ
VE7YE
VE8TO
CE3AX
CN2AP
CO2OM
CT1AS
CT3AA
DL1CR
DL1LZ
DJ1MI
DL1PA
DJ1QT
DJ2CP
DJ3FW
DL6CV
DL6GB
DL6SS
DL6YQ
DL9LB
EA1FD
F3BR
W1ALW
W1BGH
W1BUX
W1COM
W1DBA
W1DWH
W1EYP
W1GOF
W1IOZ
W1ISX
W1LOS
W1MAN
W1NEP
W1PEA
W1PPZ
W1TEC
W1TSZ
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K2MPB
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W2PGU
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W2SGK
K2TJK
K2TQC

LU5AH
OE1FR
OE1FT
OE3ED
OE5GR
OE5PV
OE8FK
OH1PI
OH5OT
OH8NC
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OK1KLV
OK1MP
OK3HF
OK3LA
ON4RM
OZ1W
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PA0MOT
PA0ZE
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PK6HA
PY1ARZ
PY1KJ
SM5BFE
TF3AR
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UA4IF
VK1EG
VK5MF
VK0AB
VP5RR
VP9AK
VP9OO
VQ4EO
VQ8CB
VS7NG
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YU3GD
ZE3JL
ZE4JC
ZL1APM
ZL1PO
ZL2GH
ZS4FP
ZS5AW
ZS6AEA
ZS6CT
ZS6OS
ZS7C
4S7MR

• 100

K1AHS
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W1BUX
W1COM
W1DBA
W1DWH
W1EYP
W1GOF
W1IOZ
W1ISX
W1LOS
W1MAN
W1NEP
W1PEA
W1PPZ
W1TEC
W1TSZ
W1UBC
W1WPO
W1YIS
W1YQF
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W2BLP
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KH6AUJ
KH6SO
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W7IEE
W7JHO
W7KEV
W7KOF
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W7ONG
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W7VOL
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W8NDC
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W8QVU
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W9TKD
W9UAZ
W9UTV
W9VOD
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WØFFV
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WØFXI
KØGPF
KØJAU
WØLBS

(*Continued on page 130*)

SX-110
Receiver

The new ideas in communications are born at Hallicrafters

S-108

S-38E

S-107

NEW: **SX-110 Receiver.** Advanced features and design make the SX-110 an exceptional value for the radio amateur and short wave enthusiast alike. Standard broadcast plus three short wave bands (540 kc-34 mc). Slide rule bandspread dial, calibrated for ham and citizens' bands; built-in "S" Meter, antenna trimmer, crystal filter. Seven tubes plus rectifier.

NEW: **R-48 Speaker.** (not shown) Perfect match for SX-110. Latest design; uses new 5½" x 7½" speaker. Exceptional damping qualities, distortion-free response. Switch for selection of voice or music response.

NEW: **S-107 Receiver.** Outstanding new styling and impressive features. Standard broadcast plus four short wave bands—unusually wide coverage (540 kc-34 mc and 48-54.5 mc). Separate bandspread and logging scale; slide rule dial; phono jack and headset tips. Seven tubes plus rectifier.

NEW: **S-108 Receiver.** Exceptional value and performance. Same as SX-110 in frequency coverages but without "S" Meter, antenna trimmer and crystal filter. Built-in speaker. Calibrated slide rule dial; temp. compensated oscillator. Seven tubes plus rectifier. Ideal general coverage receiver.

NEW: **S-38E Receiver.** Latest version of the world's most popular short wave receiver. Modern new styling, improved circuitry for utmost in performance and dependability. Standard broadcast plus three short wave bands (540 kc-32 mc). Electrical bandspread; slide-rule overseas dial; headset output; built-in speaker.

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Chicago 24, Illinois

Export sales: International Div., Raytheon Mfg. Co., Waltham, Mass.

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VE2KZ
VE3ARS
VE3BMB
VE3OR
VE3QB
VE7AAD
VE7CN
VE7KX
VF8MX
VO2NA
CE6AB
CN8BP
CO2BM
CR7CI
CR9AF
CT1FM
CT1PJ
CT3AV
DL1AG
DL1DC
DL1IP
DL1VR
DL1YY
DM2ACM
DM2AHM
DJ2BC
DJ2HH
DJ2WN
DL3CM
DL3KN
DL3NX
DL3OO
DL3RM
DL4MW
DL6TW
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DL7DE
DL9KP
EA2BL
EA9DF
EA0AB
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G2AO
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G2BJY
G2FXB
G2GM
G2NS
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G3AAG
G3ACC
G3BNE
G3CWW
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GM3EDU
GM8AT
GW5FN
GW8UH
HA5AM
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HB9EC
HC2KJ
HC7KD
I1KZ
I1PL
KP4ABD
KR6JF
KX6ZB
KZ5GF
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OE1GZ
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OE1KF
OE1TA
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OE3AS
OE3SE
OE5LV
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OH3SO
OK1GT
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PY3XE
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SM7BPO
SM7IA
SP5AA
SP5AR
SP1JF
IT1ZGY
UA1CK
UA9OM
UB5ND
UF6FB
VK3RJ
VQ4BU
VQ4HJP
VS1FK
VS6BA
YO2BU
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ZK2AD
ZL1ACO
ZL2AFZ
ZL2FI
ZS5KF
ZS6AJO
ZS6DG
ZS6IH
ZS6OW
4X4DR

RADIOTELEPHONE

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•286
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W1FH
W8BF
W8HGW
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W9RBI

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W6YY

•280
W8KML
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W8PQQ

•274
CX2CO

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W9NDA
ZL2GX

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4X4DK

•265
CN8MM

•264
W4DQH
W7PHO

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•260
W9WHM
W0AIW

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EA2CQ

•257
W6GVM
W8BKP

•256
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•255
W8QJR

•254
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KH6OR
PY4TK

•251
W5BGP
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W9YSX

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•247
W2JT
W3GHD
W4HA

•246
LU4DMG

•245
W9RNX
G5VT
SM5ARP
TI2HP

•244
W7HIA

•243
W5KBU
CE2CC
CO2BL

•242
II8M

•241
W3DHM

•240
I1AMU

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W2HTI
CO2BK

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G3HLS
HB9J

•236
W6SYG
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W4ANE

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W3KT
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W1JCX
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W5JUF
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W6DI
W7HTB
W0GKL
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W8JIN

•225
W2PTE
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•224
W5ASG
VE3KF
VE3QA
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ON4DM

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W2WZ
PY4CB

•221
W8VDJ
SM5KP

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G4ZU
TG9AD

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PY4ZS

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W5TIZ
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W4DCR
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W5YLL
PY2AHS

•216
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VK4FJ

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W4TFB

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YV5AB

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VE2WW

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•190
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W9PQA
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CX3AA
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GM3BCL
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PY4LP

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W4HRR
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KL7AON
W8HOY
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W9ZSZ
W0PRZ
CE3AE
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EI6X
G6LX
KP4ADX
OZ7TS
PY4PQ
PY7VE
VP6SD
ZS1FD

•139
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•138
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W0MCX
VE7JB

•137
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LX1HM
PA0SNG

•136
W2PRN
CX1AK
G2WW
OE1FF

•135
W2ZKG
W3DJZ
W3JNM
W3LXL
W4YQB
W4ZMC
W6WTH
W8GLK
EA9AR
HC2OT

(Continued on page 132)

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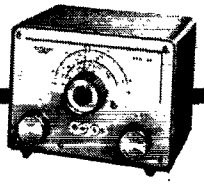

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- For spot freq operation, simply plug desired crystal into socket on panel.
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- Headphone jack for direct detection of marker points.
- Provision for remote control.
- Compact! Only 6½" x 5¼" x 5½".

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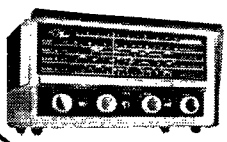

for the beginner

NC-60 SPECIAL

The all-new, all-band receiver with easy to read dial and built-in speaker. Only $59.95

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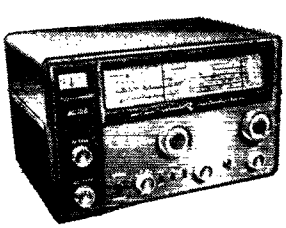

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[LONG ISLAND—144-24 HILLSIDE, JAMAICA]

I1THZ
LU8BS

• 134

W1OHJ
W4GIO
W4QT
W9HPS
WØYVV
G3DPJ
ZE1JE
ZL1PV

• 133

W1PNR
W2OFX
W3DKT
W6NIG
W6VSS
W7DAA
W8CUO
W8OUH
WØOBW
WØUYC
CE1AH
EA9BC
HB9EU
I1RM
LU9FAY

• 132

W1KJU
W2RTX
W3DYT
W6VFR
W7KT
W7PEY
W8END
W9IOD
VE6NX
G5LN
PY6RZ
SM6SA

• 131

K2PIC
W2TEX
W2ZW
W4PBH
W8GUZ
W8UMR
W9BAE
W9VVN
WØJWL
WØWYV
G3AAE
G8KP
GM2DBX
HP9FU
PAØCT

• 130

W1UWB
W1WKO
W2NHZ
W2TXB
W3BYL
W3DPS
W4BA
W4HKJ
W4IKM
W4ZKM
W6NOT
W6WNH
W7SFK
W8GAN
W8QNF
W8RNB
K9EQU
WØAMR
WØGPR
WØIGL
WØPUE
VE2GQ
CN8BA
CX2CN
DL3NE
DL3VZ
EA1GH
EA6AR
F8VU
I1AXD
I1BXK
I1ZJG
OZ7BG
PY4EM
SVØFR

• 129

W2ZVS
W4AQR
K8CFU
W9JQQ
W9YRO
DL3DP
DL7CX
PY7VBG
VK2DI
VP6CJ
YU1AG
ZS6FU

• 128

W6ALQ
W8BIM
W8JXY
K9COS
CR6AU
EI3R
I1AIJ
LU6DJY
PY7SA

• 127

W2SUC
W7WDM
W9SD
W9WKU
WØTGQ
F8SE
VQ4KRL

• 126

K1CJV
W3ROA
W8CYL
W9EU
W9QNO
KØCTL
DL4QH
I1CKV
SM5BBX
ZE2JE
ZS5CU

• 125

W1CJK
W2DSU
CX5AF
I1BWN
PY4GC
5A1TB

• 124

W2QHH
W2YOG
W6YK
W9ABA
WØEYR
WØQFQ
WØQZ
EA7EV
EI4AB
FS7RT
OA4AO
SP7HX
ZL2ANZ

• 123

W2DEW
W2MFS
W3FGN
W3SW
W8AUP
W8IOO
W9DOR
W9TJ
F9PH
KG6AGO
SM5XP
VK3ACN

• 122

W1AOY
W1HRI
W2GBC
W3UMU
W5HFQ
K4HRG
WØGFO
WØJRY
VE1NH
VE7VO
CT1HF
EA3IX
G2ALN
I1ZV
LU5DC
OQ5LL
ZL3PJ

• 121

W1BAV
W1YXD
K2FW
W3BNU
W3OGR
W3SFK
K4BCN
W4JCK
W4UWC
W4YHC
K6KJR
W7PJK
W7TMF
W9NLP
VE5GF
I1BJC
LA4HF
OH2SE
VK5LC
VK7RX
VS2DB
ZB1BG
ZP5CG
ZS5PG

• 120

W1KKT
W1RZD
W1ZSU
W2EGQ
K2GSO
W2SGX
W3DWA
W3MS
W3NIG
W4DCQ
W4IYM
K4JQR
W4MB
W5UBW
W6IKQ
W6MJB
W7OEV
W8BIQ
W8HGA
W8YBZ
W9IGK
W9UMJ
WØSFU
VE1CR
VE3BNQ
CO1AF
DL1SD
FB8BC
G5DJ
HB9DY
HP1BR
I1CHJ
I1RGF
I1WT
OD5AU
PY2BCB
ZS2AT

• 119

W1CUX
W1OHA
W4IBB
W4VZU
W5JBD
W8CQ
EA2CK
G3MCN
I1SGZ
LU3DH
LU3PF
PAØEEM
TI2IO
VK3BZ
VP5FR
ZL1VY
5A1TA
5A5TE

• 118

W1RYJ
W2VQM
W2VYH
W5RHO
W6YI
W8CJ
W9MWO
WØTJ
IT1TAI
OD5AD

• 117

W1FAB
W2NQR
W3JZY
W4KAE
W6YX
W8JWV
W9YOR
CE3AG
DL4EA
DL9OH
EA4CM
F8SC
I1ASO
ZS1KW

• 116

W1DBM
W1NBI
W3HYH
W3QIR
W7GUV
W8IJZ
F3WV
G2HIO
I1BSB
LU8FP

• 115

W1RLV
W2HQL
W2IHX
W3RIS
W3RVM
W4BVX
W4PYX
W5CE
KL7PIV
W8HRV
W8KOE
K9ALP
WØJFI
WØMAF
CN8CS
G8TS
LU3FAQ
OK2AG
OZ3TH
4X4CX

• 114

W1HTR
W3PGB
W6IDY
W8ZMC
W9GPI
WØDST
VE1PQ
VE3ES
CX9AJ
ET2LV
G3JQ
GM2UU
I1CBZ
VK5AB
ZL3IA
ZS5NZ

• 113

W1MIA
W2PFL
W3MMH
W4WM
K5GOT
W5JJA
W7GBY
W9FVU
VE5JV
G2FRL
G5PP
I1ZQ
VS4JT

• 112

W1ZW
K2HEA
K2IGO
W2IUV
W4IYC
W4KGR
W4MRA
W5INL
W6BAF
W7EKA
W9BVM
W9DIP
W9JFJ
G2UZ
G4JZ
I1PDN
LU1DJU
OK1HI
OQ5FH
OZ5KP
PY7YP
ZS6LW

• 111

W1AJV
W2PRF
W3POG
W3VSU
K4SXO
W5JME
W5YKK
W6QFE
W7MBW
W8HTP
W8ZNO
W9CZC
W9JYU
W9VTV
VE2BR
VE3AAZ
VE3TW
VE7MS
DL1FI
F8TP
I1BT
I1DV
LX1DE
PAØTV
PY1ANU
PY7YT
SM3AZI
TI2PI
YU2EH
YK1AC
ZS2IW

• 110

W1GR
W1HN
W1HOO
W1SIO
W1UQW
W1WQC
W2CGJ
W2CGP
W2GX
K2MHC
W3HUV
W3MJF
W3OJW
W4ASW
K4CLT
W4IQG
K4RXQ
W4SGD
W5NXF
W5ZUI
W6DLN
W6GUE
W6LHI
W6TNS
W7LVR
W8BFQ
W8DMJ
W8KDJ
W8LJ
W8QAD
W8RDX
W8VQD
W9ZUL
KØGUM
WØHRY
WØLBB
WØWMA
WØWXJ
VE1ADE
VE3KT
CT1DX
CT1NT
EA2DJ
EA5BD
EI4Q
F3NG
F9QP
G3JHI
G3YM
HK4CO
HR2MT
I1FLD
LU2BN
LU3EB
OA4V
OD5BA
OH5PE
OZ7SM
PY4CH

• 109

W1BFT
W1KWD
W1RIL
K4LPW
W4NDE
K5CAI
W5DJH
K6CCY
W8HSP
W9ZTD
CO2OZ
CT1PR
DJ3QX
DL4TL
DL9GU
EA4DB
F8WE
G3CIM
HB9CX
HB9ID
I1BNU
I1ZWY
OA5G
PAØOTC
PY2AK
TG9AZ
ZS6Z
4X4FF

• 108

W1JYQ
W2BOK
K2JXG
W3KTF
W3MVQ
W3MWP
K4EJO
W4LIM
W7GJ
KL7BHE
WØMVO
WØUIM
CT1OR
F9EZ
I1AHW
I1FG
I1RLH
OZ5BW
YV5GY
ZS5GU
ZS6UR

• 107

W2DCO
W2RUI
W4LZM
W4PJG
W7HLB
W9CMC
WØCXC
EA3FG
G3AKX
G4MS
G5OO
HB9JZ
IT1AFS
OH5NW
PY4APF
PY6CO
4X4BL

• 106

K2EWB
W3AER
W4BHI
W4IUO
W4LRG
W5GAH
W5LTY
W6ZWK
W7RSP
W8MKY
W8SDD
W9DPI
W9KRL
DL1FK
EA3LI
F8YE
G8VB
HK3PC
HR1EZ
I1CWX
I1CXJ
LU3MZ
SM5BAF
SP8CK
TI2OA
VK3JE
VQ5EK
VR2AZ
YN4CB
ZL2JB
4X4BO

• 105

W1ZSR
W2ONV
W2OXR
W2JJI
W3CUB
W3JTK
W3ZQ
K4SKI
W5JUE
W5RNG
W6BJU
W6UYX
K9GOQ
VE1FQ
VE3BTI
VE7YR
CX6BM
DJ2YL
DL4KD
F3KE
FA8RJ
FA9OW
G2MQ
G3ESY
I1CCO
I1KRV
OH1TX
OH3RA
SU1HF
VP6GT
ZD6RD
ZE2JK
ZS6WS

• 104

W1BPH
W1VRK
K2IQP
W2PPS
W2SNI
W3BYI
W3ERW
W4AHF
W4EYH
W4MS
W4TWW
W5FDZ
W5OXS
W6NGA
W8ACP
K8ADY
W9FHZ
K9KYF
W9LXQ
W9ZNY
WØAWK
WØUUE
VE3RE
VE3VO
CE3JE
CN8EU
CR7LU
CX2AY
EA4CK
EA7EU
EI2L
EI3S
F3OX
G2ALO
G3CEG
G3DZS
G6TA
G8QW
I1SGA
I1TC
I1TDJ
KP4GN
KV4BI
LU4ES
LX1SI
PAØAGR
PY5DP
SM5DW
VK4EL
XE1CP
ZD4AH
4X4FV

• 103

W1PDF
W1YQC
W2DPS
W2ESG
W2IZS
W2QWS
W3PQB
W4AYF
K4CKZ
K4GZL
W4LVV
W4SBX
W5NW
W6GPB
W6SIA
W6UPP
W8MG
W8NOH
W8VPA
W9EWC
K9EWL
W9ZPT
KØABH
WØAXE
WØUQD
DJ2DW
DL3RM
DL4OR
DL4UZ
DL7CE
EA1CW
F3DG
G2AKR
G8SC
GW3CDT
HB9KU
HK4FV
HP1LB
I1KP
IS1AYN
IT1CDS
KG4AP
OE5CK
OH3PB
PY6CN
SM5KG
VQ4SC
YS2AG
3A2BF
3V8BB

• 102

W1AW
W1LQQ
W2CCO
W2DSB
W2DYR
W2GNQ
W2GQP
K2HUK
K2LGS
W2PBG
W2QCP
W2QJO
W3AZD
W3LEZ
W4BQY
K4IOT
W4KYB
W4PRM
W4UK
W5NZE
W6PWR
W6WNE
W7YAM
KL7ZG
W8IWI
W8MWZ
W8SMQ
W8UPN
W8UUI
W9BUJ
W9JJV
W9PVA
W9PWL
W9WXT
KØKKN
WØSQO
WØSUG
WØVBQ
WØWSH
VE3AUJ
VE3BHS
VE4RP
VE7HC
VE7IT
CN2AK
CO7GM
CT1DU
CT1ER
CT1FL
CX7BA
DL1ME
DJ2MM
DL3DO
DL3TM
DL7AB
DL9OV
EL1H
F7DD
F9SH
G2ACK
G2DP
G3CCO
G3DQC
G3HRD
G3XC
GC6FQ
GI6TK
GM3CIX
GW8BW
HB9HM
I1AUH
I1BFS
I1ZZG
JA6AK
KP4ES
KR6RB
LU9DM
ON4LJ
OZ2JF
PAØMDW
PJ2CA
SM5BO
TA3GVU
TI2RAF
VS9AH
XZ2SY
YO3VI
YS1JR
ZD1SW
ZL3LR
S5ZG

• 101

W1HGA
W1QWU
W1RFE
W1YWU
W2LSX
W2UAT
W2WME
W3JOR
W3KDP
W3QD
W3ZBF
W4DEO
W4GNT
W4HVH
W4IIB
W4JFV
W4KZF
W4LPT
W4NZM
W4ZCB
K5EXW
W5HWK
W5KFT
W5LFK
W5VWF
W5ZS
W6BYB
W6KPC
W6LDD
W6PKI
W7DND
W7JNC
KL7ALZ
W8NML
K9HCG
W9ICF
W9LQ
WØCVU
WØINI
WØLIL
WØNWW
WØZVM
VE1DR
VE2AHE
VE3PQP
CN8GT
CT1EX
CT1JG
EA1CP
EA3GT
EA3HL
EI9Q
ET3MZ
F3PW
F9AA
F9MD
G3AG
G6WX
HB9BR
HK1DZ
I1BEM
I1CSP
I1KZ
I1NK
I1QQ
I1RB
I1WAL
JA1ACB
KA2AL
KP4EZ
KZ5DX
LU5AR
OE1PC
OH2OV
PAØCM
PJ2MC
VP6WR
VP6ZX
VP9L
VS1AY
YK1AA
YU3JN
ZE2KO
4X4AD

• 100

W1ACC
K1BDP
W1DGJ
W1FQX
W1KTV
W1LIY
W1LSS
W1MLM
W1NVB
W1PCD
W1PCQ
W1QFQ
W1REP
W1UOP
W1VFK
W1WTF
W2APF
W2BTV
W2BZN
W2CFT
W2CPI
K2EAD
K2EFB
W2FZO
W2GFH
W2IXT
W2KKY
W2KSN
W2MA
W2NZG
K2OPJ
W2OR
W2OTZ
W2PQJ
W2RGU
W2SKE
W2VCZ
W3ABW
W3ALB
W3AM
W3DZZ
W3ELH
W3PA
W4CRI
W4DCW
W4DFE
W4DSC
W4DYM
W4ECE
W4ENH
W4EYG
K4GAL
W4GLR
W4LGG
W4NQN
W4NYX
W4PAH
W4PGZ
W4RVL
W4UKA
W4WW
W4YSY
K5BJU
W5DA
W5GZ
W5LBI
W5SFT
W5URU
K6BX
W6EHN
W6GRV
W6NGZ
W6OZE
W6UZX
W6ZTW
W6ZZC
W7ADH
W7DWO
W7TGG
K8AEK
W8ALC
W8BRA
W8CSN
W8FJX
W8TOZ
W8VGQ
W9CKP
W9EVI
K9GFV
W9GZK
W9HDV
W9HMG
W9QYH
W9UJ
W9VQG
W9VRV
W9YHE
WØDIB
WØDXE
WØGSW
WØMRJ
VE3AOL
VE3BIF
VE3DYB
VE3IR
VE3MR
CR6AG
CT1QF
DL4MN
DL4SK
DL4ZC
EA2EL
EA5EP
EI4L
F7AX
G2HIF
G2LS
G2VJ
G3BDS
G3JCQ
GI3CDF
GM3DZB
HC2BH
HK4AQ
HP1GD
HR1LW
I1BNC
I1RO
KP4HZ
LU8FAO
LX1DC
OH1PN
ON4HP
PAØDOK
PAØQJ
PJ2AF
PY1FT
PY1RC
PY5QZ
SM4BMX
SM5FA
SM6OE
SU1AS
VP1EK
VP5AR
VQ5PBD
XE1AE
XE2KW
YN1RA
YO3CV
YU2DB
ZL4HE
ZL4IG
ZP5KQ
ZS1KO
ZS1MQ
ZS3AB
ZS8I

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. . . where you get that important something "extra" for your money

NEW! Globe Chief De Luxe

MODERN! 90 WATT
10-80 BANDSWITCHING
TRANSMITTER
FOR NOVICE OR OT!

$10 DOWN
AS LITTLE AS
$5 A MONTH

Provisions for plug-in VFO and modulator • Excellent performance, quality and value—at lowest cost.

Complete, easy Kit $59.95
Factory wired, tested $79.95
Screen Modulator, Kit $11.95

Globe Scout De Luxe NEW!

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$10 A MONTH

90 WATT CW
85 WATT PHONE
6 THRU 80 METERS

The modern, bandswitching transmitter, with high efficiency straight-thru final on all bands. More results—less money!

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755-A VFO

Kit $49.95 Wired $59.95

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GLOBE TRANSMITTERS

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350
WATT
PUNCH!

Clean CW, 275 watts of crisp, high level AM phone! (450 Watts PEP with SSB exciter.) Stable VFO. 10-160 meters, single bandswitch.

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FOR 6 AND 2

$20 DOWN
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$10 A MONTH

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6-2 VFO

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Kit $49.95
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60 watt CW, 55 watt phone. Bandswitching, with separate, high efficiency output on 6 and 2 meters.

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COME ON IN!

OPEN ALL DAY SATURDAYS
Including
Dec. 26, Jan. 2

Station Activities

(Continued from page 108)

call letter license plates. Organization is under way at Levittown (N. J.) among the fellows in the new community. A RACES group is taking part in the Burlington Co. c.d. activities. K2YBN (OO) has been supplying news of progress. Traffic: K2DEI 175, W2RG 92, W2ZI 41, K2SOX 28, W2BZJ 22, K2JJC 12, W2BE1 8, W2SXV 7, K2CPR 4.

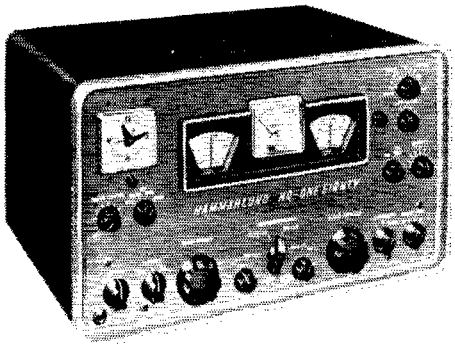
WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: W2GBX. RMs: W2RUF and W2ZRC. PAMs: W2PVI and W2LXE (v.h.f.). The NYS C. W. meets on 3615 kc at 1900, ESS on 3590, kc. at 1800, NYSPTEN on 3925 kc. at 1800, NYS C.D. on 3509.54 and 3993 kc. at 0900 Sun., TCPN 2nd Call Area on 3970 kc. at 1900,, IPN on 3980 kc. at 1600. W2RUF celebrates ten years as net manager of the C.W. Net. She started when NTS was organized. W2FEB, W2OE and W2WZQ have been faithful members throughout Clara's reign. Good luck and may the next ten years be easier. Endorsements: K2AOQ, W2ATC and W2TPV as ORSs; W2COB, W2BKC and W2ATC as OPSs. Congratulations to W2COB on the high score in the Phone CD Party. W2GBX was elected president of the Niagara Frontier DX Club. W2FXA has DXCC 204, WAZ and WPX Awards. He earned them in two years running a Viking II with 15-, 10- and 20-meter folded dipoles in the attic. He finally has decided to put up a beam! W2PDB has a new Thunderbolt. K2LWR runs a Navigator to a three-element beam 80 feet in the air—in one year DXCC 231/217. W2ZIA has installed 250-watt a.m. mobile. W2ZPV is now on 75-meter phone after 10 years on c.w. K2RTN has a new 10-, 40-meter vertical. K2DOZ reports the Wyoming County Fair Parade was handled by the local c.d. group. K2JXF received 30-w.p.m. CP. WV2DSK is a new YL on 80 and 2 meters. WV2CRE has moved to KL7-Land. K2JZM has gone s.s.b. using a 20A and 1625s. K2UZJ has a new NC-300. New officers of the North Country RC are K2BFO, pres.; K2INY, vice-pres; K2SAC, secy.-treas. W2ATO has a new NC-303 and a Tribander to go with the Valiant. K2QAE will be at Harvard U. operating W1AF. VE3MR presented the story of his TI9, PZ1, VP3 and FY7 expedition to the Buffalo Area clubs. The CVARC's 1959 QSO Party was a great success with more than 200 persons in attendance. The event was held in Randhill Club House and 2-meter and 75-meter transmitter hunts were conducted. The XYLs served the hot dogs. Traffic: (Sept.) K2SSX 334, W2RUF 225, W2TPV 183, W2OE 126, WA2ALO 124, K2RTN 120, K2JBX 117, K2UZJ 109, K2AOQ 94, K2IYP 90, K2RDY 58, K2GWN 57, K2IMK 54, W2MTA 50, W2ATC 38, W2ZRC 35, W2RQF 33, W2PGA 30, W2BKC 26, K2RWV 24, K2OFU 23, K2BBJ 20, K2GQU 18, WA2DHH 17, W2COB 16, W2QQK 15, K2JXF 14, WA2EOL 13, K2EQB 12, W2ZDL 11, W2PVI 6, K2HUK 5, K2KIR 2. (Aug.) K2RDY 49, K2IMK 16.

WESTERN PENNSYLVANIA—SCM, Anthony J. Mroczka, W3UHN—SEC: OMA. RMs: GEG, NUG and LXU. It is with deep regret that we have to report in this column the death of DGL. The WPA Traffic Net meets Mon. through Fri. at 1900 EST on 3585 kc. The PFN meets Mon. through Fri. at 1800 EST on 3850 kc. WA2AYI announces that the Eastern Area Slow Net (EASN) is back in operation on 3748 kc. at 1800 EST Mon. through Fri. It will cover the 1, 2, 3 call areas and he invites all W. Pa. hams to QNI. CA still is chasing DX; he just recently received DUF-4. WAKI and CAA certificates. K3HWP has his General Class license. ZWZ is now portable three on 6 meters from Carnegie Tech. The WPA Traffic Net is in dire need of more station activity, especially around Pittsburgh, with LXU away at school. K3CLX is working out in the East. That leaves only KUN, LXQ, K3ICN and a few others doing the lion's share of the work. The Semi-Annual S.S.B. Dinner was well attended on Oct. 3 at the Pittsburgh Parkway Hotel. New officers of the Amateur Transmitters' Assn. of W. Pa. are ZJZ, pres.; OVM, vice-pres.; EOU, secy.; UL, treas.; UGV NUG and KQF, directors. We hear our former PAM TOC is ill at home. A speedy recovery, Bill. Up Erie way: KNQ is giving code and theory instruction at the YMCA; K3GAO is heading up a Novice code net. The Washington County ARC reports that UEJ is having good success on 2 meters; the PENOWVA Net had a get-together at Thomalson Run State Park WVA in the rain. The Etna RC reports via "Oscillator" that SIR got a new receiver; HSW is with the Air Force at Lackland, Tex.; W. Pa. Mobileers have applied for a charter; the Etna RC visited channel 11, WHC studios. ZAO was guest speaker at the ATA October meeting. New appointee: WRE as EC for Cambria County. Traffic: W3KUN 164, CA 12, K3GHH 9, COT 4, W3WRE 3, ZWZ 1.

(Continued on page 138)

IT'S HAMMARLUND...
for SSB at its very best!

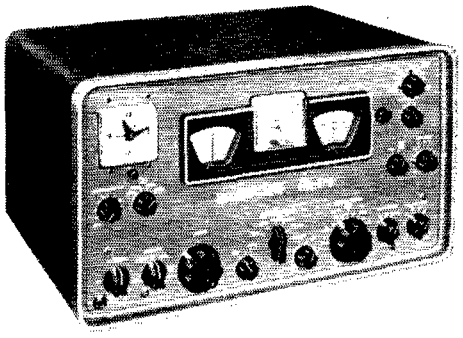
the
ALL-NEW HQ-180
for general coverage



An advanced design 18-tube superheterodyne receiver with full dial coverage from 540 KCS to 30.0 MCS. Bandspread on all amateur bands within frequency range of receiver.

$429.00 (Optional clock-timer, $10.00)

the
PROVED CHAMPION
*of amateur band receivers—***HQ-170**



No amateur receiver has ever gained as fine a reputation as the HQ-170. A 17-tube superheterodyne receiver tuning the 6, 10, 15, 20, 40, 80 and 160 meter amateur bands.

$359.00 (Optional clock-timer, $10.00)

Hammarlund shows the way to new standards of performance in SSB with the HQ-170 and HQ-180 receivers. These receivers incorporate the Hammarlund slot filter that allows attenuation up to 60 db for razor-sharp tuning, selectable sideband, selectable IF amplifier tuning, separate product detector, BFO control, crystal calibrator, selectable rates of AVC and other advanced features. Pick the one that suits you best. You can't buy better, or be more satisfied than with a Hammarlund SSB receiver... they're tops!

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A HALF CENTURY OF 50th Anniversary QUALITY PRODUCTS

CENTRAL DIVISION

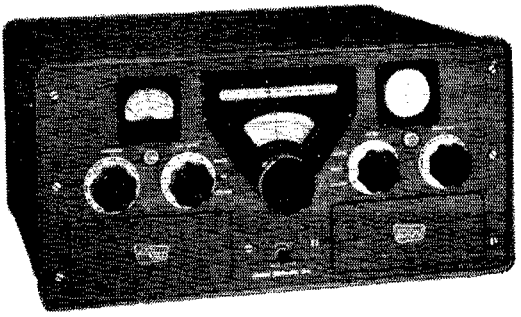
ILLINOIS—SCM, Edmond A. Metzger, W9PRN—Asst. SCM: Grace V. Ryden, 9GME. SEC: HOA. RM: PCQ. PAM: RYU. EC Cook County: HPG. Section net: ILN, 3515 kc., Mon. through Sat. at 1900 CST. The Hamtesters (Chicago) Silver Anniversary Dinner honoring all the past presidents of the club was very well attended. The North Central Phone Net's traffic total for August was 303 messages and for September was 217 messages. JXW and K9QYW were elected net manager and assistant manager. K9OUU informs us that his new 20-meter dipole is bringing in the DX. K9JXO would like to work some of the LaSalle-Peru gang on 2 and 6 meters while he is attending St. Bede's College in that area. PCQ reports that the ILN cleared 336 messages in 21 sessions during September. SKR is celebrating his 25th year of hamming. Congratulations, George. JJN is working a lot of new countries on the low end of 40 meters. SXL has a new quad Yagi five-element beam. The Rock Island County gang helped with communications and the loan of emergency equipment to the town of Monmouth after the Sept. 26 tornado. MAK received his DXCC certificate and is now heading back to his school books and college. Ask K9BBC about his beam experiences during a 50-m.p.h. gale. BQC has been called by Uncle Sam and will be out of civvies for two years. The Starved Rock Radio Club is enlarging its station club rooms to make room for the generator and other gear. TLC and ZEN are the proud owners of recently-acquired 20-A's. K9PMB, K9RDS and K9SYK are new General Class calls. K9GDQ and K9OZM are working DX with new Hy-Gain beams. New Novice calls heard: KN9TTE, KN9TUN, KN9TUO, KN9TVP and KN9UCQ. K9QYY has a new Gonset GSB-100 and a 101 linear. SUP is moving his QTH to W6-Land. LNQ, K9MDM and K9MKA have new N-300s and are doing a lot of listening and working the tough ones. USR, a housewife with two small harmonics, is doing a lot of work on the ILN, according to her gang. K9ONZ has a new Seneca on 6 meters and K9HEA has added an SX-101A to his shack. GFF lost his tower and beam in the recent 75-m.p.h. gales. New officers for the coming year of the Sangamon Valley Radio Club (Springfield) are K9KKL, K9IDQ, PNO and UYP. GOJ is conducting a new c.d. class for radio operators in Springfield and Sangamon County. Many reports were received of the various activities of emergency handling of communications during the recent wind and rain storms. Now that the summer activities are over and the gang settles back to hamming we should receive many more traffic reports. Traffic: (Sept.) K9AIR 2241, W9DO 864, K9PLF 458, W9USR 409, PCQ 342, K9MHW 158, W9-MAK 128, SXL 49, JXV 39, FAW 33, K9JBX 21, LXG 21, W9SKR 8, PRN 4, TZN 4, K9BLY 2, OXM 2. (Aug.) K9PLF 136, CWF 46, ISP 2.

INDIANA—SCM, Arthur G. Evans, W9TQC—Asst. SCM: Seth Lew Baker, 9NTA. SEC: SNQ. PAMs: BDG, BKJ, MEK and UXK. RMs: DGA, JOZ, TT and VAY. Net skeds (all Central Standard Time): IFN (a.m.) 0800 daily and 1730 M-F on 3910 kc.; ISN (s.s.b.) 1830 daily and 3920 kc.; QIN 1900 daily and RFN 0700 Sun on 3656 kc. and QIN (training) 1800 M-W-F on 3745 kc. SNQ reports four new ECs are K9BPV for La-Porte Co., K9DUV for Johnson Co., K9MOU for Blackford Co. and QAJ for Owen Co. This makes 58 counties in the State with active ECs. The Wabash Valley ARA elected RDG pres.; K9EFO, vice-pres.; K9ITK, treas.; and K9IGS, secy. k9MAN and K9PGA were appointed as Official Observers. NTR reports that a new radio club has been started at St. Meinrad. K9ETF, Gen. Cl. in Muncie, is using a DX-100. K9PDE received her 20-w.p.m. CP certificate. John DeGraff, ex-SYM is now 4ISF at Pleasure Ridge, Ky. BUQ has a new VHF-126 and soon will be on 2 meters. K9KRN has a new Matchbox and s.w.r. bridge. SYX earned WPX before leaving for Rose Poly. Welcome to K9HSA, new in Valparaiso from California, who is building a rig for 6 meters. VAY reports QIN traffic as 451. JOZ reports QIN (training) traffic as 79. IFN traffic reported by BDG was 222. RFN total was 91, as reported by TT. MEK reports ISN traffic as 65. ETM, NZZ and TT made BPL. I want to thank all the gang for the fine cooperation that I have received during my two years as SCM. The many League Officials who put in long hours of work to keep our activities running smoothly have made being SCM a real pleasure. I sincerely hope you will do the same for the new SCM. Traffic: (Sept.) W9NZZ 882, TT 525, VAY 455, ZYK 309, ETM 228, FJR 179, K9AYI 127, W9JOZ 94, K9JDK 90, IHG 84, W9DGA 81, GJS 77, BDG 65, K9BSU 61, W9RTH 55, QFQ 36, TQC 35, MEK 34, QVQ 31, K9GBB 29, IXD 29, LBD 26, W9SWD 25, CLF 24, K9JKK 23, W9CC 22, K9LZJ 22, W9BKJ 21, K9HMC 21, W9BDG 18, RVM 16, ZPP 12, NTI 11, SNQ 11, DZC 10, UQP 10, EJW 9, K9OFP 9, W9IMU 7, K9RMQ 6, LZN 5, W9NTR 5, K9PTS 4,

(Continued on page 140)

THE REVOLUTIONARY NEW CENTRAL ELECTRONICS 100V EXCITER-TRANSMITTER

BROADBANDED! ONLY ONE TUNING CONTROL, THE VFO ITSELF.



CENTRAL ELECTRONICS, THE PIONEER OF AMATEUR SSB IS PROUD TO BRING YOU THE FINAL RESULT OF THREE YEARS OF THE KIND OF PATIENT ENGINEERING, TESTING AND IMPROVING THAT MAKES FOR A SUPERIOR PIECE OF ELECTRONIC GEAR.

MANY OF THE TRIED AND TRUE PRINCIPLES AND FEATURES OF THE ORIGINAL MULTIPHASE EXCITERS HAVE BEEN RETAINED IN THE NEW 100V, ALTHOUGH IN VASTLY IMPROVED FORM. THE USE OF PATENTED BROADBAND CIRCUITRY THROUGHOUT PRACTICALLY ELIMINATES "COCK-PIT" TROUBLE.

REGARDLESS OF YOUR PREFERRED MODE OF OPERATION, IT'S ALL IN THE 100V. SSB, DSB, AM, PM, CW and FSK . . . AND ALL AT THE FLIP OF ONE SWITCH. ALTHOUGH THE 100V WILL PROBABLY FIND ITS GREATEST USE AS A SINGLE SIDEBAND SUPPRESSED CARRIER EXCITER-TRANSMITTER . . . NO ONE HAS BEEN "LEFT OUT IN THE COLD" IN ITS DESIGN. THIS IS THE KIND OF A RIG THAT HAMS DREAM ABOUT!

CHECK AND COMPARE THESE FEATURES

STABILITY: The new patented two tube permeability tuned VFO circuit is exceedingly stable and is immune to the effects of line voltage fluctuations and tube ageing. Built like a battle ship, it is tuned by a husky precision lead screw assembly running in ball bearings. This is a VFO to end all VFO's.

FREQUENCY COVERAGE: 80 METERS — 3.5 to 4.5 Mc. 40 METERS — 6.5 to 7.5 Mc. 20 METERS — 13.5 to 14.5 Mc. 15 METERS — 20.5 to 21.5 Mc. 10 METERS — 27.7 to 29.7 Mc. A spare X position provides for the installation of broad-band coils for 160 meters, MARS, etc. OR any 1 Mc. portion of the spectrum between 1.5 Mc. and 25.5 Mc. OR any 2 Mc. portion of the spectrum between 25.5 Mc. and 29.7 Mc. YOU DON'T SETTLE FOR HALF A LOAF OF FREQUENCY COVERAGE WHEN YOU HAVE A 100V!

THE TUNING DIAL: Band scales in the large slide rule window change with the band switch and are calibrated at each 100 KC point. Frequency is read directly in 1 KC increments by the circular KC dial without any computation whatever. Approx. 12 feet of bandspread on each band. A smooth running two-speed tuning knob allows fast tuning at 100 KC per turn and slow tuning at 750 CYCLES per turn. Calibration accuracy is 250 cycles between any two 50 KC points.

METERING: Reads POWER INPUT (0-200 watts) RF AMPS OUTPUT, AC LINE VOLTAGE and CARRIER SUPPRESSION IN DB DOWN TO 70 DB.

MONITORING: A 2" scope provides an instantaneous visual check on non-linearity resulting from improper loading. Also indicates proper setting of carrier injection for 100% AM modulation. Scope presents trapezoid pattern.

OTHER INDICATORS: Below the meter a neon indicator provides a check on the operation of the NEW AUDIO LIMITER CIRCUIT. Below the scope a second neon indicator starts operating if you have the antenna or load mis-matched.

NEW AUDIO FILTER-LIMITER: The new filter is composed entirely of R-C components, yet has the steep side response and rejection characteristics of a four toroid tuned filter but without the usual harsh, ringing effects. Bandpass is 200 to 3700 cycles. This filter precedes the phase shift system and will maintain 50 DB SUPPRESSION OF THE UNWANTED SIDEBAND. The new audio limiter maintains audio drive to the balanced modulator WITHIN 1 DB, REGARDLESS OF HOW HARD THE MIKE IS HIT. IT'S IMPOSSIBLE TO OVERDRIVE THE 100V BALANCED MODULATOR! Inverse feedback circuits allow 10 DB OF CLIPPING with negligible distortion.

NEW PS-2 AUDIO PHASE SHIFT NETWORK: A twelve cross-over point network is composed of heat-cycled components having .1% accuracy. Even changing the balanced modulator tubes has no effect on its maintaining 50 DB OR BETTER suppression!

POWER OUTPUT: The husky, ultra-linear type 6550 tubes in the final of the 100V will deliver 100 WATTS OF SINGLE TONE POWER, EVEN ON TEN METERS! AND WITHOUT GRID CURRENT FLOW. Two tone third order distortion products are down in excess of 40 DB. A new POWER OUTPUT CONTROL eliminates the need for power dividers when driving AB1 or AB2 linears, since power output is continuously variable from 10 watts to full output.

SET AND FORGET CONTROLS: These seldom used controls are all located behind the flip down magnetic doors on the front.

GENERAL CIRCUITRY: Crystal controlled master SSB generation is at 8 MC. VFO injection is 5 to 6 MC. Crystal controlled heterodyne oscillators operate into mixer stages for various bands. This system, originally developed by C. E. is today the standard of the industry. Blocked grid keying of mixers and final amplifier provides perfect CW and PHONE BREAK-IN.

PHYSICAL DATA: Panel is standard 19" width by 8¾" high. Finish is smooth grey. Attractive heavy duty rounded corner cabinet is 15" deep, is finished in grey wrinkle and has a latch type access lid. Shipping weight approx. 90 lbs.

MULTIPHASE 100V complete.....Amateur net **$695.00**

Orders entered prior to June 1, 1959 will be shipped at the original price of $595.00

COMING UP! MORE SUPERIOR GEAR FROM C. E. THE SSB PIONEER

A NEW COMPANION RECEIVER: Which will TRANSCEIVE THE 100V or separate the two VFO's at the flip of a switch. The 100V has the interlock control sockets built in.

A NEW 2500L BROADBAND LINEAR AMPLIFIER. Big brother to the famous 600L.

A NEW HETERODYNE CONVERTER: To cover all of the 2 and 6 meter bands with the 100V. Interlock control sockets are in the 100V.

SORRY: INFORMATION AND DELIVERY DATES ON THESE NEW ITEMS NOT YET AVAILABLE.

MULTIPHASE EQUIPMENT

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WRITE FOR LITERATURE ON THE COMPLETE MULTIPHASE LINE

W9YYX 4, DOK 3, FWH 3, K9GSV 3, W9VQP 3, K9ELE 2. (Aug.) W9ZYK 441, QYQ 120, K9RMQ 42, W9QWI 31, DZC 21, K9MWC 13, W9OCC 13, K9PHP 12, W9BUQ 4, K9GSV 4, DWK 2.

WISCONSIN—SCM, George Woida, W9KQB—SEC: YQH. PAMs: NRP, GFL and K9IQO. RMs: SAA and K9ELT. New appointees: SJL as EC, K9JJR as OO Class III. WIN certificates went to CCO, CXY and LFK. DYG and K9DAC, members of the A-1 Operator Club, made BPL. OO PJT has a BC-342 for portable operation. K9GSC has a new 2nd-class radiotelephone operator's license. CXY is back on regular TCC schedules to the West Coast. K9PQU is a new station in Brussels. A DXCC certificate was received by YT, the U. of Wis. station. The Badger V.H.F. Club of Milwaukee has affiliated with ARRL. An interesting monthly bulletin is published and a 51.1-Mc. net of the members meets Sun. at 8 P.M. Lucky KN9RPM got three 6146s at two meetings of the Oshkosh Club. Thirty-two clubs in Wisconsin registered with the SCM but monthly news is being received from just seven. Activity reports from the other 25 will be appreciated. Working mobile exclusively, JQE has WAS on 10-meter phone and an HKØAI contact on 15 meters. Ralph is a member of the OTC and RCC. VZP has a QSL from JT1AB marked No. 74. PVO, ex-operator at KC4USB, is attending college at Whitewater. The new set-up at MWQ includes an NC-303 Johnson KW, at Matchstick and a doublet. K9AEQ/4 is attending the St. Petersburg Junior College in Florida and is looking for Wisconsin contacts on 10 and 15 meters. K9PZP's 65-watt 15-meter signal was given a boost with a new three-element beam on a 20-ft. tower. A very interesting bulletin is being put out by NRP, manager of the BEN. There are approximately 65 A-1 operators in the Central Division, of which just 10 are in Wisconsin. Let's watch our operating and merit this "Tops in Awards." A Merry Christmas to the radio amateurs of Wisconsin. Traffic: (Sept.) W9DYG 1112, K9DAC 765, W9CXY 394, NQW 154, K9DTK 90, ELT 56, W9CCO 54, KQB 52, SAA 45, OTL 24, NRP 21, CBE 14, LFK 13, SIZ 12, MWQ 11, K9DOL 8, ESN 6, GSC 6, HDL 6, IQO 6, JQA 6, W9YT 3. (Aug.) K9ELT 45, W9PJT 9, MWQ 3, HDZ 2.

WISCONSIN QSO PARTY

December 6

All Wisconsin amateurs are invited to take part in a QSO party, sponsored by the Milwaukee Radio Amateurs' Club in order to promote friendship and operating ability within the section.

Rules: 1) The party will begin at 10:00 A.M. CST and end at 5:00 P.M. CST Sunday, December 6. 2) All types of emission and all bands may be used, but a station may be worked only once regardless of mode or band. C.w.-to-phone operation is permitted but crossband work is not allowed. Stations are urged to work all bands from 2 through 160 meters to raise their scores. A station may compete on c.w. or phone or both, as desired. 3) The general call will be "CQ Wis." 4) Information to be exchanged during contact will consist of a QSO number, RS or RST report, county, operator's name and time of contact. 5) Logs should show times, station worked, signal reports sent and received, frequency, time emission, power input, QSO numbers sent and received, name, county. It is suggested that sheets from the ARRL Log Book be used for convenience and accuracy. Exchanges must be entered correctly. 6) *Scoring:* Count one point for such information sent and one point for such information received, for a maximum of two points per contact. Multiply the total contact points by the number of different Wisconsin counties worked for final score. Only contacts with other Wisconsin amateurs can be counted. 7) An engraved gold cup will be awarded to the highest scorer, regardless of whether that score has been made completely on c.w., phone, or is a composite of both. In addition, engraved gold cups will be awarded to the highest scorer in phone only, c.w. only, Novice and Mobile. These awards, donated by local radio suppliers, will be presented at the Wausau Hamfest. 8) A self-addressed stamped envelope to W9FDX will bring contest forms. Send logs, postmarked not later than January 7, 1960, to Doug Pavek, W9FDX, 5776 N. 24th Street, Milwaukee 9, Wis. Judgments of the committee, consisting of W9s DYG QYW YZG and K9s ENB CJK, will be final.

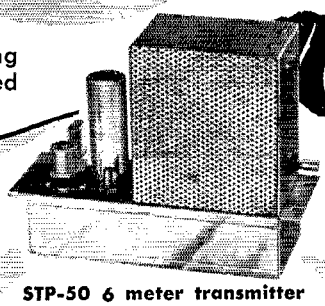
See how many Badgers you can work during the seven-hour contest period. Get on the air December 6 and meet the gang!

(Continued on page 142)

Santa's Bag is full of International gifts . . .

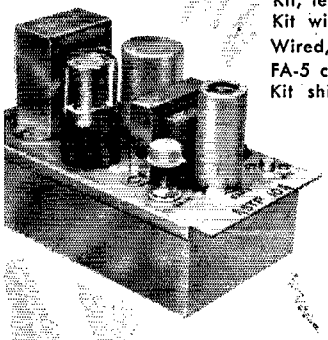
HAMS WANT MOST!

FREE! Gift Wrapping on all orders received by Dec. 15.



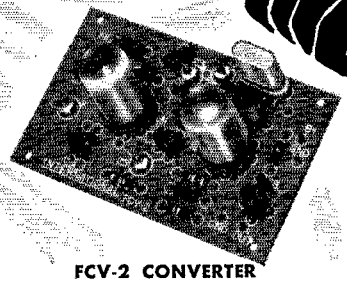
STP-50 6 meter transmitter

Kit, less tubes & crystal, $21.50
Kit with tubes, less crystal, $26.50
Wired, with tubes, less crystal, $32.50
FA-5 crystal, 12MC, $4.00
Kit shipping weight 5 lbs.



STP-10
10 WATT MODULATOR

Designed for STP-50 transmitter.
Kit, less tubes, $22.75
Kit, with tubes, $25.25
Wired and tested, with tubes $30.50
Shipping weight, 3 lbs.

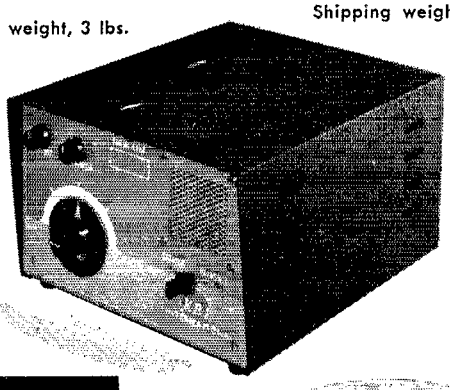


FCV-2 CONVERTER

Model 50, 6 meters. Model 144, 2 Meters. Kit with crystal, less tubes, $12.95. Wired and tested, with tubes and crystal, $17.95. Shipping weight, 2 lbs.

KB-1 TRANSCEIVER KIT

FOR AMATEUR USE ON 6 METERS OR 10 METERS. Tunes 300 KC portion of the band for which the unit is ordered. (Specify portion of band desired when ordering. Complete kit with 3-way power supply for operation on 6 volts DC, 12 volts DC or 115 volts AC, $98.00.
Shipping weight 20 lbs.



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DAKOTA DIVISION

NORTH DAKOTA—SCM, Harold A. Wengel, WØHVA—SEC: KØJLW. PAM: KØKJR. The NCSs for the 75-Meter Phone Net are as follows: Mon., KØLAB; Tue., KØADI; Wed., BHF; Thurs., KØITP; Fri., KØGRM; Sat., KØDHB; with HVA and PHC acting as Alternate Net Controls. The North Dakota C.W. Net reports 12 sessions, with a total of 30 check-ins and three pieces of traffic. We could use some more activity there, fellows. KØADI has his 3rd-class operator's license. KØPTO reports that he exhibited his station, a Knight R100 and an Adventurer, at the Walpeton 4H Fair in September. The station was operated by KØTPL, KNØTPJ and KØPTO. Thank you for any news reported, we appreciate it all. Traffic: KØKJR 22, WØKTZ 21, KØGRM 16, MPH 14, TYY 14, RMS 13, WØPHC 11, DNJ 10, KØPVH 9, ADI 7, WØCAQ 6, BHF 4, IHM 4, OAB 4, BHT 3, KØPLY 3, AJW 2, WØGQD 2, KØITP 2.

SOUTH DAKOTA—SCM, J. W. Sikorski, WØRRN—SEC: SCT. Six activities reports were received this month from an ARRL membership of approximately 300. How about some help? SMV has disposed of his 813 rig and now uses a Courier, driven by a Ranger. New calls in Sioux Falls are KNØs WEM and WEN, Clayton and Low Wardell. At Avon, Lowell Schroeder received the call KØRCA. KIHNC/Ø and K1LXC/Ø are operating 50 Mc. at Gettysburg. Those receiving General Class tickets in Sioux Falls are ORH, RMI, PVL, SZJ and TDW. Newly elected officers of the SFARC are RPK, pres.; TGX, vice-pres.; SZK, secy.; and RWE, treas. I have received very few requests for renewal of appointments in answer to my letter. SCT is making progress in securing ECs for this section. Traffic: WØSCT 386, DVB 108, BMQ 103, ZWL 58, KLR 14, OFP 14, YVF 10, ZLB 10, FCR 8, FJZ 8, QPK 6, DUR 4, HVV 3, LKH 3, INZ 2, LXH 2, CWJ 1, RCA 1, SEJ 1.

MINNESOTA—SCM, Mrs. Lydia S. Johnson, WØKJZ—Asst. SCM: Rollin O. Hall, ØLST. SEC: TUS. RMs: RIQ and KØIZD. PAMs: QVR, TCK and TUS. Congratulations to BUO and ZWL on their election as director and vice-director, respectively. KFN and EUI logged their 37th wedding anniversary. IRJ is employed at the Owatonna Nursing Home. The North Star YLs welcome TOP in Minneapolis. We deeply regret to report that OO-OPS WMA is in the Minneapolis General Hospital. ZMK and KØAUH renewed EC appointments; BUO his OBS and KØMNY his OPS. Three new ECs are KØMPH, IGW and KØICG. New c.w. OBSs KØIDV and ORK send Official Bulletins on 3595 kc. at 1815 CST. KØQLM serves the Novices. WMA earned Class I OO and YAC Class II. The following appointments have been cancelled because of inactivity or no reports: LIG as OPS, KØGCN as OO, KØHNL as OES, KØERO and GLS as OBSs, IRJ as ORS, and LUX as EC. SEC TUS compiled a Minnesota Call Book for the AREC. KØHKK, erected a 40-ft. tower for his 10-meter beam. KØLWK, KNØVPJ, KØERQ and OJG attended the Ham-Fair in Iowa. KØMAK is wiring a "red-skin," the Apache. KØQYY puts out a dandy signal with his Valiant. A new signal heard from Brainerd is keyed by KNØVGW. KØLAX reports that the Mesabe Wireless Club elected KØIBS, pres.; DCL, vice-pres.; KØIZK, secy.; KNØUBA, treas. SFU invites all of you to attend the MRC Annual Christmas banquet to be held Dec. 12 in Minneapolis. Call DQL for tickets. Editor KEL resigned from *Splatter* because of his heavy sked at the U. of M. REA Mobile Club officers are THY, pres.; KØMVF and VZP, vice-pres.; KØPPD, secy.; KØLNE, treas. Happy to have EC-OPS TWG back on the bands. Don added a Lampkin frequency standard to his station, and put up a home-brew 15-meter two-element beam. RNY states the MARC drafted TOF as president after KØEWC moved to Minneapolis and JYC left for LeSueur. Mobiles TCK, WVT and OET offered their services to the Blue Earth Sheriff to assist in locating a farmer in the area. KLG is keying an electronic keyer he designed and built. KØOTH has his General Class ticket and can be heard on 20-meter c.w. ALW spent a month in the State of Virginia. Chuck received his Traffikers 1000; KJZ Traffikers 10,000. Every member on MSN gave a traffic report this month. FGP informes us that CCX, formerly of Minneapolis, became a Silent Key at his Florida home. May God's richest blessings be yours at Thanksgiving and Christmas! Traffic: (sept.) WØKJZ 263, KØIDV 136, WØTUS/VPO 116, RIQ 106, KØQLM 100, WØOPX 89, HEN 75, KØSNC 52, WØLST 49, UMX 43, KLG 41, KØMGT 38, ORK 38, WØKYG 37, BUO 36, KØLAX 31, WØWMA 30, KØMAH 27, WØTWG 27, KØIKU 26, GIW 25, QYY 23, EPT 21, WØALW 19, MXC 19, OET 18, QVR 18, PET 17, OJG 16, ISJ 14, RQJ 14, KØMPG 13, OIW 11, WØQVQ 10, KØMNY 9, JYJ 8, WØNYM 8, OJK 7, KØKYK 6, RCF 6, WØVBD 5, DQL 4, KØSNG 3, WØGBG 1. (Aug.) WØFGP 14, TWG 12.

(Continued on page 144)

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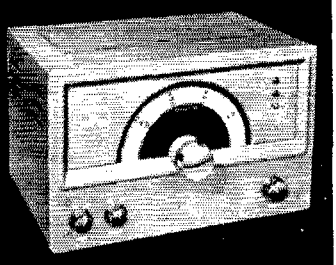

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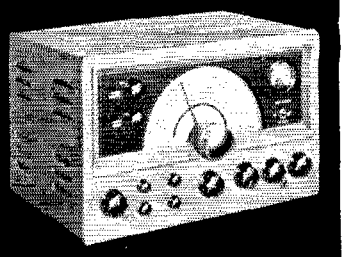

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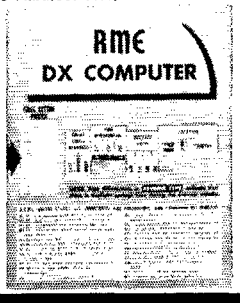
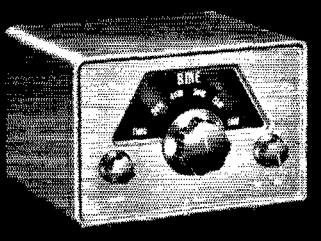
DX COMPUTER...

an operating aid designed to make available DX information about all countries recognized officially by the amateur societies of the world. This unusual computer is a complete DX guide to the ham operator in a handy, compact form. It gives all call letter prefixes; time differentials; international postage rates; continent, zone, and country; in addition to an address listing of all the QSL Bureaus of the World. By sliding the center plate to the desired prefix, you can read all the above mentioned guides at one setting. The call letter prefix column has extra spaces to fill in your own QSL record, sent and received. Size: 13¼" x 4¾" **$1.00** Amateur Net.





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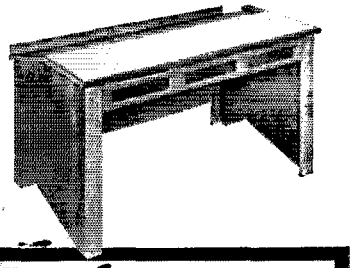

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DELTA DIVISION

ARKANSAS—SCM, Ulman M. Goings, W5ZZY—SEC: K5CIR. PAM: DYL. RM: K5TYW. CAC reports the RACES program has been set up in Garland County. LVB has been appointed Radio Officer for the County. The Miss. County Radio Club had the club station set up at the County Fair and handled many messages as a public service. We all express our deepest sympathy to K5HYC, who recently lost his father. The Arkansas Hamfest, which was held recently at Conway, was a real success. This will be an annual affair. K5SMV has a new high-power linear on. FB has a pair of 813s on s.s.b. His signal sure has a lot of punch now. BUX, of Oklahoma City recently visited the hams of Arkansas. The Arkansas Emergency Phone Net meets Mon. through Fri. on 3885 kc. at 0600. The Arkansas OZK C.W. Net meets Mon. through Fri. on 3790 kc at 1900. Your support of these nets is invited. There still is a part of the State that is not covered. We would be happy to have more news items for your column in *QST*. Traffic: K5IPS 93, W5ZZY 92, K5TYW 77, W5DYL 4.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—CEW has been reappointed PAM. While at the Division Convention he was elected pres. of the West Gulf DX Club. KC was elected vice-pres. 4MBO/5 will be active while stationed near Centerville at a commercial transmitter site until he is transferred. A Sawbones Net is in operation in New Orleans on 29 Mc. under the name of the New Orleans Medical Net. Netters include K5USU, PNR, EOE, VAV, VAIN, JGM, STJ, UNP, SVP and JCD. EA, who says he hasn't much time to ham, regularly meets the OZK Net, Delta Net, LA MARS and 4th Army Nets. MXQ is holding a six-week course in code for licensed Novices and Technicians. He now has a Mosley Tribander beam but curtailed the skiing for a while. Al was selected as EC for the Greater New Orleans ARC. CEZ is back in the saddle again. He banged in another BPL this month with a traffic count of 568. Carter recently installed a ground-plane antenna for 6 and 2 meters and the 6-meter gear is undergoing modifications. K5WKT, the XYL of NYK, is on all bands all day with a DX-100. New Novices are KN5WGT and KN5VAP; new Conditionals are K5RVU, K5UFO, K5URS and K5SWT. SPZ finally got back on the air on 80-75, 40 and 20 meters. One of the oldest old-timers (ham-wise not age), NO, is on single sideband. Traffic: W5CEZ 568, MXQ 258, EA 7.

MISSISSIPPI—Acting SCM, Thomas C. Pate, K5HYO—Local amateurs stood ready for a reported tornado to strike the northwestern part of the State Sept. 26. Several of the fellows were on emergency power and ready. K5UFQ, the Cleveland ARC, can be heard using a 600-watt transmitter. We are pleased to announce the appointment of K5QNF as RN5 manager. K5VGF is on the air with a new 500C Globe King and an HQ-145 receiver. VGG and VGF are out of the hospital after suffering heart attacks. TXZ is back on duty at the Greenville AFB after a serious automobile accident. Would appreciate receiving some news from the Gulf Coast and other parts of the State. The Post Office Net is in full swing and would appreciate more of the fellows checking in on Wed. night at 2000. The Meridian ARC reported that the simulated emergency held Sept. 13 was very successful. The following hams participated, using mobiles, a DX-100 and a 75A-3: UTL, DEJ, EMM, OSA, AFA, GSK, FQ, K5TBK, KPV/4, PYS, ACJ, KVM and YCS. Their problem was an air raid. Traffic: W5SQS 61, MFY 21, HYO 19, NRU 16, RUO 5.

TENNESSEE—SCM, R. W. Ingraham, W4UIO—Congratulations to EIN and FX on the first of a new series of C.W. Net Bulletins. K4AMC is a new NCS for the C.W. Net. K4KYL reports considerable interest in Knoxville on the new 145-147-Mc. band for Technicians. K4OUK reports QRP contacts with 3 watts input. TDZ says his new son is taking most of his spare time; also his DXCC score is 109/87. K4LPW says he is getting ready for the DX and contest season. Good luck to K4TYZ, who has returned to school. K4SGF has a sideband slicer but his DX-100 has broken down. OGG has a Johnson Ranger. UVU is modifying a 522 for 6-meter mobile. UVP has a rotator for his 6- and 2-meter beams. The Chattanooga Club is operating its own QSL Bureau—P.O. Box 13, Chattanooga. Congratulations to RRV and K4OUK on getting the new Tenn. Slow Net started. Look for it each Tue. and Thurs. at 2130 EST on 7075 kc. Traffic: (Sept.) W4PL 949, K4CNY 248, W4OGG 172, VJ 109, CXY 102, K4OUK 64, W4EIN 63, PQP 62, CIO 27, K4AMC 26, W4TZG 24, UVL 18, RRV 15, K4RSU 15, W4TZD 13, K4LPW 11, TYZ 8, W4UVU 8, UVP 6, VTS 5, TYV 4, PAH 3, K4KYL 2. (Aug.) W4TZG 14, K4LPW 10.

(Continued on page 146)

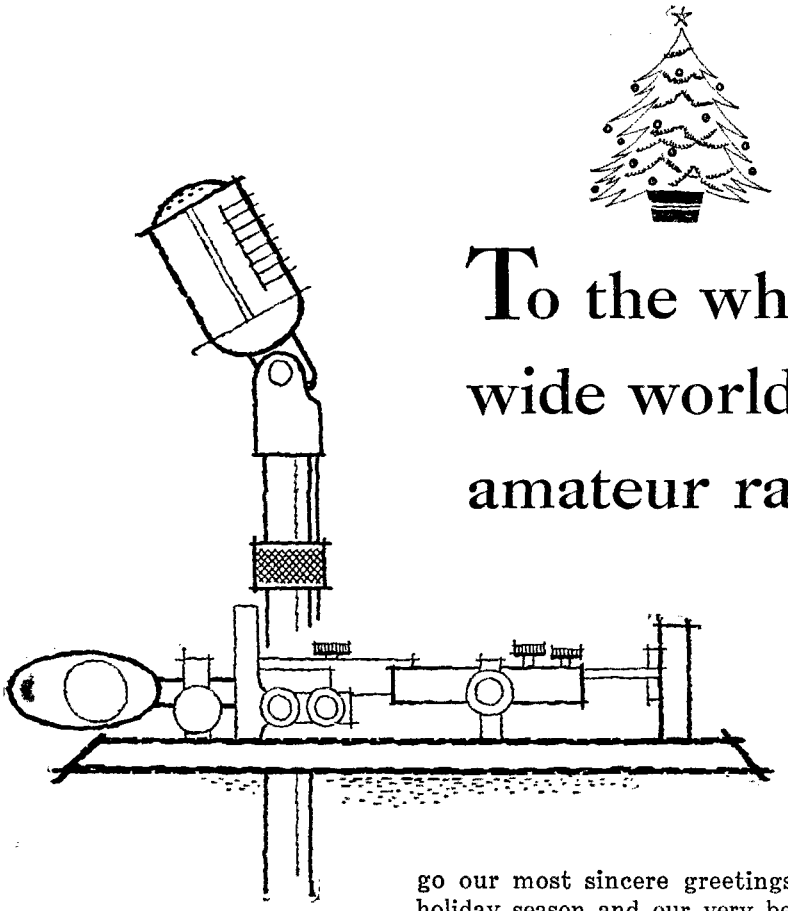
GREAT LAKES DIVISION

KENTUCKY—SCM, R. A. Thomason, W4SUD—Asst. SCM: W. C. Alcock, 4CDA. SEC: BAZ. RM: K4CSH. PAMs: K4HCK and SZB, S.S.B, PAM: MMY, V.H.F. PAM: K4LOA. MMW, manager and originator of the morning Kentucky Phone Net, has resigned because of changes in his college schedule. Kentucky is indebted to him for giving us another section net. SZB is the new manager and with your support he will keep MKPN one of our best nets. K4HCK is replacing GTC as manager of the evening net. Thanks to John for his help during the past year. HCK requests your cooperation in keeping KPN our largest section net. OO reports were received from EJA, SZL, K4GEZ, BUB and GAG. BUB is moving into his new home, which he built himself. Carl is Kentucky's most active OO. September BPL was earned by BAZ and K4IFB. EJA has a new job with WLVL. Larry hopes to be on 6 meters soon. V.H.F. PAM K4LOA reports 6-meter schedules are working very well. Keep Hanks posted on your v.h.f. activity. Traffic organizations by BAZ from Louisville C.D. and Red Cross are certainly a boost to our section nets. Keep them coming, J.B. K4HTO has gone to M.I.T. ELG reports he is keeping his OBS schedules. KN7G1Q is now KN4IMF. Traffic: K4CSH 276, IFB 259, W4ZDB 156, BAZ 137, SUD 62, CDA 41, SZB 41, K4VTY 24, DFZ 23, QHZ 22, SBZ 21, JOP 20, KIS 20, W4YY1 17, K4PNA 15, HCK 11, W4KJP 9, ELG 8, K4MPV 7, W4SZL 5, K4LOA 4, KN4IMF 3, W4EJA 2, K4HOE 1.

MICHIGAN—SCM, Ralph P. Thetreau, W8FX—SEC: YAN. RMs: SCW, OCC, QQO and FWQ. PAMs: AQA and NOH (v.h.f.). EC appointment went to SLV, ORS to FWQ, OPS to ATB and K8KVM, OO to K8-HMD. Your ex-SCM, RAE, is now mayor of Buchanan! All Michigan nets are in full swing. JKX is using a home-brew trap antenna. RAE now is on 144 Mc. K8-LPV has a new RME receiver and home-built antenna tuner. K8CKD was married Nov. 7. NUL has a new Apache. SWN built a transistorized keyer. EMD (OO) issued 49 notices and 42 were for second harmonics. Made many c.w. contacts on 50 Mc. and says the rhombic is best if the aurora is low; the beam best if the aurora is high. NOH (V.H.F. PAM) reports JUU and PX on 144 Mc. each evening at 8 and 9 P.M. 1UJ reports Sunday-only nets in the U.P., c.w. on 7055 kc. at 10 A.M. and phone on 3920 kc. at 9 A.M. TRM is NCS. EGI reports that TXS, QQO, GJI and K8IQW helped in the Woman's Air Race on Oct. 3. K8GJD has a new Cheyenne. PT worked 17 stations on 220 Mc. during the V.H.F. Contest. K8IWF has EC nets in Van Buren County on 29.61, 50.4 and 145.26 Mc. GKT is moving to Kalamazoo. HKT's antenna farm is about complete now. SX finally paid the SCM a visit. Traffic: (Sept.) W8OCC 154, FWQ 113, K8NAW 76, W8RTN 62, FX 57, YAN 53, NOH 49, JKX 48, QQO 48, CNH 41, K8GJD 38, W8ILP 33, HKT 25, TBP 16, K8KMQ 14, LPV 12, AEM 11, W8AUD 11, FDO 8, SCW 8, QIX 6, SWG 6, K8HLR 4, CWI 3, CKD 2, GUE 2. (Aug.) W8JKX 43, K8NAW 20, W8AHV 14, RAE 4.

OHIO—SCM, Wilsom E. Weckel, W8AL—Asst. SCM: J. C. Erickson, 8DAE. SEC: UPB. RMs: DAE and VTP. PAMs: HZJ and WYS. I want to take this opportunity to wish each and everyone of you a very Merry Christmas and a Happy New Year. The Seneca RC held a transmitter hunt. Toledo's *Ham Shack Gossip* named ITT as its "Ham of the Month," KIX is back in Toledo and is attending Toledo U., GOP has a homebrew mobile, NVK is on 160-meter s.s.b., BIW is back from Air National Guard training camp, FPU and NBD are on 160 meters, IWA vacationed in New Jersey, SUT vacationed in Florida, K8JDS vacationed in Pennsylvania and the Toledo RC held its picnic. Please change the call letters of the vice-pres. of the Chix on Six Net from VLS to VLF. K8s LEV and LEW (a man-and-wife team) have a new tower, a Mosley Tribander beam and a Valiant rig. K8s MZS and MZE (another man-and-wife team) have a new Valiant and a Viking 6 and 2. K8PVX is a new one on 6 meters. KN8s MRF, PTP and QHQ are new hams in the Canton Area. K8IPD has a TA33 rotator and a Mosley Tribander beam. WJB has a new Globe linear amplifier. The stork brought OJZ a new baby girl. While in Cincinnati IF gave me the first *R-F Carrier* I've received in about six months and it tells us that RLE, an old club member, attended the club's latest meeting and the club is starting another code and theory class for Novices and Technicians. Columbus ARA's *Carascope* informs us that HB spoke to them on "Testing of Circuit Components," the club will start a radio school if they get enough students. K8LWB has a new G-50. K8LVW is on 6 meters. OMY received his WAC certificate. K3CXZ/8 was brought a baby boy by the stork. KN8s PXV and QBS are new Novices in Tuscarawas County. SBM is in the hospital in Akron. K8LTA received his General Class license. K8QNT has his General Class license and a new

(Continued on page 148)



To the whole wide world of amateur radio...

go our most sincere greetings for the holiday season and our very best wishes for a wonderful year. Good QSO's . . . Good DX . . . and Good Fellowship to all.

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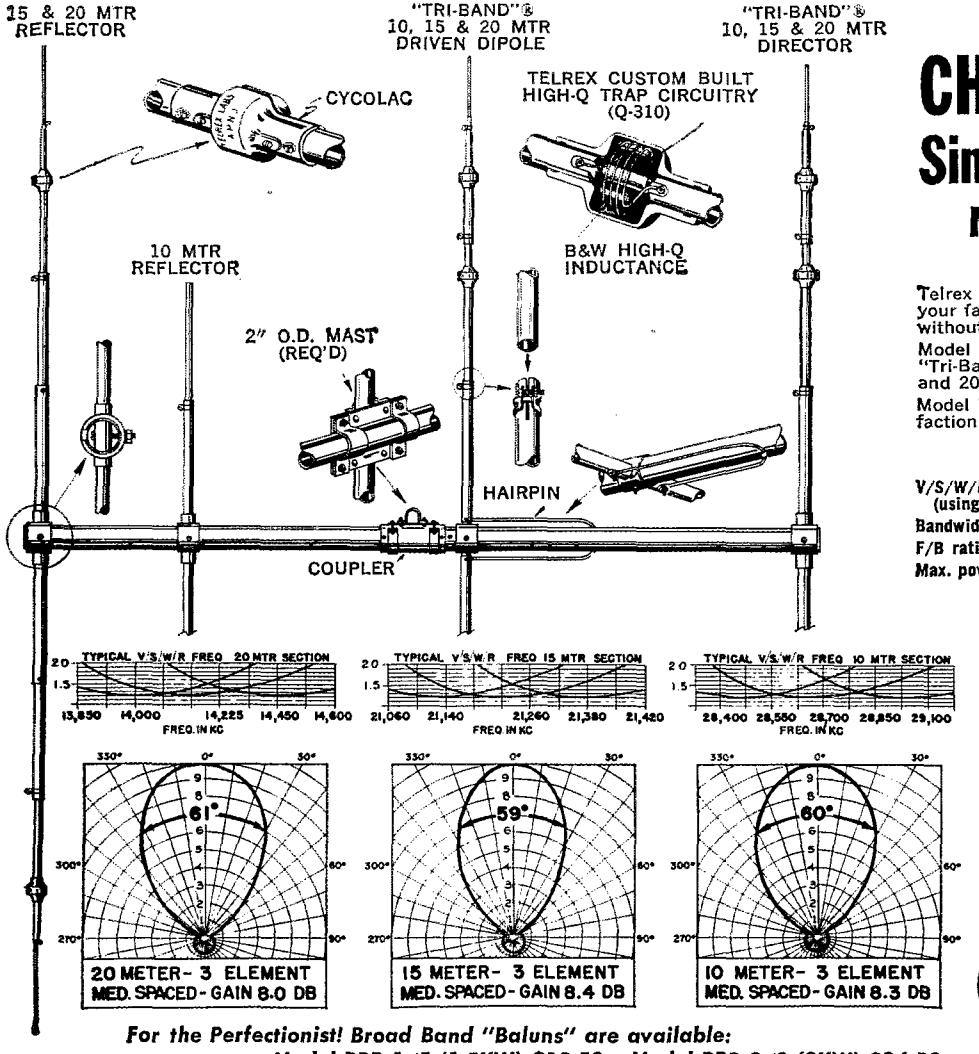
Globe Scott and Hy-Gain vertical. KN8QZL is a new ham with a new Mohawk. IBX received his BERTA No. 1403 certificate. K8CTQ moved to Wisconsin. The stork brought a new baby boy to FFK, which means another brother for K8HKU. FRB has a new 10-meter beam. KN8s PVD and RBS are new hams. For the first time your SCM was all set to attend the Findlay and Cincinnati Hamfests. When the Findlay Hamfest came up I had at ten-day illness which prevented me from attending. However, I did attend the Cincinnati Hamfest, where about nine hundred amateurs registered, with 4MOP taking home the HT-32A and VJF the SX-101A. Talked to several former Buckeye Net members trying to get them back into the net before the holiday season starts. It looks very encouraging and if they would select one evening apiece, we would have no worries about Cincinnati being represented in the Buckeye Net. Watsa, boys? Please get together, set an evening and get on 3580 kc. at 1900 EST. Traffic: W8UPH 1249, DAE 324, K8DHJ 278, W8ZYU 83, LUS 69, K8IDH 61, KHS 39, W8BZX 37, CTZ 32, PMJ 27, IBX 22, BEW 14, LT 14, K8JZZ 11, W8FFK 10, K8HKU 9, W8LZE 8, K8GVV 7, ONQ 6, W8HZJ 5, PZS 4, SYD 4, WYS 4, K8EBO 2, GPI 2, W8LGR 2, LMB 2, K8MHO 2, W8UQI 2, K8BNL 1.

HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: W2KGC. RM: W2PHX. PAMs: W2IJG and W2NOC. Section nets: NYS on 3615 kc. at 1900; NYSPTEN on 3925 kc. at 1800; IPN on 3980 kc. at 1530; ESS on 3590 kc. at 1800; ENY (emerg.) on 29.490 (Thurs.) and 145.35 Mc. (Fri.) at 2100; MHT (Novice) on 3716 kc. Sat. at 1300. Appointments: K2HNW as EC, WA2AUC as OO, WA2AKK as OES and WA2BMB as OBS. Endorsements: K2BCU and W2HO as EC. Congrats to RM W2PHX on the new arrival in July. Her name is Carol Ann. W2SZ reports 114/10 on 6 and 77/16 on 2 meters during the Sept. V.H.F. Party. Congrats. More than 50 freshmen showed interest in the club during the R.P.I. Activities Fair. The Schenectady Club held its annual auction at its October meeting. 1959-60 officers of the Yonkers Club include K2BIG, pres.; K2SII, vice-pres.; K2HGN, corr. secy.; WV2DDE, rec. secy. W2AMJ was guest speaker at the club's September meeting. K2AXM is on 2 meters with an eight-element beam. Also going on 2 meters are K2IOM, K2HGN, K2AXM, K2BIG and WA2BJS. A new Apache and an SB-10 soon will be on the air at W2UF. The Hudson-Champlain Anniversary Parade on Sept. 12 in Albany was coordinated by amateur radio. With W2GTI and K2PXM at control, mobiles included K2BUV, W2FQP, W2OOJ, K2EKR, K2UMH, K2AYH and K2GNY. Lost children, traffic jams and ambulance calls were all part of the communications activity. This is excellent publicity and other groups should offer their services for these events. For specific information on how to handle this type of public service, contact W2GTI. Congrats to our two BPL winners, K2UTV and WA2ALO. Traffic: (Sept.) K2UTV 3072, K2YZI 416, K2YTD 204, WA2ALO 124, K2MBU 93, W2ATA 90, W2EFU 54, K2OZT 37, W2PKY 22, WA2EKE 1. (Aug.) W2FVP 29, K2BIG 23.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: W2ADO. RM: W2VDT. PAM: W2UGF. V.H.P. PAM: W2EW. Section nets: NLI, 3630 kc. nightly at 1930 EST and Sat. and Sun. at 1915 EST. NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EST. NYC-LI AREC, 3908 kc. Sun. at 1730 EST. V.H.F. Traffic Net, 145.8 Mc. Tue.-Wed-Thurs. at 2000 EST. Your assistance is needed to handle the anticipated large volumes of holiday traffic. If you can devote time to a net or two your attendance will be welcomed. Contact our traffic managers or your SCM for further information. BPL cards were earned by ever-consistent W2KEB and a newcomer to the traffic ranks, K2SJF. WA2AYI, representing the Eastern Area Slow Net on 3748 kc. Mon. through Fri. at 1800 EST, invites participation by all amateurs with or without traffic experience. WV2IMO, nephew of W2KEB and W2KFV, is on the air from Westbury with a DX-20 and a G-43. K2QBW's traffic total covers only 15 days of operating. Ray had to report to M.I.T. W2PWI has found lots of DX on 10 meters. Many others found 10-meter openings profitable, including K2SJF who raised his ten-only country total to 58. K2TPU finished his 6-meter mobile rig. New officers of the Central Queens RC are K2MMQ, pres.; K2TPU, vice-pres.; K2QDQ, treas.; WV2DMQ, rec. secy.; and WV2CYZ, corr. secy. W2VSU nominated 3 stations for RCC. W2IVA, W2PF's son, is seeking his M.E.E. degree at Brooklyn Poly. W2BXK. K2OFD operated in the SS with W2JGU. A new 2-kw. PEP rig has been completed at K2PEV. New officers of the Stuyvesant HSRC are W2JGU, pres.; and W2TOX, vice-pres. K2UBB is operating from W8ZSQ, the University of Michigan RC station. New officers

(Continued on page 150)



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SPECIFICATIONS

V/S/W/R at resonant point (using 50 ohm coax)	1.2/1
Bandwidth within 2/1 V/S/W/R	1.5%
F/B ratio on 10, 15 and 20 meters	26DB
Max. power rating	1.2 KW 100%AM
Boom length and diameter	16 ft. x 2" O.D.
Longest element length	Approx. 30 ft.
Turning radius approx.	17 ft.
Support mast required 2" O.D.	Seamless .125 wall min.
Wind surface area	5-29 sq. ft.
Wind load at 100 m.p.h.	164 lbs.
Recommended rotator— Telrex Model	175 RIS
Design wind load rating with ½" radial ice load	85 m.p.h.
Antenna net wt. 44 lbs.— Shipping wt. approx.	58 lbs.
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of the 6-Meter L. I. Emergency Net are K2MGA, NCS; W2JYA and K2TXA, asst. NCSs; K2RKL, act. mgr.; W2EHP, asst. act. mgr. and K2DZA, OBS. A new Seneca is in use at WA2CXP. K2SGO has a new Drake 1-A receiver. W2DYC is now using a 75A-3. A sample of our usual departures are K2MDL to Lehigh, K2JTS to Ohio State, K2DEM and K2OKJ to Cornell, K2QBW to M.I.T. and W2DYC to Emory. A new HQ-170C and a pair of 6146s is on 6 meters at K2SJP. K2UYG made DXCC, WAC and WAZ all on 20-meter c.w. or phone. W2WTQ moved to Huntington Station. The Order of Boiled Owls RC members have hit s.s.b. with a bang, with W2AYJ, W2ESO, W2HMJ, W2HQL and K2FC enjoying a new country or two on the new mode. K2QZS moved to Hillsboro, N. H., where he now signs K1MID. W2-YHP, K2IDB and K2JWT operated W2YKQ/2 atop the highest point on L. I., Jane Hill, in the V.H.F. Contest on 50, 144 and 220 Mc. WV2GGI is on the air with a DX-40 and an SX-71. W2LTB joined OTC. Officers of the Mid-Island Net on 50.9 Mc. are K2RCP, NCS; K2RBS and WA2EQK, asst. NCSs; WA2HOA, secy.; WA2BRY, treas.; WA2DLS, act. mgr.; and WA2-FLG, OBS. New officers of the Frog Hollow RC are K2VHR, pres.; W2ACH, vice-pres.; K2IGY, secy.; and W2EHA, treas. W2GIE and his XYL vacationed in Ireland, where they report on the wonderful Emerald Isle, of the EI boys, TVI problems exist on the Emerald Isle, too! The AREC organization in Kings County, as reported by Kings EC, K2CTK, finds W2JCI as Asst. County RO; K2OVN, 2-meter EC; K2AAL, 6-meter EC; and K2BDD, 10-meter EC. New officers of the Grumman ARC are W2PCV, pres.; W2QOH, vice-pres.; WA2FWV, secy.; and K2KSP, treas. K2PHG passed the General Class exam. Traffic: (Sept.) W2KEB 3676, K2SJF 384, K2QBW 266, W2VDT 218, W2EW 102, K2-DEM 50, W2UGF 45, K2YQK 39, W2DUS 38, W2JBQ 36, WA2BST 25, W2IVN 22, WA2BVH 21, K2JLD 21, K2SFS 16, K2RJO 15, K2IRS 12, W2DRD 10, W2EC 9, K2IUT 8, K2CMJ 7, K2RDP 7, K2TPU 7, WA2CSE 6, WV2FAV 6, K2JVB 6, W2LDC 6, W2MDM 6, W2UAL 6, K2AAW 5, K2GCE 5, W2VSU 5, W2HNG 4, K2MEM 3, K2GB 2, K2MYS 2, K2OFO 2, K2PEV 2, W2PF 2, WV2DXH 1, W2JGY 1. (Aug.) W2VDT 222, K2MDI 24, K2SJP 12, K2VIX 12, K2AZT 2.

NORTHERN NEW JERSEY—SCM, Edward Hart jr., W2ZVW—SEC: W2CVW. RMs: W2RXL and W2ADE. PAMs: W2REH and K2KVR. NJN held 30 sessions with an attendance of 517 and traffic 259. NJN meets on 3595 kc. at 1900 daily. The N.J. Phone Net had 30 sessions, with 420 attendance and 63 traffic. It meets on 3900 kc. at 1800 daily except Sun., and at 0900 on Sun. The Tri-State Novice Net is on 3738 kc. at 1515 Tue. and Thurs. W2NJR gave a talk on satellites at the Ridgewood ARC. K2SRD is having trouble with a chirpy v.f.o. W2REH broke 100 countries but not all are confirmed yet. K2-YBC soon will be on 6 and 2 meters but has been working DX on 20 and 10. WA2AXC is building a 100-watt c.w. rig for W2CBT. K2YHZ received his Extra class ticket. K2PTI has a new SX-99 receiver. K2VVL had a bout of walking pneumonia and is off to Phoenix for a few weeks to recuperate. W2NIY received the Keystone Award. W2CWK had a visit from W2UK/KH6UK, who will be in the States for a few months. K2UCY, in the same building with K2YBC, finally hooked up on 40-meter phone after almost a year. K2AGJ has the new Collins S-Line. W2RXL faithfully puts out the NJN bulletin every month. To get on his mailing list, join the NJN. Karl also is teaching an adult education class at Phillipsburg on how to become radio amateurs. W2EWZ skeds W1FNU. WA2COO received ORS and net certificates. W2VMX reports a new jr. operator for K2UXJ. Class ticket. K2PTI has a new SX-99 receiver. K2VVL. K2CBG is NCS on NJPN and his son is K2MGC. W2-OPB has his wings slightly clipped by school work. WA2CCF has a new Johnson 6N2. K2MFF operates nets while doing homework! K2LWQ and W2SJB have received Net certificates. WA2EBZ, formerly W1RWS, of Connecticut is a new ORS in No. N. J. The N. J. Slow Speed Net reports 22 sessions, 43 attendance and traffic 20. K2LXL now has a 242-ft. antenna and claims it works FB. W2GVU, who recently left No. N. J. after retiring, is now W6FB (what a call!) in Van Nuys, Calif. Look for him on 7010 kc. Traffic: (Sept.) K2ZHK 114, W2ZVW 113, WA2COO 103, W2RXL 83, WA2APY 80, W2CQB 76, W2OPB 53, K2UCY 52, W2EBG 51, W2RZO 44, K2YBC 44, K2VVL 33, K2MFF 31, K2EQP 30, W2CVW 24, K2LXL 20, W2REH 20, K2LWQ 18, K2JTU 15, K2CBG 13, W2DRV 12, K2MFX 10, W2-OXL 10, W2EWZ 7, K2SLG 7, W2ADE 6, K2AGJ 2, WA2CCF 2, W2VMX 2, W2CJX 1. (Aug.) K2YBC 42, K2PVH 14, WA2AKM 6, W2CJX 2.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, WØBDR—VWF, State RACES Radio Officer, organized a group of

(Continued on page 162)

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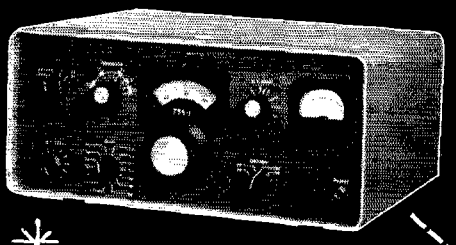

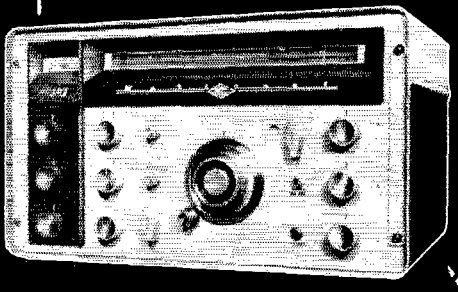

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stations to furnish communications for the press when Khrushchev visited the Garst farm at Coon Rapids. Mobiles were KJN, as NCS, NWX and K5KDA. Fixed stations were KØOAH, SEW and NTA, operated by KØGXP. Claude reports that the news flowed solid for three and one-half hours and everything worked 100 per cent. The Sioux City Hamfest was attended by 285 persons. ERG, the club station, handled traffic and made BPL. The Des Moines Club station, KØHEA, had a booth at the State Fair and also made BPL. GXQ joined the Air Force. Good luck, Jerry. KØBLJ has moved to St. Louis. The Bedford Picnic was attended by 169 persons with 69 amateurs registered. New appointments: LCX as RM and KØEAA as EC; also GEY as EC. BQJ renewed his ORS appointment. Officers of the Luther College Club are K9OHE, pres.; BQV, vice-pres.; K9JVW, secy.; K9HXL, treas. and trustee. KØPDP is the new president of the Council Bluffs Club. KØQAI has the new beam up and is working DX. FKB has gone to Arizona for the winter. BDR visited NGS. SLC has an HT-32 and a 600L. Traffic: (Sept.) WØLGG 1511, SCA 1361, BDR 1342, LCX 1151, KØCLS 659, HEA 425, GXP 143, WØERG 100, GXQ 99, KØCMC 86, WØNTB 59, NGS 50, SLC 50, NYX 35, QVA 30, KØMMZ 25, WØBTX 18, REM 18, VWF 18, KØIHC 14, WØVQX 14, KØEAA 13, WØYDV 12, KØQAI 11, WØUDT 11, HUO 10, KØSEW 9, INR 7, JGM 7, WØADB 6, KØAPL 6, WØQVZ 6, UIZ 5. KØKBX 3. (Aug.) KØHEA 89.

KANSAS—SCM, Raymond E. Baker, WØFNS—SEC: IFR. Asst. SEC: LOW. RM: QGG. PAM: VZM. V.H.F. PAM: HAJ. New appointments: KØIZM and KØOMM as OPSs; KØJVX and SYZ as ORSs; KKS as EC for Zone 12 and SYZ as EC for Zone 21. KØOWX was in the hospital after a bout with a press drill. We have a total registration in the AREC as follows: 345 members, 119 mobile units, 61 emergency radio units, 8 emergency local nets, all tied to section nets, 12 drills last month listed. BYV, OO, is active again. KØJWT still is working with TV. ETX is now 2-meter mobile. HAW is working 6 meters. GJG advises that 18 new amateurs are lined up for General Class tickets. DSM was in a bad auto accident but is coming along fine. KØJWD was elected president of the Federation of Clubs. OYA paid the SCM a visit, but he was in St. Louis. The KVRC operated TRG/Ø at the Topeka Fair handling over 150 pieces of traffic. KXB demonstrated his RTTY equipment at a recent KVRC meeting. The VV Radio Club holds code classes each meeting night at the Naval Reserve Building, Independence, Kans. KØGIA continues to pile up QSOs on 6 meters. Traffic: (Sept.) WØBLI 502, QGG 307, FNS 215, KØHGI 155, WØTOL 138, SYZ 116, KØBIX 98, WØRJF 82, ABJ 56, KØKMZ 52, IZM 49, WØIFR 47, KØJVX 37, WØVZM 36, UTO 34, KØGEL 26, BXF 25, WØGJG 22, FDJ 12, FHT 11, KØKED 11, TCT 11, WØVUI 11, KØEFL 10, QOB 9, JID 7, WØSTC 7, KØQWN 6, WØWFD 5, KØMRI 3, GYA 2, TNW 2, WØFHU 1. (Aug.) KØEFL 8, TOA 8, WØRJF 4, KØGEL 2.

MISSOURI—SCM, C. O. Gosch, WØBUL—SEC: KØLTP. RMs: OUD and QXO. PAMs: BVL, OMM and KØKLQ. Net reports: MEN (1800, 3885 kc, MWF). Sept.: 12 sessions: QNI 377; QTC 92; NCS OHC and OMM 4 each, VPQ 3, BUL 1. Congratulations are extended to KØKBD on his appointment as manager of the Tenth Regional Net (TEN). The SCM wishes to thank the following for their good reports for the month of Sept.: OVV and TOD as OBSs; WYJ and OJC as OOs. The V.H.F. Club (St. Louis) held a city-wide and county-wide transmitter hunt on 6 meters late in October. The SWMARC (Springfield) conducts an AREC Net the 2nd and 4th Mon. of each month on 29.626 Mc. at 1930. Any other AREC groups conducting or planning this type of activity, please advise the SEC or the SCM. A practical application of such activity was assistance given by mobiles BUB, BVG, HUI and KØLTK in conducting the hunt for a nine-year-old girl lost in the woods in the area recently. The Suburban RC (St. Louis Co.) conducted a display and demonstration at Kirkwood for the area c.d. Those cooperating in this effort were KØMMU, BVV, COD, IGU, ICV, FQY and IFL. Club bulletins are always appreciated. Please keep them coming. It is with deep regret that we report that DWX has become a Silent Key. Appointments: OO—KØKBD, OJC, WØQLR and KØLGZ. Endorsements: RM—QXO; OES—KLQ and PME; ORS—GBJ, PME and QXO; OO—PME. Officers of the Ritenour HARC are KØSBJ, pres.; KØJPH, act. mgr. Officers of the Zombies are KØSBJ, pres.; KØPSQ, vice-pres.; KØMNN, secy.-treas. Meetings are held at 2400 Tue. on 50.55 Mc. Traffic: (Sept.) KØONK 1161, KBD 416, WØOMM 174, OUD 96, VPQ 72, KIK 60, ZBR 59, KØPFF 52, WØWFF 50, MRJ 39, BVL 38, OVV 37, BUL 24, KØOEP 16, OJC 12, WØGEP 8, KØLGZ 8, WAP 7, IHY 6, WØGBJ 2, KØLWX 1. (Aug.) KØLWX 33, WØKA 23, KØMAU 7.

(Continued on page 154)

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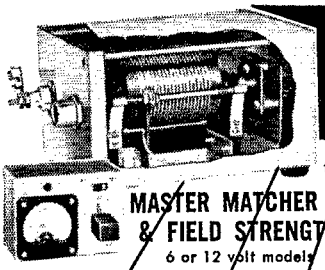

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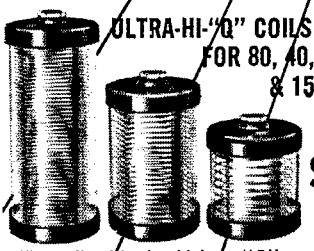

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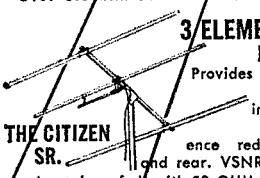

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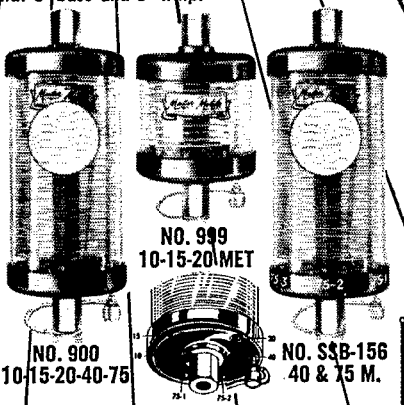

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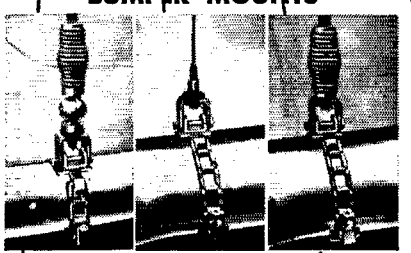

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FG-103 103"	$6.95

MARINE ANTENNA

Center-loaded, provides max. power on all marine freq. from 2 - 3 meg. Weatherproof, waterproof. 10½' overall length, 4' S.S. plastic-coated whip, 18" impregnated coil. Colorful.

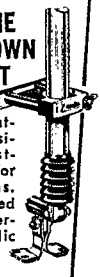
$29.95

11M. CITIZEN BAND ANTENNA

40" base loaded S.S. whip antenna. Fitted with a ¼" dia. brass slug for use with a standard-broadcast 8-ball type cowl mount, also rooftop or trunk lid type mount. Low standing-wave ratio on most of band when fed with a 52 ohm coax.

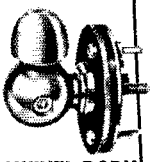
8B-27 **$12.95**

MARINE LAYDOWN MOUNT



Can be mounted in any position. Adjustable swivel for all positions. Chrome-plated brass, waterproof phenolic insulator.

$19.95



SWIVEL-BODY MOUNT

Smaller version of Master Mobile Mounts, less spring. Swivels, mounts in all positions. ⅜"-24 thread for Magic Wand, and all Master Antennas.

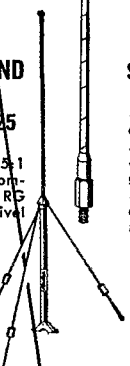
No. J-11 **$2.95**

CITIZEN BAND ANTENNA

26.960-27.225 MC

VSWR under 1.5:1 at resonance. Complete with 50' RG 58/U Cable. Swivel type antenna base for flat or peaked roof installation.

GP 27-11 **$34.50**



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SIZE ⅜"x 19"

NO. B-1080

Positive action, just slide whip in or out to loading point and lock nut into position.

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New easy-to-install, single band, top-loaded plastic covered fiber glass antenna provides maximum performance at the most useful radiation frequencies.

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11 Met.-	5 Ft. L.	8.95
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20 Met.-	5 Ft. L.	8.95
40 Met.-	6 Ft. L.	9.95
80 Met.-	6 Ft. L.	9.95

SUPER HI-GAIN CITIZEN BAND

Stacked coaxial antenna provides 5-6 DB gain. 42" high from ground plane. Furn. with 12" ext. for bumper mount.

460-465 MC
No. CL-465
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All products are for Universal Use-Mobile, Home, Marine, C.A.P., Civil Defense, Emergency, etc.

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NEBRASKA—SCM, Charles E. McNeel, WØEXP—The Western Nebraska Net reports QNI 703, QTC 79. The 75-Meter Morning Net reports QNI 689, QTC 126, with 51 on roll call. The 75-Meter Noon Net reports QNI 364, QTC 28. KØKUA and KØMRS transmit slow-speed code practice Mon. through Fri. on 3695 kc. NYU is RM for the Nebraska C.W. Net that started operation on Sept. 1. A very FB hamfest was held at Sioux City with a good attendance. KØDGW was elected net manager for the Morning Phone Net on 3983 kc. KNØVAZ is off to a good start in Curtis. KØCDG and WGA are attending Nebraska U. KØMRS is back on the air after a summer vacation. The Central Midwest Division Convention held in St. Louis was well attended with a good representation from Nebraska. After talking with Director NWX it is hoped that we can organize to put on the Midwest Division Convention in Nebraska next year. Talk it up, fellows. The August report for the 75-Meter Noon Net was QNI 250, QTC 15. Thanks to SXR for filling in for me while I was on vacation. Traffic: WØNYU 219, ZJF 123, KØKGW 88, KUA 57, IJW 58, WØRDN 38, OKO 35, NIK 32, KØCDG 28, WØHTA 26, KØDFO 24, WØUOV 24, KØBDF 22, FBD 17, WØVZJ 16, 11, KLB 10, KØTSU 8, ELU 7, WØLJO 7, KØQFK 7, URR 7, CBV 6, KJP 6, MSS 6, WØGGP 5, KØMRS 5, SCM 5, ULQ 5, WØHOP 4, KØMZV 3, WØATU 2, KØELQ 2, LXS 2, WØWGA 2, YFR 2, AFG 1, KØSLB 1.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1-TYQ—K1IWV, who passed the General Class exam at the Hartford Convention, is on s.s.b. with the S-Line. Cards from VQ9AIW and KS4BB bring BIH to 282 confirmed. His first 6 contacts on s.s.b. gave him WAC. K1CBV has a nifty new QSL. K1BFJ visited DJ1BZ and DL4USA while on his vacation. YBH reports that CPN met 29 times, handled 285 messages, and had an average of 27 stations daily. High QNI goes to K1CBV, K1CRQ, MWB, TVU, 25; K1AAE, VIY, YBH, 24. The Manchester Radio Club holds code classes Tue. nights at C.D. Headquarters. YBI is convalescing after an operation. YOL has been sampling 2 meters. FHP reports CVN handled 23 messages during 13 sessions and had 122 check-ins. The weekly 2-meter meeting of the CQ RC netted 63 stations and 4 messages. FVV has cleaned up the ignition noise on his Rambler. MWB has a new NC-125. K1HAN is NCS on HTN Thurs. K1BML and K1BMM are contemplating s.s.b. with an SB-10 and a Ranger. K1BFS added 14 new countries and several new states. HYF is s.s.b.ing on 3.9 Mc. with the S-Line. ECH needs New Brunswick for WAVE. KN1-MGV is a new Novice in Wethersfield. College is cutting the operating time of K1CAK. QVF has built a new 32-element 220-Mc. beam. WA2AYI reports the Eastern Area Slow Net operates Mon. through Fri. at 1800 EST on 3748 kc. K1GDW has a new Mosley TA-33 on a 50-ft. tower. KYQ reports CN handled 345 messages, including 36 on the second session, during 30 sessions. Average attendance was 13 stations. High QNI goes to K1HWF, OBR and RFJ. WJF is home after 4 months on Ice Island T-3. KLK has transferred to McChord AFB in Washington. *Nutmeg News Notes* is a bulletin put out for Connecticut hams. If interested, write your SCM for a free copy. K1DME is back at college. KN1DUW has dropped the "N." EYF has a new 6N2. MQT is in the Air Force in Texas. CHR is back handling traffic. VKZ brought his DX total up to 108/94 during the summer. ZZK operated portable from Maine. GVT has a new 20-meter beam. MFS joined the Armed Services. K1DNU has returned to Boston U. GXG was injured in an accident. GTH is home after a stay in the hospital. DNJ donated an electric frying pan to the Southington ARA. MEZ is on s.s.b. VXJ is enjoying 10 watts and an S-85. AOS is receiving good reports with his transistor rig. UWU has 39 states on 6 meters. KN1KSH, KN1-MBH, KN1LKC, KN1ATR, KN1KTQ and KN1KVR formed the GOB (General or Bust) Club. They operate on 3745 kc. New officers of the Candlewood ARA of Danbury are ADW, pres.; K1GDW, vice-pres.; K1-HKH, secy.; 1NB, treas. WHL and XYL attended the Grave Yard Net Picnic in Lynchburg, Va. K1HAN, K1HWF, K1AAE, K1BCP, K1CBV, K1CWF and K1-GCS have received Section Net certificates. WHL reports the 6-Meter Net handling 39 messages in July, 31 in Aug. and 37 in Sept. K1HAN has been appointed ORS. Appointments renewed: CUH and VKZ as ORS; ZYT as EC; YBH as OPS. Reports received: OES from FVV; OO from K1BNQ, K1EFI, GIX, MBX and MWB. Traffic: (Sept.) W1OBR 309, AW 275, YBH 151, KYQ 133, K1HWF 119, W1QJM 113, CHR 84, EFW 79, ROX 58, VIY 52, DGL 50, RFJ 44, MWB 42, FHP 32, K1JAD 31, CBV 28, W1FYF 28, K1HAN 23, W1BDI 21, K1BNQ 9, W1JZA 8, K1BMM 7, W1GIX 7, CUH 6, BFS 4. (Aug.) W1EFW 142, QJM 64, CUH 8.

(Continued on page 156)

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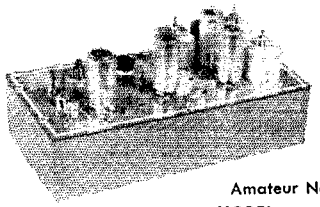

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Model C-3-21 15 meters
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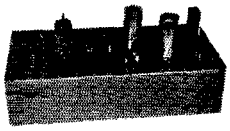
Choose IF output between 2 and 6 mc. to suit your receiver.



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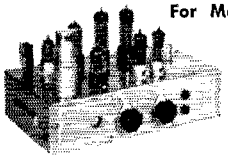

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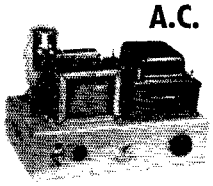

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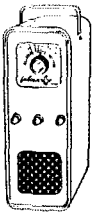

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MAINE—SCM, Jeffrey I. Weinstein, W1JMN—SEC: W1JMN. PAM: BXI. RM: EFR. The Sea Gull Net meets Mon. through Sat. at 1700 on 3940 kc.; the Pine Tree Net Mon. through Fri. at 1900 on 3596 kc. JMN Official Bulletin schedule: Mon. through Thurs. at 2000 on 3600 kc. New appointments: K1BXI as PAM; K1DPM and GVQ as Asst. ECs. Renewals: K1BYE and OTQ as OPSs; KEZ as EC. K1LCH is attending classes at the U. of Me. in Orono. KN1MBM is a new Novice in Westbrook. K1GMW has moved to W2-Land. The Eastern Area Slow Net (EASN), which covers the 1st, 2nd, and 3rd call areas and meets Mon. through Fri. at 1800 on 3748 kc., invites all Maine amateurs to join and participate in slow-speed c.w. traffic work. Also, the Maine Slo-Speed Net meets Tue., Thurs. and Sat. on 3726 kc. at 1730. KN1JAP has dropped the "N." The Portland gang can be heard regularly chewing the rag on 10 meters. We all regret the passing away of the "Old Maine Schoolmaster," BX. Does your area have an EC? If not, and you're interested in the appointment, let your SCM know about it. Also, station appointments are available to qualified applicants. GKJ is piping r.f. out on 50 Mc. K1GVQ is on 15 meters with a rotary dipole. Best wishes for the Yuletide and Season's Greetings to all. Traffic: (Sept.) K1DPM 72, W1ISO 48, UDD 40, EFR 37, JMN 10, KN1KSG 8, K1GVQ 5, W1OTQ 3, K1BYE 2. (Aug.) W1UDD 22. (July) W1UDD 17.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—New appointments: K1CIF/1 as ORS, TWG as OPS, K1BGX as OES. Appointments endorsed: MKW Dennisport, DVS Falmouth, CZW New Bedford, SS Lincoln, YWB Norfolk, KZW Westwood as ECs; K1AFA as OO; HWE, SS and WU as ORSs; SS and K1CXN as OPSs; EUJ and MEG as OESs. Ex-YVV now is WA2GVU in No. Utica, N. Y. Heard on 75 meters: RBN, HOM, QLT/1 and K1GAU. K1EES and EEU are husband and wife. Heard on 2 meters: LAE, VPP, HNK, K1s AEK and MHC, who is K1GYM's son. K1BPJ is in No. Billerica. To all Radio Officers and ECs: Note that AOG is our Section Emergency Coordinator and it is his intention to assist everyone. New officers of the Chelmsford Amateur Radio Assn. are UX, pres.; K1IFV, vice-pres.; LDT, secy.-treas. K1IMP has a new 500-watt homebrew rig and a two-element beam. BGW has a three-element beam on a 40-ft. tower for 20 meters. 8HKZ/1 had a new son. TKN moved to Medway. WAJ took part in the F.M.T. NF attended the DXCC meeting and received confirmation for 140 countries. New

(Continued on page 158)

MASSACHUSETTS QSO PARTY

December 12 and 13

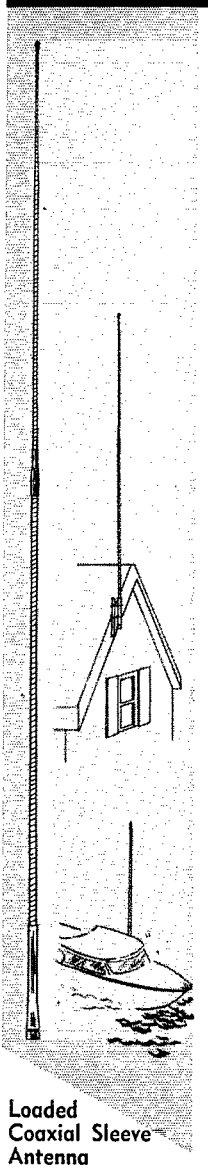
The Merrimack Valley Amateur Radio Club announces a Massachusetts QSO party in which all amateurs are invited to participate. Details follow.

1) The contest begins at 6 P.M. EST December 12 and ends at 11:59 P.M. EST December 13. 2) Suggested congregating frequencies are 3660, 3870, 7080, 7260, 14,100 kc., 21100, 28100, and 50 and 144 Mcs. 3) The same station may be worked for additional credit on more than one band. Phone and c.w. are considered separate contests. Stations may enter both but must submit separate entries. 4) General calls: "CQ MASS." Massachusetts c.w. stations identify themselves by signing "de MASS (call) K." Phones say "Massachusetts calling." 5) Contact information: Mass. stations send QSO number, RS or RST and county. Others send number of QSO, RS or RST and state, province or country. 6) Scoring: Each completed contact counts five points. Non-Mass. amateurs will multiply by the number of Mass. counties worked; Mass. stations will multiply by total number of states, provinces and countries worked. Multiply this total by 1.5 if input power remains under 150 watts at all times. 7) Certificates will be issued to the highest-scoring station in each state, province, country and county in Massachusetts. 8) Logs must show the date, time, emission, and power input as well as the required contact information. 9) Contest logs should be submitted to MVARC, Box 211, Lawrence, Mass. postmarked not later than December 31, 1959.

The Worked All Massachusetts Counties certificate (p. 62, September *QST*) will be issued to those who succeed in working all 14 counties during the contest, regardless of the type of emission used.

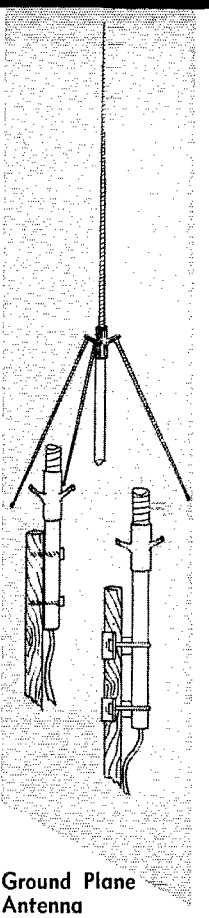
27 MC citizens band FIBERGLASS antennas

Shakespeare WONDERODS



Loaded Coaxial Sleeve Antenna

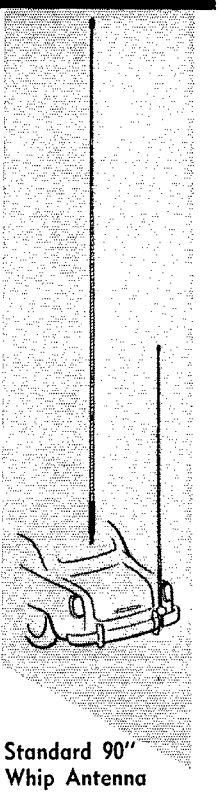
Ideal for both marine and base station application. Antenna terminated with UHF connector. – STYLE 72-0 – $46.00



Ground Plane Antenna

High Strength fiberglass radiating elements. Supplied to fit 1¼" water pipe. Antenna terminated with UHF connector.

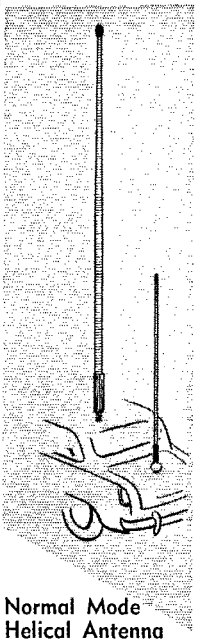
STYLE 61-0 – $41.60



Standard 90" Whip Antenna

Light-weight, –high flexural and impact strength, corrosion-resistant.

STYLE 10-3 – $6.95

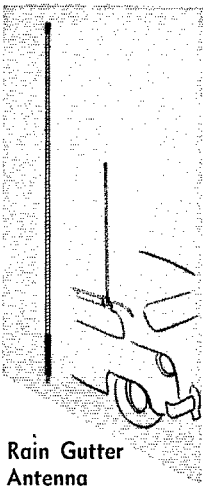


Normal Mode Helical Antenna

Distributed-load antenna eliminates standard loading coils; four ft. length permits choice of mounting positions.

STYLE 62-0 **Deluxe model, in white** $15.90

STYLE 73-0 **Std. model, metallic gray** – $11.25



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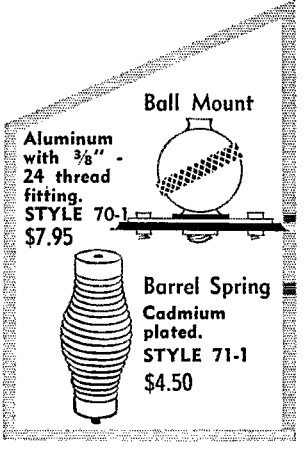

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Aluminum with ⅜" - 24 thread fitting.

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Look for the spiral markings of genuine Shakespeare Wonderods

officers of the Framingham Club are K1HTK, pres.; SON, vice-pres.; K1GYH, rec. secy.; FY, corr. secy.; QVK, treas; RCJ, act. mgr. PEX is a Lt. Col in the CAP and deputy for Comm. Mass. Wing and has a Hy-Gain G-2 vertical up 70 feet, a ten-element Hy-Gain beam for 2 meters up 62 feet and a five-element beam for 6 meters up 54 feet. K1BCS visited K1GRP. K1GPH is working on a TV station. K1LQJ is working on a transmitter. GEK is putting a corner reflector on 2 meters. K1BYV is building a 15-meter beam. K1AII says YK will have a u.h.f. rig. LMZ has a new HQ-170. HB's XYL, W4IBM, is now K1MIB and will be on 40-meter c.w. and 2 meters. NKA is on 2 and 6 meters. K1CIF/1, PEX and K1GRP made BPL. WA2AYI, chairman of the Eastern Area Slow Net, is looking for members from this section. The net is on 3748 kc. at 1800 Mon. through Fri. The T-9 Radio Club met at WNK's QTH. K1BJZ is secy. of the Yankee Radio Club. TVZ spoke at the Framingham Club on "Transistorized Power Supplies." K1CCW has a DX-100 and an SX-71. The South Shore Club held a meeting. UGH is in So. Dakota again. KN1LWJ is new in Winthrop. CMW was elected vice-pres. of the Morse Club of America, Boston Chapter. Sorry to announce the death of UKO. HDM and NIF are Alternate ORs for Westwood. AWA spoke at the QRA on "Net Operations." A retirement open house was held for FI at his QTH. The Braintree Radio Club held a meeting. K1MHM is ex-WV2DQN/1 in Lexington on 80 and 40 meters. KN1LLU has a DX-20. EUJ is working on the rig for 2396.5 Mc. K1JME says he has received many letters thanking the group who set up a rig in a Quincy Super Market on the Six-Meter Cross Band Net with AWA and K1DGI's rig. LMZ has a 4X250-B rig on the air. K1AII has a rig on 220 Mc. New on 2 meters: K1JOV, BGH, KN1KZV and K1LPQ. K1DIO is handling traffic on 2 and 6 meters. OFK has an SX-36. The Eastern Mass. 2-Meter Net is very active. K1JME has a 55-ft. tower. AAR is mobile on 2 meters. FJJ has a GSB-100 for s.s.b. EUT is in college in N. C. K1ASY and W1EQS are at the U. of Maine. K1CWS will have a 44-element beam on an 80-ft. tower for 2 meters. EUJ has a 4X150-A on 2 meters. ALP has had his call 35 years. New officers of the El Ray Radio Club are PEG, pres.; WB, vice-pres.; Bud Lowery, secy.; AAC, treas.; HA, act. chairman; MEG, chief eng. Traffic: (Sept.) K1CIF/1 714, W1PEX 670, K1GRP 577, DIO 289, W1UIR 277, OFK 192, K1GYM 110, W1ZSS 84, HGN 81, EMG 71, K1BYL 64, MHC 37, W1AKN 36, KN1LLU 25, K1JME 19, W1SIV 19, K1GPH 18, GQZ 18, MHM 18, W1QFO 18, JBD 16, GEK 14, NVV 14, TWG 14, ATX 12, K1CMS 9, BUF 8, BYV 8, W1TY 8, UE 6, AAR 5, FJJ 5, K1AII 4, LCQ 4, W1MIX 4, WU 4, DTB 3, K1-EJW 2, W1IBE 2, LMZ 2, HB 1. (Aug.) K1BYV 20, BUF 14, W1QFO 6.

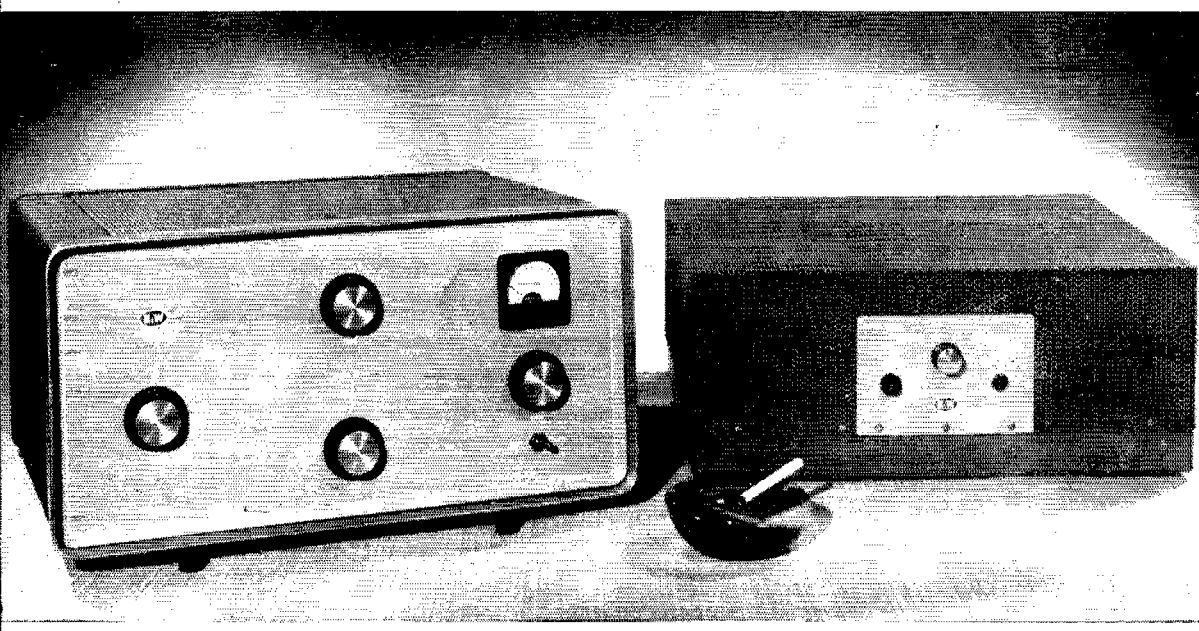
WESTERN MASSACHUSETTS—SCM, Percy C. Noble, W1BVR—SEC: BYH. RM: DVW. PAM: DXS. V.H.F. PAM: RFU. WMN meets on 3560 kc, Mon. through Sat. at 7 P.M., MPN on 3870 kc daily at 6 P.M. ORS endorsements: DZV, FZY and KGJ. KGJ has entered Tufts University. K1GCV is doing an FB job as OO and is now Class H. DXS now is operating with a new Valiant. Old-timer EFN is recovering from polio at the Good Samaritan Hospital in Boston. Drop him a line. The annual picnic sponsored by the Mass. Phone Net was held in Fitchburg Sept. 20. The PAM is looking for stations interested in OPS appointment and for outlets in all parts of West. Mass. Contact DXS, 26 Richards St., Worcester. Phone Section Net certificates were issued to BYH, BWF and DXS. From the Podunk Radio Club: K1CPD is out of the hospital and concentrating on DXCC, EKO, K1CBW and K1BYM are off to college. *From the Montachusett Radio Club*: K1KBS has had 285 QSOs on 6 meters in two and one-half months. K1LLP has a new Ranger. KN1JPP dropped the "N." GUI and K1AVO are now operating new home-brew 6-meter mobiles. BYH as 200 watts to an 813 on 75 meters. OAZ is back on the air after a long illness. *From the Berkshire Country club*: K1LAG now has a Viking II. CRK is back at the U. of M. and has a 50-Mc. rig there. DPY finally has neutralized his linear. FNP is now WA2DNU. WF has a new Heath KW S.S.B. TNQ still is in Indiana. Ex-ADF now is W2WTS. GKK and AZW attended the New England DXCC meeting at Dedham. Sorry to report that KQK lost his mother. BKG has received a letter of commendation from the FCC for the excellent work of his TVI committee. New officers of the Pittsfield Radio Club are UIS, pres.; K1DAB, vice-pres.; BKG, secy.; Jim O'Keefe, treas. News from Springfield and vicinity? Traffic: W1BVR 86, ZPB 70, DXS 43, DZV 40, DVW 39, BYH 29, AGM 14, OSK 4.

NEW HAMPSHIRE—SCM, Robert H. Wright, W1RMH—The following are the active N. H. nets: Granite State Phone Net on 3842 kc. Mon.-Sat. at 1900 and on Sun. at 0900. The NHN (c.w.) Net on 3685 kc. daily at 1830. The Northeast V.H.F. Net on 145.8 Mc. daily at 1930. ASZ (U.N.H. club station) invites all interested to

(Continued on page 160)

Merry Christmas from your XYL

POWER... PACKAGED FOR TODAY'S AMATEUR



LPA-1 GROUNDED GRID LINEAR AMPLIFIER
NET PRICE $375.00 COMPLETE WITH TUBES

LPS-1 POWER SUPPLY
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Power—a full kilowatt with this smartly designed, excellently styled version of the famous B&W linear amplifier family! New compactness . . . takes up no more space on your table than a receiver. New features . . . for greater performance and flexibility than ever before.

Separately housed LPA-1 R. F. section employs two Type 813 beam power tetrode tubes, connected as high-Mu triodes in a grounded-grid circuit. Blower, filament and bias supply are included in this section.

High voltage power supply unit LPS-1 may be remotely located. Switching control panel is removable for convenient installation at the operator's location. Circuit consists of a full wave single phase bridge rectifier, using four Type 816 mercury vapor rectifier tubes. R. F. filtering protects tubes and prevents mercury vapor hash radiation.

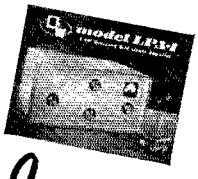
The LPA-1 can be driven by most exciters in the 100 watt class, such as the B&W 5100/5100B series, Vikings 1 and 2, Valiant, Collins 32V, KWM-1, 32S-1 series, Heath DX100 and others.

A compact impedance matching unit, the B&W LPA-MU, is separately available. It provides for operation with fixed output exciters such as the Hallicrafters HT 32 Series and similar types. A similar unit, the LPA-MU-2, is also available for use with the B&W L-1000-A and L-1001-A.

Your local distributor should have these advanced units *now* . . . see them soon.

LPA-MU MATCHING UNIT $36.00
LPA-MU-2 $36.50

Send for this illustrated brochure in full color giving specifications and detailed descriptions of the new B&W LPA-1, LPS-1 and LPA-MU.



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check into the N. H. Weather Net, Mon.-Fri. at 1800 on 3842 kc. This net was established to collect weather information for WENH-TV, Channel 11. K1MID (ex-K2QZS) is located in Hillsboro. Welcome to new hams in Concord, KN1MCM, KN1MCN and KN1LZG, KN1-JCO, the XYL of M1DP, is now General Class. HDQ, an active RTTYer has moved to New Hampshire. With regret I announce the resignation of K1CIF as RM. Many thanks for your contributions to N. H. C.W. Net activity. The Eastern Area Slow Net, which meets Mon.-Fri. on 3748 kc. at 1800 EST, extends an invitation to N. H. hams to participate. Anyone interested, write WA2AYI. Appointments: K1CSJ and K1MID as OPSs; K1CIG as OES. Renewals: GDE as EC; EVN and HQ as OPSs. Traffic: (Sept.) K1BCS 644, W1TA 56, K1IIK 49, W1QGU 46, YHF 18, EVN 13, K1CSJ 9, W1KVG 8, AIJ 6. (Aug.) W1EVN 20, K1DKD 8.

VERMONT—SCM, Harry A. Preston, jr., W1VSA —SEC: EB. RM: K1BGC. PAM: HRG. Vermont frequencies: C.W. 3520, Phone 3855, RTTY 3620 kc. Nets: C.W., M-W-F at 1830; VEPN, Sun. at 1730; VTPN, Sun. at 0900; GMN, Mon.-Sat. at 1730 K1GBF is on s.s.b. now with an SB-10 and an Apache. K1GBE has a new 6N2, a DX-20 and an NC-98. GBE also has a central power supply and control panel and for an antenna a long wire string for 80 meters. K1-IRH has received his Conditional Class license and is on 2 meters and 75 through 10 meters. HUR is the new editor of *BARC News*. K1AUE is program director of the BARC. Civil defense has a new Radio Officer for the State in BXT. Give your emergency generator a weekly test and be sure it's working. It would be appreciated if Vermont amateurs would drop a line to the SCM and register his or her club. We would greatly appreciate news items and station activities reports. Congrats to HRG on his appointment as Phone Activities Manager. K1BGC is our Route Manager and invites stations to check into our C.W. Net. Traffic: W1OAK 168, K1GBF 151, W1ELJ 49, VSA 19, KJG 17.

NORTHWESTERN DIVISION

ALASKA—Acting SCM, Kenneth E. Koestler, KL7BZO—There was very little activity here in Alaska in the month of September. 2 meters was pretty good for c.d. KG1DT made the BPL on Ice Island. The weather has been nice but conditions have been very poor. 10 meters has opened up a little in the Western States, so see you next month. We will get our dope in for the charter member. Traffic: (Sept.) KG1DT 423. (Aug.) KG1DT 532.

IDAHO—SCM, Mrs. Helen M. Maillet, W7GGV—Club activity is starting up around the State. Send in your news! Idaho radio amateurs held a Labor Day Picnic at PCP's QTH. GOM, OA and K7AYU are getting FB DX reports on new cubical quads. K7DMZ and K7DMY are the new prexy and veep of the Magic Valley Club. The Pocatello Club viewed the c.d. film on "Atomic Attack." FARM Net elections voted JHY, manager; WEY and K7GQM, net controls. WEZ had 9 cub scouts in Hamsack for a briefing on ham radio. FOF, 1SY, IRM and K7CVB are operating portable 7 in Pocatello during the college year. K7ALA and K7ENE are using DX-100s, and BQY has a new HQ-170. K7AYU invites check-ins to the Tri-State Weather Net on 3890 kc. at 0630 PST daily. K7BWV worked VE7BAV, who was operating 3 watts during the VE/W Contest. K7ANZ, K7GQE, K7GHX and FOF are on 2 meters. Traffic: W7GMC 90, K7BWV 42, W7VQC 30, GGV 16, DWE 6.

MONTANA—SCM, Vernon L. Phillips, W7NPV/WXI —SEC: KUH. PAM: EOI. RM: KGJ. The Montana Phone Net meets Mon.-Wed.-Fri. at 1800 MST on 3910 kc. The Montana Slow-Speed Net meets Tue.-Thurs.-Sat. at 1830 MST on 3630 kc. K7BKH made BPL and earned the BPL Medallion. New calls: KN7IQA and KN7JAQQ in Cut Bank; KN7JAZ in Lewistown; and KN7JBF in Great Falls. K7AIC moved to Pennsylvania from Great Falls. W7DEO moved to Kalispell from Great Falls. K7DPH moved to Great Falls from Cut Bank. INI moved to Great Falls from Baker. IHT is in FAA School at Okalahoma City. Miles City amateurs are conducting code and theory classes for prospective hams. New officers of the Harlo Radio Club are K7IUJ, pres.; K7CHA, vice-pres.; TGM, secy.-treas.; and SZB, act. mgr. Recent appointments: K7BON as EC for Billings and ZUQ as EC for Fort Shaw-Simms-Sun River. Traffic: K7BYC 307, BKH 175, EWZ 75, GHC 19, W7-CQC 8, IDK 6, YQZ 4, K7AWD 2.

OREGON—SCM, Hubert R. McNally, W7JDX—Rumor has it that OMO probably is moving out of the State. Sorry to hear that, WL. KN7JTZ is a new ham in Grants Pass who assembled her own DX-40. DIC is

(Continued on page 162)

Honoring 1958 Award winner Julius M. J. Madey, K2KGJ, spotlighted the public-service work of all radio amateurs. Here L. Berkley Davis, head of General Electric's Electronic Components Division, presents the young New Jersey ham with his Edison trophy, earned by handling over 12,000 messages to and from isolated American personnel overseas. Looking on is Captain Robert H. Weeks, Assistant Director of Communications for the U.S. Navy, which has publicly commended Madey.

JAN. 4 LAST DAY FOR EDISON AWARD NOMINATIONS

Letters naming candidates for the 1959 Edison Radio Amateur Award must be postmarked not later than Jan. 4, 1960, to receive consideration by the panel of judges.

Award nominations come only from letters written by you and others. In view of this, you will be rendering an important service to the entire amateur group by choosing a suitable candidate and sending in a letter describing what he has done. Do this now! Time is growing short.

In doubt about what qualifies an OM or YL for the Award? Read the list of representative activities at right. For rules of the Award, see the October issue of this magazine, or write to *Edison Award Committee, General Electric Company, Electronic Components Division, Owensboro, Kentucky.*

HERE ARE TYPICAL ACTIVITIES THAT CAN QUALIFY FOR THE AWARD:

- Emergency communications work in a disaster, such as a flood, hurricane, tornado, or explosion.
- Helping amateurs and others with their specialized problems, through professional knowledge and experience.
- Community service in organizing mobile and fixed communications to promote the success of fund drives and other public events.
- Helping disabled or physically handicapped persons.
- Relaying messages from remote points for the benefit of isolated servicemen and civilians.
- Designing and constructing radio equipment for use by persons in remote parts of the world, who do not have access to regular commercial communication channels.
- Civil-defense organization work; weather reporting; radio assistance to state or local traffic and police authorities; cooperation in forest-fire prevention and control.
- Teaching basic electronics to young people.

GENERAL ELECTRIC

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getting out a YL-XYL column for the *OEN Netter*. ZB isn't going to lose his antenna to the new highway and everyone is happy. BDU, ZB and K7CLL made BPL. Some of you should listen in on these fellows and watch the traffic fly, especially to ZB on 20 meters. CLL has to go back to school so his total may drop but not his knowledge. Hi. The Council of Clubs in Portland is making good plans for the 1960 State Convention. The AREC Net is coming along fine. New ECs are to be appointed in several counties. 9SM is seeking chess players via ham radio. Anyone interested should write him direct. K7DVK reports there was no DX on 2 meters in September but local contacts were good. MTW is a new ORS. GWB reports on the V.H.F. Net and is lining up more AREC members. The OARS is renewing code classes. A swell report was received from UQI, our SEC. Each month the activity gets better. JDX has given up as a salmon fisherman and now will return to ham radio. Hi. Wish someone would tell us how FO8AC in Tahiti has such a c.w. signal in Portland on 20 meters. He's louder than the locals! Traffic: W7BDU 687, ZB 617, K7CLL 200, W7LT 65, ZFH 52, K7EPO 42, W7DIC 30, BWO 16, DEM 11, FIF 8, OMO 3.

WASHINGTON—SCM, Robert B. Thurston, W7PGY—Washington nets: CBN, 3960 kc. 2000 PST. NSN, 3700 kc. 2100 PST Mon. through Sat. WARTS, 3970 kc. 1830 PST Mon. through Sat. WSN, 3535 kc. 1900 PST Mon. through Fri. New officers of the Cascade Radio Club are ROL, pres.; PTX, vice-pres.; UGH, secy.; BLX, treas. YFO is QRL with the basement as a new ham shack. K7GNA is a new grandpa. IEU has the new station all completed and in operation. DPW is dropping most of his traffic skeds because of other commitments. AIB is waiting for a new HQ-170. AMC made a good traffic count. FIX has the RTTY converter completed and is waiting for the machine to hook it to. The VARC of Puyallup had a display booth at the Western Washington Fair with about 8000 visitors. ZMG is mobile on 10 meters. JJK and PUA are attending U. of W. Pa. FZP put the home-brew rig on 6 meters and is back on the active list. AXT is going s.s.b. with a 20-A exciter and a pair of 813s for kw. RXT moved to Tacoma. COP has a new boat. ATF has the new beam ready to install. CZK won the last two hidden transmitter hunts in the Tacoma Area. New EC appointees are ZCE for Franklin County, ZDQ Clark County and K7BIV Grant County. LFA renewed his OPS appointment. The WSN had 21 sessions with 264 QNIs and 149 QTCs for the month of August. CZY is working on RTTY gear. CWN is chasing DX. K7APJ has a new 10-meter beam. A new club has been formed on the east side of Lake, called the Lake Washington High School Amateur Radio Club, with K7EEJ, pres.; and K7ETP, vice-pres. The WSN had 22 sessions with 315 QNIs and 181 QTCs for the month of September. DNU, K7BOB and AQB are working lots of DX on 15 and 20 meters. MTX installed Heathkit mobile rigs. OEB made No. 140 and Zone 39 with JT1AB. K7DDQ is starting code and theory classes. About 80 attended the Bar-B-Q held at CZY's. GSP has a new kw. JBH and REC are doing road construction work. Traffic: W7BA 2127, DPW 515, DZX 447, QLH 234, AMC 198, HUT 174, KZ 162, APS 119, OEB 85, GIP 41, AIB 31, K7AJT 22, W7EKT 22, EHH 17, IEU 15, K7DDQ 10, GNA 10, W7LFA 10, UWT 7, REC 5, CZY 4, EVW 4.

PACIFIC DIVISION

HAWAII—SCM, Samuel H. Lewbel, KH6AED—The Hilo Amateur Radio Club has announced that it will sponsor the Hawaiian Islands Amateur Radio Convention in 1960. Present plans call for combined efforts by the Hilo Club and the Kona Amateur Radio Club and it looks like the date will be the Fourth of July week end. Keep a watch on 40 meters for the latest information. CWW now is using a 5-band beam. BG, who also is an OBS, finally made DXCC, and CUQ has now 101 countries confirmed. KW6CGA had to slow down on net activities because of extensive traveling. Novice training on Wake still is going on and some new calls will be on from the Coast Guard station there. The Honolulu Mobile Amateur Radio Club elected the following net officers for 1960: BHJ, pres.; BYO, secy.; DQ, treas.

NEVADA—SCM, Charles A. Rhines, W7VIU—IWT is QRL making the bedroom shack over into a nursery for the forthcoming blessed event. HJ has set up an FB AREC plan for Boulder City. MAH has a new Telrex twenty-element spiral on 2 meters; hears K6TYW and works W6GDO. W7BJR joined the MARS Two-Meter Net using an SCR-522. Special thanks goes to SDE for help on the Slide Mt. 2-meter repeater. K7AHA is buying a new home in Reno. JKV has been discharged from the Army and is attending the U. of Nevada. A 94-m.p.h. wind in Elko blew VIU's vertical

(Continued on page 164)

Now... another fine Drake Receiver...

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FEATURES

- Triple conversion with crystal controlled first converter for maximum frequency stability.
- Continuous sideband selection without retuning
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- Distortion-free product detection.
- Convenient tuning rate with deviation scale.
- High sensitivity, low noise.
- Compact size.

ALSO A CHOICE OF

- Slow or fast AVC.
- Selectivity band width.
- Product or diode detector.

SPECIFICATIONS

FREQUENCY COVERAGE: 3.5-30 mc, twelve 600 kc segments which may be set up and selected from the front panel include:
Five "Ham" ranges: 80M (3.5-4.1 mc), 40M (6.9-7.5 mc), 20M (13.9-14.5 mc), 15M (20.9-21.5 mc), 10M (28.5-29.1 mc).
Two "Ham" ranges (with accessory crystals): 10M (28.0-28.6 mc) and 10M (29.1-29.7 mc).
Five "Universal" ranges (with accessory crystals) five 600 kc ranges that may be set up between 3.5 and 30 mc by plugging in five accessory crystals chosen for the desired ranges (WWV, MARS, Sputnik, etc.).

MODE: Selectable SSB, A.M., C.W.

SELECTIVITY: 2.4 KC at 6 db — 8.5 KC at 60 db or 4.8 KC at 6 db — 23 KC at 60 db.

SPURIOUS RESPONSES: Image rejection more than 60 db, IF rejection more than 60 db on ham ranges, Internal spurious signals within ham bands less than equivalent 1 microvolt signal.

FREQUENCY STABILITY: Less than 500 cycles warm up, Less than 100 cycles after warm up, Less than 100 cycles for plus or minus 10% line voltage change.

DIAL CALIBRATION: 10 kc main dial divisions, 1 kc (approximately) vernier dial divisions, Main dial and vernier both adjustable for calibration purposes.

SENSITIVITY: Less than ½ microvolt for 10 db S/N.

AVC: .75 sec. or .05 sec. discharge, less than 100 micro second charge.

AUDIO OUTPUT: 1 watt maximum, .2 watt at AVC threshold.

AUDIO DISTORTION: Less than 3% harmonic, Less than ½% intermodulation (including product detector).

CONTROLS: "Frequency" 2⅛" diameter with adjustable 40 divisions skirt (approximately 1 kc/division). **"Preselector"** tunes antenna and RF to incoming signal, calibrated 80 through 10 meters plus 0-10 scale for frequencies outside ham bands. **"Band"** Switch indicates ham band or other tuning range. **"Sideband"** used with 2.4 kc selectivity to select desired sideband by tuning passband above or below the fixed BFO (or carrier). **"RF Gain"** adjusts RF gain (S meter reads accurately at any setting of control which allows meter to kick). **"AF Gain"** adjusts audio gain. A front panel headphone jack disconnects the speaker when phones are plugged in.

SLIDE SWITCHES: "Power-Off" A.C. on or off. **"Stby-Rev"** standby-receive or to offset external muting when used with transmitter. **"S. AVC-F. AVC"** .75 seconds or .05 seconds AVC discharge time. **"2.4 KC-6 KC"** selectivity switch. **"Prod-Diode"** detector selector switch. **"BFO-Off"** BFO switch independent of detector switch. (BFO may be used with either Product or Diode Detector.) Also Accessory Switches: "Q Mult. Off" and "Cal. Off."

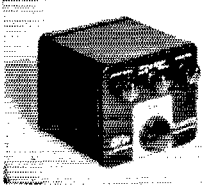
REAR CHASSIS CONNECTIONS: All connections are made to screw type terminals (provision is made for SO 239 Antenna Coax Connector). Terminals are: 50-75 ohm antenna, Muting, AVC time constant, 4 ohm AF output (to speaker, Antitrip, etc.) Socket for Q Multiplier.

10 TUBES, plus IN34 bias rectifier.

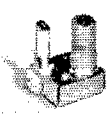
SIZE: 12" Wide x 7" High x 9" Deep. **WEIGHT:** 14.5 pounds.

POWER: 120 volts, 60 cycles, 40 watts.

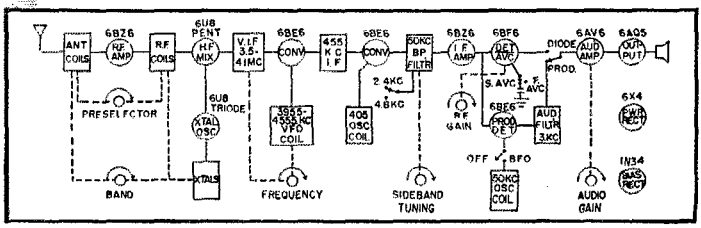
ACCESSORIES



Model 583 Q-Xer Q-Multiplier $34.95 Amat. Net



100 kc, Model 2-AC Crystal Calibrator $16.95 Amat. Net



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down. VIU received a YLCC-200 sticker. YNO and his XYL are the proud parents of an 8-lb. boy—making VIU a grandpa for the first time. UPS is using his vacation to work some s.s.b. HOP is moving back to W6-Land. Send in some news, boys. Don't let your ARRL membership lapse. We need support for the ham's cause, and ARRL membership is a good way to give it. Traffic: W7VIU 35.

SANTA CLARA VALLEY— SCM, W. Conley Smith, K6DYX—W6DEF and W6ZRJ reported on the extensive S.E.T. preparations made by the SCARS and SCCARA, respectively. W6QIE and his group held the drill in So. S.F. The SCARS has a contest among the members for a QSL card design for the club station, W6WWJ. The Palo Alto RC held an auction at its Oct. meeting. The Monterey Bay RC also plans an auction as the first of several projects to increase the club treasury with the purpose in mind of adding to the club station, W6UCS. K6BJ spoke at the Santa Cruz RC meeting which was also visited by our Director, W6HC, as well as your SEC and SCM to discuss League matters. Among those who "Had a fine vacation but glad to be back" are K6GII, W6OH and W6WAL. W6UJA was visited by his father, KP4ACH, and together they mobiled through So. Cal. They hope for a father-son sked but the OM's main interest seems to be 6 meters. Their last QSO was by flashlight as the plane took off. Although in the process of moving, K6GZ kept the station in operation long enough to make BPL. K6HCP has a twenty-element spiral ray on 2 meters and is working on a parametric amplifier. K6SRG is working for Westinghouse in Sunnyvale. WA6BWT is DX hunting and assembling a station separate from dad, W6GGA. W6WIU has moved to Templeton. K6ZCR is new in the section, transferring her ORS and OO Class I appointments from San Diego. W6EIC has a fine c.d. net on 50.5 Mc. at 1900 Mon. A new OO appointee is K6HFK, of Stanford. Traffic: (Sept.) W6RSY 1053, K6DYX 348, W6AIT 159, K6GZ 125, K6ZCR 95, W6FON 74, W6HC 44, W6DEF 43, W6YBV 35, W6PLG 31, W6OH 27, K6VQK 24, W6ZRJ 19, K6GID 14, WA6CLT 2. (Aug.) K6DHO 80, W6OH 20, W6HC 5.

EAST BAY—SCM, B. W. Southwell, W6OJW—SEC: K6DQM. ECs: W6LGW, W6ZZF, K6EDN, K6JNW and K6ESZ. K6EHR is building a new v.f.o. and an exciter for 6 and 2 meters. W7SMB/6 is rebuilding his BC-610. K6ZYZ is the new manager of NCN. W6AKB returned from his vacation and is on MARS. WA6ABQ is a Technician and hopes to have his General Class license before leaving for KA2-Land. The Richmond Radio Club had an FB auction at its Sept. meeting. W6CBF is QRL work, but was in the F.M.T. and is on the SARO nets. W6HM is in Vallejo General Hospital. Get well, OM. The CCRC met Sept. 2 at the QTH of W6CTH. The EBRC met Sept. 11 and heard an FB talk on microwave equipment by an engineer from Hewlett-Packard. The MDARC provided communications for the Walnut Festival Parade. WA6DOV is a new General Class licensee in MDARC. WV6ECF is awaiting his General Class ticket. K6ZRQ has a new QTH in El Cerrito. WV6DTZ is going to the University of California at Davis to major in zoology. K6QUG is on 2 meter m.c.w. WV6DOP and WV6DOY took the Technician Class exam. K6EMR has a new Communicator III on 2 meters. WA6BXC is a new Technician in the MDARC. K6TFB has a new Ranger. WV6FKH was heard in VK-Land with his DX-20. WV6FCM passed the Technician Class exam. K6DQM's XYL is a new Novice with the call WV6HYU. Congrats. WV6HSQ, WV6HSA, WV6HYV, WV6HYW and WV6-HSK are new Novices and WA6GCS and WA6CNW are new Technicians in the Walnut Creek Area. K6SWY will form Novice classes in the HARC. The HARC held a big auction. K6RDD and WA6BBF vacationed in VE7-Land. Ex-KN6LNX took the General Class exam. K6-TIY has a new T-bird. K6AHW and W6WSH attended the MARS Hamfest in Napa and won a 'scope and an SCR-522. K6SCS is the XYL of K6SWY. W6MFZ has a DX score of 144/111. W6JK has a new QTH. Communications personnel for the VIII Olympic Winter Games had a dinner meeting at the Nut Tree Restaurant on Highway 40, Vacaville. That does it for this month, gang; keep 'em coming. AREC members: Get that portable gear in shape for possible action this winter. Traffic: K6ZYZ 254, K6GK 150, WA6BKQ 3, W6CBF 3.

SAN FRANCISCO—SCM, Leonard R. Geraldi, K6ANP—Asst. SCM: Jeri Bey, W6QMO. RM: K6PQG. PAM: W6PZE. ECs: K6EKC Fortuna; W6OPL San Rafael; W6CXO San Francisco. OOs: W6GQA Class I; K6OHJ Class III. OBS: W6GGC. ORSs: K6PQG, W6GGC, W6QMO, W6OPL and W6GQY. OPSs: W6PZE, W6GGC and K6OHJ. Congratulations and best wishes to W6HC and W6ZF on their reelection as Director and Vice-Director, respectively, for the Pacific Division. The Marin Radio Club has a new meeting place in Larkspur at the American Legion Hall. W6LOU did a bang-up job as head of the committee in charge of the recent Air Force Hamfest in El Verano. W6GGC is

(Continued on page 166)

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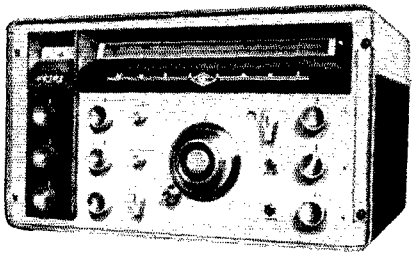
NEW FEATURES



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- **NEW** dual noise limiters. Separate automatic noise limiter for AM. Separate double-ended manual limiter for CW and SSB.
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- **NEW** exclusive WWV converter provision. No interference with dial calibration or frequency coverage. Accessory calibrator provides two microvolt sensitivity on 10mc WWV frequency.
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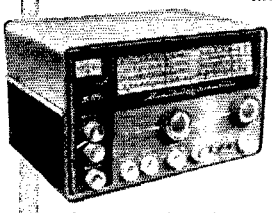

Covers 540kc to 40mc in four bands including broadcast band. Receives AM, CW and SSB. Large, lighted, easy-to-read, 11 inch slide rule dial. Calibrated electric bandspread for 10, 15, 20, 40 and 80 meter amateur bands, uses separate tuning knob and tuning capacitor. Logging scale. Automatic noise limiter. Separate heterodyne detector for CW and SSB signals. RF and AF gain controls. Front panel antenna trimmer. High-frequency oscillator has separate ceramic coil forms and is temperature compensated and voltage regulated. Features National's exclusive new "MICROTOME" filter which provides 5 degrees of sharp selectivity in addition to normal bandwidth for voice. Has sharp phasing notch (over 60db deep) for interference rejection. "S" meter for signal strength indication.

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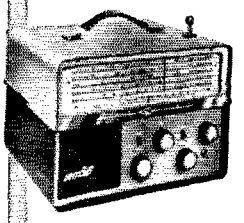

PORTABLE SHORTWAVE RECEIVER MARINE AND AIRCRAFT BANDS. Covers weather, amateur, world wide shortwave and standard broadcasts in five steps. Frequency coverage 150 thru 400kc and 0.5 thru 23mc. Large slide rule dial plus expanded electric bandspread. Two built in antennas: ferrite loop for DF and broadcast band and the other a telescoping whip antenna for a short wave reception, as well as provisions for direction finding loop. A radio frequency amplifier brings in those hard to get stations. Two tone gray cabinet, chrome trim. (salt spray tested) 115V AC, DC or battery. 12 5/16" x 9 11/16" x 10" shipping weight 16 lbs. Less Batteries

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using his new Hallicrafters SR34 for his OBS schedules on 2- and 6-meter c.w. Wally and his XYL, Rose, attended a dinner at the Nut Tree recently for the personnel who worked during the Olympic Games tryouts last February. Purpose of the dinner was to formulate final plans for the communications squad of the Olympic Meet in 1960. W6GQA is available almost every night for frequency checks, harmonic checks, etc. His San Francisco phone number is SE 1-2648. K6PQG holds steady spots in NCN as NCS and liaison to RN6. W6FEA is active on Air Force MARS Nets. W6PHS is active on Air Force RTTY and Phone Nets. Congratulations to W6FVK on his recent marriage. W6PCN is attending City College to obtain her California teaching credits. W6SLX reports from Eureka that WV6GYC, WV6GHL and WV6GUH are new members of the club. WV6GUH having barely used his call, was promptly ordered to report for two-years' active duty for Uncle Sam's Navy, and is now on the *USS Cushing*. W6QMO now is active on NCN, RN6 and Air Force MARS. W6BIP had a very nice stay in Alaska on business. Good wishes to W6NCK in his new venture into the amateur radio supply business. K6OPI will be spending the next year or so at college in Claremont, Calif., on an engineering course. W6REK has introduced a bill in the State Legislature providing that hams with call sign auto license plates not be required to pay the additional $3.00 plate charge on annual renewal of their auto license, but that the $3.00 cover the extra fee for a period of four years. Traffic: (Sept.) K6PQG 129, W6QMO 54, W6FEA 21, W6GGC 12. (Aug.) K6PQG 136.

SACRAMENTO VALLEY—SCM, Jon J. O'Brien, W6GDO—Asst. SCM: William Van de Kamp, W6CKV. SEC: K6IKV. RM: W6CMA. PAMs: W6EZS and W6PIV. The Camellia Capital Chirps mobiled to Stockton for its September meeting. W6AF caught more fish than DX during the summer. K6YBV is going strong again after being off the air all summer. Bob reports a new club is being organized at San Juan High with a Ranger and an SX-101 to start out. Very sorry to report that Bob's faithful guide dog, Pukka, was killed by a car in September, but he should have a new dog by this reading as he is scheduled to go into the class beginning Nov. 15 at the San Rafael School, Guide Dogs for the Blind, Inc. W6NFH and K6CWK are now Mr. and Mrs. and are residing on their ranch near Penryn, which they call Charmon Ranch. The Sacto. Area Emergency Net, which formerly met on 3885 kc., has moved to 29.4 Mc. and meets each Tue. at 2000 PST. K6SXX totalled up a nice score in the VE/W Contest. W6HTS and W6HSB, mobiling through the U.S., say the nicest part is being able to talk to the family at home (W6GDO and K6HHD) each day and know that things are all FB while they see the country; the KWM-1 sure is working good. The Best of Season's Greetings to all. Hope you have a wonderful Christmas and that the New Year finds you happy and healthy. Traffic: K6YBV 790, K6SXX 65, W6CMA 56, W6QNI 7.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—SEC: W6EBL. EC: K6BGO. ORS: K6ROU. PAM: K6EJT. EC: W6ARE. I am looking for a qualified ham as EC in Kern, Merced, Stanislaus, Mono and Kings Counties. K6AXV has moved to Livermore and is with the Radiation Lab. W6JXY bought an Elmac AF67 and is going mobile. K6LKJ has a pair of 813s driven with the S-Line. W6QFR finally got his arm out of a sling (literally speaking) and is now fitting out his new boat with s.s.b. gear. W6ARE is trying to sell the high frequencies to the gang for a valley net instead of 75 meters. K6ROU got all the cards for WAS and is now going for DXCC. K6IOW moved into Fresno from the Bay Area and is on 40-meter c.w. K6OZL made WAS. W6FRH and W6PJF are assembling Apaches. W6NKZ is experimenting with mobile coils. W6BAN and K6BGK went deer-hunting and used some walkie-talkies for coordination but no luck. K6BKZ is building a new final for s.s.b. with more power. K6LKJ attended the S.S.B. Convention in Santa Barbara. W6KTW is building a new QTH near W6JPU. W6NCG has moved down to Bakersfield. The San Joaquin Valley Net held its first picnic at Bass Lake. W6MJS is the new net manager. W6ZFN is assistant of the southern section with K6MYQ on the northern section. The SJVN had 409 check in on 26 sessions with a 118 traffic count. I'd like to wish all of you a very Merry Christmas. Traffic: K6EJT 32. W6ARE 6. K6ROU 5.

ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: HUL. PAM: DRC. V.H.F. PAM: ACY. Well "Gracie" has come and gone, and the nets in the State were READY. The Tar Heel Net operated on 3865 kc. with an information net on 3855 kc. The s.s.b. net operated on 3895 kc. Army MARS, Air Force MARS and CAP were all alerted. We are very grateful

(Continued on page 168)

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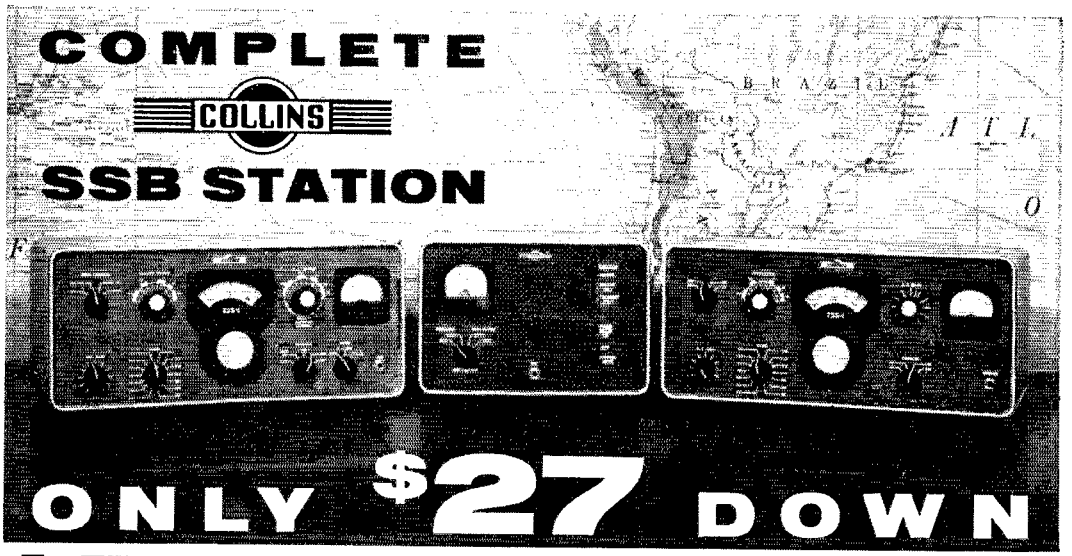

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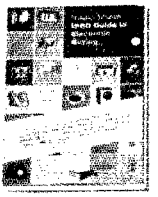

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that "Gracie" did very little damage in the State. Two-meter equipment was utilized to good advantage in all areas on a local basis. Generators were on a stand-by basis for possible dispatch to areas that might lose power. Mobile stations were in a "Ready Alert." Congratulations to all who were standing by "just in case." HUL reports an s.s.b. net is on 3895 kc. with 61 members. I believe it meets Mon.-Fri. at 7:00 P.M. This is a needed addition to our traffic system. The SCM attended two hamfests in September. The Shelby ARC put on a good meeting. There was lots of rain, but everyone enjoyed the meeting. The Asheville ARC put on a good show Sept. 27. Attendance was low but the boys did an excellent job. The MARS held a meeting at Asheville that was well attended by District One. Mr. Nelms, Deputy MARS Director, Third Army, was in attendance. These hamfests offer an excellent opportunity to discuss ham problems and should be supported by every *active ham*. Meet your friends and have a good "eye-ball QSO." Look for a report later giving the number participating in the "Gracie" Alert. Traffic: (Aug.) W4GXR 487.

SOUTH CAROLINA—SCM, Dr. J. O. Dunlap, W4GQV—SEC: K4PJE. RM: K4AVU. PAM: K4IIE. Those earning SCN certificates are BWZ, QCC and K4LNJ. K4MYR has been reendorsed as OBS after a superb job for the last year on 3930 kc. K4BVX, the editor of *Scarab*, is back on the air. Hurricane Gracie kept all nets in continuous operation for over 60 hours. FFH and DAW managed to stay on the air in the path of the storm in spite of many difficulties. The outstanding stations on the organized nets were AKC, DAW, QCC, PED, K4GAT, BLF, AVU, BVX, K4PJE, FEB, YCU, CIY, FGD, BMS, MYR, W4ITU, GIF, PMZ, K4AII, QMZ, MHK, W4HMG, FFH, TUN, TTH and HBY. A very active Charleston Area net on 3805 kc. handled "on the scene" emergencies with mobile and portable stations, and deserves great credit and recognition in the EC's report which the SCM is awaiting The gasoline explosion in Charleston created another emergency operation which needs reporting. K4PIA is the new net manager of SCN, succeeding GAT, who has made an enviable record. Further details of recent emergencies will be given as soon as all reports are in from the ECs. Traffic: (Sept.) K4WCZ 324, GAT 296, W4FFH 187, PED 149, AKC 108, K4AVU 94, W4QCC 77, K4PIA 48, IIE 28, W4VIW 22, K4LNJ 21. (Aug.) K4LNJ 21.

VIRGINIA—SCM, John Carl Morgan, W4KX—Congrats to the Richmond gang on another fine Division Convention. Hurricane Gracie found the Virginia nets standing by. SEC K4MJZ reports good participation in the Fairfax County AREC drill Sept. 11 & 12. Participation was reported by K4s QIX, SSA, UEI and YCG and W4RZJ and MIB. Several made BPL on drill traffic, all of which was taken by K4QIX on 6 meters for relay. QIX's XYL is now Tech. Class and has been on 6 meters. OOL and ATQ are teaching a Novice class of 22 at the SVARC club house. KXV is pres. of the PVARC and K4LPR of the TMRC. The Norfolk group holds regular transmitter hunts Sun., and TMRC members again assisted with the Elizabeth City, N. C., Boat Races Oct. 3-4. K4VWK reports, "Couldn't turn beam because of tree limb. Cut off limb, fell on beam, NO beam, tsk, tsk!" BGP found his doublet works better in "hurricane position" (half-down)! Ex-ØKRN, at Staunton, now has the call W4HEU. K4ASM moved to Harrisonburg and K4QLH to Rock Springs. Among those returning to college: CXQ, AAD, K4DWP, BND and MBL. JUJ reports adding the DUF Award to his growing wallpaper collection. RHA, tired of loafing since retirement, is learning a new trade. K4ELG, VN's old faithful, is working nights but is NCSing VEN (Va. Emerg. C.W. Net, 3665 Sun., 1800 EST). All are urged to QNI. 3YOR is new to Fredericksburg from Maryland. New EC appointments: DWM for Bland, K4JRE for Bedford and K4TUE for Giles. There still are several counties *without* ECs. Volunteers should write K4MJZ. Your SCM continues to receive requests requiring replies without the sender's mail address. Be sure to give your *full* name and complete address on ALL correspondence. Traffic: K4QIX 1017, QES 549, W4SHJ 159, K4SSA 127, ZKU 114, YCG 101, JRE 72, W4OOL 58, K4KNP 44, YPR 38, W4BGP 30, K4VWK 20, W4KX 15, RHA 15, AAD 12, K4ASM 11, IIP 11, HIA 7, W4KFC 7, ATQ 6, K4LPR 4, QLH 2, W4JUJ 1, DVT 1.

WEST VIRGINIA—SCM, Donald B. Morris, W8JM—SEC: HZA. PAM: GAD. RMs: GBF, HID, PBO and VYR. The WVN C.W. Net meets on 3570 kc.; the Phone Net on 3890 kc. It is indeed a pleasure to be your new SCM and I wish to thank you for your support. Your suggestions and comments will be appreciated. Officers of the Blennerhasset Radio Club are K8JLW, pres.; K8HYE, vice-pres.; IBF, secy.-treas.; KN8OIZ, act. mgr. K8AXU QSOed 1000 miles to Oklahoma on

(Continued on page 170)

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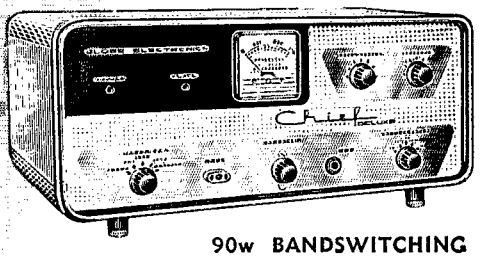

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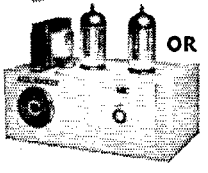

Permits radio-telephone operation at minimum cost. Self-contained. Printed circuit board, all parts and complete instructions.

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144 Mc. ESH has a new 2-meter receiver. K8BLR watches v.h.f. openings for new states. IBF installed 6-meter mobile plus rigs for 432 and 1296. ELX, a new ORS, is active on the C.W. Net. IXG, program chairman for the 2nd Annual West Va. Hamfest, operates on 3570 and 3890 kc. to contact committees. OIV, K8LUS and TVO are active in OO work. K8BRM renewed his ORS appointment. K8JLF's regular skeds resulted in making BPL. ETF has a new HQ-170. K8CNB, K8HID, BWK and HZA keep the W. Va. C.W. Net rolling. BOK, K8EAB, K8EEJ and JM attended the Roanoke Division Convention at Richmond. NCS received WACWV certificate No. 16. Contact VOI for reservations for the Clarksburg Radio Club Christmas Party. Traffic: K8JLF 518, HID 55, CNB 40, W8BWK 26, K8ELX 19, BRM 18, W8TVO 9, JM 6, GAD 5.

WEST VIRGINIA QSO PARTY

December 5-6

To aid amateurs in their pursuit of the Worked West Virginia and Worked All Counties in West Virginia awards (p. 63, September *QST*), the Kanawha Radio Club is sponsoring a QSO party to be held December 5 and 6.

Rules: 1) Stations outside W.Va. will work as many W.Va. amateurs as possible, using any band or mode. W. Va. to W. Va. contacts will not count for score. Outside stations will call "CQ WVA." West Virginia stations will sign "WVA" after their call. 2) Each contact will contain a QSO number, RS or RST report, and ARRL section or country. West Virginia stations will sign county. 3) Stations may be worked twice on each band, once by phone and once by c.w., and may be worked on as many bands as desired. 4) Score one point for a complete QSO exchange *per band*. Incomplete contacts do not count. 5) Time of contest 6 P.M. EST Dec. 5 to 11:59 P.M. EST Dec. 6. 6) Suggest frequencies: 3570, 3890, 7050, 7250, 14050, 14250, 21050, 21350, 28050, 28800, and 50760 kc. 7) Awards will be made to the highest aggregate score (phone and c.w.) and to the highest phone score submitted from each ARRL section and country. Awards will be made to the three highest aggregate scores and to the three highest phone scores submitted by West Va. stations. Stations wishing to be considered for separate phone award must submit separate logs. 8) Logs should be submitted to Contest Committee, Kanawha Radio Club, Box 129, Spring Hill Station, South Charleston, W.Va., postmarked no later than Dec. 31, 1959. 9) Decisions of the judges will be final.

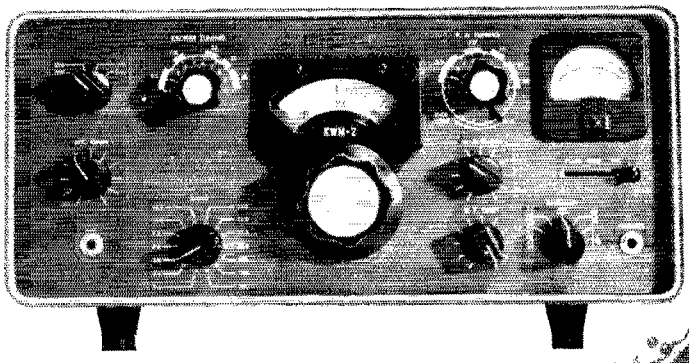
ROCKY MOUNTAIN DIVISION

COLORADO—SCM, Carl L. Smith, WØBWJ—SEC: NIT. RMs: KØEDK and WME. PAMs: CXW and IJR. OBSs: KQD and KØDCC. The OBS skeds of KQD are on 7225 kc. Mon., Wed. and Fri. at 1230; of DCC, on 3945 kc. Tue. and Sat. and on 3700 kc. Thurs. at 1930 MST. The new Colorado C.W. Net got off to a good start Sept. 14 and in 13 sessions handled 135 messages for an average of 10 per session. There is a need for coverage in the northeast and southeast portions of Colorado. Have you checked in to CCW yet? Everyone is welcome. V.H.F. news: In the Springs, ULZ and ALH bring the active 2-meter list to eleven stations, and in the Denver Area a new 2-meter net is now in operation daily at 1300 on 146.25 Mc. From the Pikes Peak RAA *Newsletter* CVG, HHR, BTS, IRO, REP and LZF operated mobiles and handie-talkies for the weekly pigeon races. YJO, OOI and BTS are fully operational on s.s.b. and GBS and LZF have new cubical quads in operation. New officers of the Denver Club are RQI, pres.; SIN, vice-pres.; ICR, secy.; KØDCW, treas. KØSLD has received a CP-25 endorsement. MNQ reports a new triband beam and many QSOs on all bands 80 through 2 meters, and CEN has a new Globe Scout and trap antenna in operation. ANA made BPL and EDH and EDK could qualify for multi-op. BPL and keep it in the family. Traffic: WØANA 429, KØEDH 377, EDK 304, WØWME 148, KQD 116, KØDCW 78, RTI 53, WØBWJ 48, KØDTK 32, RQF 19, TMM 18, WØCBI 13, KØSLD 11, LCZ 8, WØSIN 5, KØMNQ 1.

UTAH—SCM, Thomas H. Miller, W7QWH—Asst. SCM: John H. Sampson, 7OCX. SEC: FSC. PAM: BBN. V.H.F. PAM: SP. RM: JBV. K7BYR has received an OPS appointment. CTI has a new harmonic. HIX has

(Continued on page 178)

THE PERFECT GIFT FOR CHRISTMAS



Collins KWM-2 Mobile Transceiver

The man who takes the wrappings off this handsome station will be happy indeed. Here is a gift that keeps on giving.

The Collins KWM-2 features operation on all bands between 3.4 mc and 29.7 mc. 175 watt PEP input on SSB or 160 watts on CW. Frequency determining components assure exact coincidence of transmitted and received signals. Exceptional frequency stability, readability and advanced SSB generation are comparable to the KWM-1 and the famous Collins S/Line. The use of common components in both transmitting and receiving functions saves space and costs.

The KWM-2 weighs only 18 lbs. 3 oz., measures 7¾" H x 14¾" W x 13¼" D.

Net price, only $1095 (power supply and other accessories extra).

BEFORE YOU BUY OR TRADE

for that Collins KWM-2

SEE WARD W2FEU

time payments arranged at

LOW BANK RATES

Every month more amateurs see Ward before they buy or trade—there must be a reason!

Write, Wire or Call Ward, W2FEU at

ADIRONDACK RADIO SUPPLY

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moved to Kearns from Tooele. VEX is back in Salt Lake City. FSC has been encouraging operation on 160 meters and is finally getting some results. Stations heard nightly on 160 meters are FSC, WCF, NHY, HIX, JHI, ZSW, 1BO and K7BDX. The AREC now has 78 members and has four local nets. AREC and c.d. are working together and, contrary to popular belief, are quite compatible. QWH is portable from the home QTH with 10 watts on 80 through 10 meters. Improved band conditions have helped local nets a great deal. Traffic: W7OCX 175, K7BYR 57, W7QWH 11.

NEW MEXICO—SCM, Allan S. Hargett, K5DAA—SEC: CIN, PAM: ZU, V.H.F. PAM: FPB. RM: ZHN. The NMEPN meets Sun. at 0730 on 3838 kc., Tue. and Thurs. at 1800 MST on 3838 kc. The Breakfast Club meets Mon. through Sat. at 0700 MST on 3838 kc. The TWN meets Mon. through Sat. on 3570 kc. at 1900 MST. The NMBP meets Mon., Wed. and Fri. on 3570 kc. at 2000 MST. The AREC Net meets Tue. through Sat. at 2000 MST on 3838 kc. The EC Net meets Sun. at 1900 MST on 3980 kc. Meet as many of these nets as you can. We are very sorry to lose K5VLH as EC, as he is moving to Oklahoma. We are very sorry to add AK to the Silent Keys ranks. He will be greatly missed by the hams of New Mexico. New calls in Portales are K5VVS, K5BYG and K5WRH. The Caravan Club was very busy over the Labor Day week end working with the State Police road patrol and traffic spotting using 18 mobiles in 266 hours and 7 operators on fixed stations in 130 hours. Because of pressing business of the new drug store FHL, Santa Fe, had to retire as EC after many years of faithful service. Thanks, Ruric. Traffic: (Sept.) K5WSP 1559. W5ZHN 430, DWB 269, 7AVN/5 202, K5LFE 87, DAA 63, GOJ 50, WØOME/5 45, K5DAB 9, W5BZB 9, ZU 7, VC 6, HJ 5, K5CXN 4, RXN 1, UNK 1. (July) K5WSP 1122.

WYOMING—SCM, Lial D. Branson, W7AMU—SEC: CQL. The Pony Express Net meets Sun. at 0830 MST on 3920 kc. The Wyoming Jackalope Net meets Mon. through Fri. at 1200 MST on 7255 kc. for traffic. The YO Net is a c.w. net on Mon., Wed. and Fri. at 1830 MST on 3610 kc. The Wyoming SEC has appointed HKD as EC for Laramie County with two assistants; also CQP as EC for Carbon County. BFL has been transferred as EC from Johnson County to Sheridan County. An emergency AREC drill was held Oct. 10. BHH was in Spokane recently. DTD moved from Worland to Casper. IDO was in the hospital a short time and we are glad she is home and feeling fine again. Traffic: W7GDW 5, BHH 4, YWW 3, 1EC 2, K7AIY 1, W7AMU 1.

SOUTHEASTERN DIVISION

ALABAMA—SCM, Clarke A. Simms, jr., W4HKK,—SEC: WJX. PAMs: K4BTO and PHH. RM: RLG. Congratulations to K4BTO, elected as the outstanding NCS for the last quarter. Also congratulaions to ZKU, K4BVD and K4EJI on qualifying for AENB certificates. Welcome to K4MIH, a new addition to AENB. ZKU, K4BVD and K4EJI have really earned their net certificates by continuing excellent participation. CIN is net mgr. and Wed. night NCS of AENO. HKK has gone mobile with Elmac units. It sure will come in handy as this will be the only equipment on hand until we have moved to the new home in Pensacola, Fla. I want to thank all the operators in Alabama for making my term as SCM such an enjoyable experience. Sorry to leave Alabama but will be back for the hamfests next year. Please continue to give your new SCM the same excellent cooperation I have had for the past two years and the Alabama section will be the best in ARRL. 73 from Clarke, Lorraine and Mike. Traffic: W4RLG 185, K4PFM 131, JDA 55. W4PVG 54, K4YGS 37, PHH 34, W4MI 22, K4AOZ 21, W4CIU 19, K4RIL 13, W4WHW 6, K4BWR 5, HFX 2, HVN 2.

EASTERN FLORIDA—SCM, John F. Porter, W4KGJ—SEC: IYT. RM: K4SJH. PAMs: TAS and RMU (v.h.f.). Do you check into one of our Section nets? We have six at the present, three phone, two c.w. and one emergency. Find one to suit you and give it your support. New officers of the Fort Myers ARC are PJG, pres.; K4OBD, vice-pres.; SMK, secy.-treas. The club now puts out its own paper, *The ARC*. PJG and KET made DXCC. K4UHF has a new HQ-170 and SMK has a new GPR-90 and a GSB-1. The Missile ARS elected K4PMJ, pres.; ID, exec. vice-pres.; CHR, vice-pres.; and KN4GRF, secy.-treas. The Missile Net meets every Sat. on 7220 kc. at 0900. A new club in Gainesville is the Sperry Amateur Radio Association. The Hollywood ARC meets the 3rd Fri. of each month at the Hollywood Federal Savings and Loan Bldg. K4ODS is the new net mgr. of TPTN. GJI is net secy. GWF and CIL monitor c.d. frequencies 50.55 and 50.37 Mc. in Palm Beach County while at work during the week. New officers of the Orlando ARC are TVR, pres.;

(Continued on page 174)

You're "On the Move" ... with the { MOBILE PORTABLE DIPOLE }

hy-gain Trap Traveller

for 10, 15 & 20 Meters

★ Automatic 10, 15 & 20M operation with ENTIRE WHIP OPERATIVE all bands for MAXIMUM EFFICIENCY.

★ Unique 3-band circuits select proper amount of inductance for high efficiency CENTER LOADED whip operation on 15 & 20M. Loading coil automatically shorted out for full sized ¼ wave operation on 10 meters.

★ Coil is Hi-Q air wound of No. 14 copper wire on ribbed high impact styron form. Entire assembly enclosed in weatherproof, air tight plastic cover. Air foil design, 1½" wide and 4½" high. Handles up to 300 watts P.E.P.

★ May be used with any standard 3' base section and 5' whip, or Hy-Gain's telescoping base and whip assembly. Telescopes down to 29" for easy garaging. No base spring necessary. Especially designed high pressure knurled knobs maintain perfect contact in telescoping sections when whip is fully extended.

★ For 52 ohm Coax, SWR less than 2:1 on all bands.

8' 4½" Extended For Maximum Efficiency

Telescopes Down to 29" for Easy Garaging

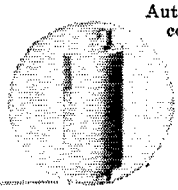
Telescoping Base Section

Hy-Gain telescoping base section and top whip assembly, Model TBW; fits all standard mobile mounts. 5' top whip, when used with Trap Traveller coil telescopes from 8' 4½" down to 3'. Positive grip, knurled knob connections.

$15.00

Automatic Loading Coil

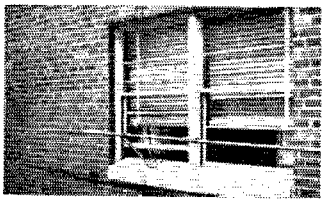
NO. T-3



Automatic 3 band loading coil Model No. T-3. For any standard 3' base and 5' whip or with Hy-Gain telescoping base section and top whip assembly. Air foil design; 1⅛" wide by 4½" high.

$14.95

Portable Micro-Dipole Kit



Trap Traveller Dipole Kit requires two 3-band loading coils and makes into midget high efficiency dipole for 10, 15 & 20M. Mounts anywhere; matches 52 ohm coax; low SWR, all three bands. 16 ft. overall when extended. Sections collapse to 3 ft. for easy carrying. Complete with all hardware (less the two loading coils). Wt.: Only 3½ lbs. Model TDK: $9.95. Complete Dipole with loading coils: $39.85.

UNIVERSAL MOUNTING BRACKET

Adjustable screw driven clamp mechanism with 2' mast for mounting the Trap Traveller Dipole almost anywhere. Adjustable through a 90 degree arc from vertical to horizontal. Wt.: Only 2½ lbs. Model UB: $9.75.

CONVENIENT PLASTIC CARRY BAG

Attractive and convenient plastic carrying bag with full-length zipper holds Dipole when collapsed. Plenty of space for Trap Traveller coils and Mounting Bracket in addition. Model TCC: $8.95.

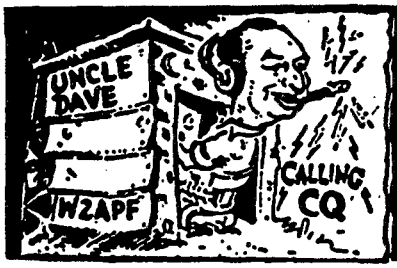
NGR, 1st vice-pres.; K4LXX, 2nd vice-pres.; K4GHL, secy.; and K4HXP, treas. Winner of the *FLORIDA SKIP* QSO Contest trophy was K4DRO. Runner-up was BIL. Have you heard about the Tropical Hamboree to be held in Miami Jan. 30-31? Watch *SKIP* for more details. The Florida V.H.F. Picnic was another big success with v.h.f.ers from all over Florida attending. The State c.d. communications bus was on display. If you are interested in v.h.f. how about contacting RMU, our V.H.F. PAM, to find out how you may fit into our v.h.f. statewide net. Traffic: (Sept.) K4AHA 847, SJH 809, LCF 160, ILB 146, KDN 125, RNS 121, W4GJI 102, LMT 78, K4ODS 70, LCD 66, W4DVR 64, 1YT 62, BIL 50, NGR 45, K4BY 41, W4KGJ 31, FJE 28, K4EHY 22, FMA 22, KN4ISR 22, K4COO 19, MTP 18, SZC 15, EFZ 14, TDT 13, MBB 11, W4TAS 10, K4JJZ 6, AHW 2, KN4GLI 2, (Aug.) K4ODS 55.

WESTERN FLORIDA—SCM, Frank M. Butler, jr., W4RKH—SEC: PQW. RMs: AXP and BVE. Pensacola: Virgil Wood, Grice's ham dept. manager, is now K4MWC. His new assistant is HKK, former SCM of Alabama. Clark replaces K4PIY, who has moved to California. The NAS Club voted to hold only one business meeting a month. Other club nights will be devoted to technical study, code practice and operating. New officers of the V.H.F. Club are K4IYQ, pres.; GSY, vice-pres.; K4LAN, secy.; K4QAC, treas. A new YL is KN4OIQ. K4HYL has traded the HQ-110 for a 75A-3. K4IVD is mobile on 6 meters with a Gonset and a halo. PAA and RSD are increasing their DX totals. Ft. Walton/Eglin AFB: ARRL Southeastern Division Director ZD was guest speaker at a meeting of the Eglin ARS. K4UBR is the new net mgr. of NWFN. Net sessions will be extended to one hour during the winter to handle increased traffic. The W. Fla. Phone Net still meets on 3840 kc. daily at 1700 CST. Defuniak Springs: 4JOZ is teaching code and theory in the high school. Tallahassee: UEU has organized civil defense nets on 75 and 2 meters and is holding regular drills. Perry: KQP, EC for Taylor County, is looking for more AREC members. PBO, Madison Co. EC, is planning monthly c.d. drills, assisted by RDQ and RCO. Traffic: (Sept.) K4UBR 411, W4GAA 3. (Aug.) K4UBR 72.

GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: PMJ. PAMs: LXE and ACH. RM: DDY. GCEN meets on 3995 kc. at 1830 EST Tue. and Thurs., at 0800 on Sun.; GSN, Mon. through Sun. at 1900 EST on 3595 kc. with DDY as NC; 75 Meter Mobile Phone Net, each Sun. at 1330 EST on 3995 kc. with K4JTC as NC; GTAN, Sat. at 1000 EST on 7290 kc.; Atl. Ten-Meter Phone Net, each Sun. at 2200 EST on 29.6 Mc. with KWC as NC; GPYL Net, Thurs. on 7260 kc. at 0900 EST with K4DNL as NC; GAN, on 7105 kc. at 1800 EST Mon. through Fri. with K4KZP as net mgr. When "Gracie" hit the Charleston, S. C., coast with all her disaster the amateurs of the Augusta, Ga., Radio Club were ready to offer their assistance. With K4AUM, president of the Augusta Club, PMJ, Georgia's SEC, AAY, K4JEN, K4KAR, K4ORV, THH and QDM, they operated and maintained the c.d. communication van of Richmond County, which they took over to Charleston, S.C. Savannah EC KGP did an excellent job in getting his boys lined up in emergency communication. AREC members, c.d. and RACES members did an excellent job in participating in "Gracie." K4DNH did an excellent job in reporting to and working with the American Red Cross. YEK kept c.d. headquarters posted on their needs. Many hams contributed by keeping off the net frequencies. K4VHC has had rig trouble. The call of radio club at Russell High School is CZG. Officers are: K4HBI, pres.; KN4LSW, vice-pres.; George Chambers, secy.; Jerry Davis, treas. The name of the club is the Wildcat Radio Club. K4TYU and KN4HTX also are officers. K4HBI's ten-year-old brother, Mason, is now K4VGQ, General Class. KN4AEK is now a Technician. CXZ paid IMQ a nice visit from Black Mountain, N. C. LNG is back from four and one-half months work in Florida. Traffic: W4DDY 173, K4EJI 154, BVD 102, VTH 99, BAI 87, MIH 85, LVE 65, W4ZKU 64, K4PHA 25, VHC 10, VCM 8, HBI 7, W4FTB 4, BXV 2, K4UWJ 2.

WEST INDIES—SCM, William Werner, KP4DJ—SEC: AAA. AJN joined the AREC and has a 2.5-kw. emergency power plant. ALY built a 70-ft. welded crank-up tower. ADR is moving to Urb. San Geraldo. AMG is QRL microwave tests in Caracas for I.T.&T. MO added a DSB10 to the Apache. RC is on 21-Mc. s.s.b. ATM has a new Telrex Tribander while AOO has a new TA33 Jr. KD has cards in for DXCC 246 and is awaiting cards from UI8, UJ8, YA1, EA9, Ifni and LA1/P Jan Maven for his DXCC 250 sticker. KD won first prize at the Ramey AFB MARS-Fest in the QLF contest. DJ won first prize for the fastest sending. Each received a 4-400A tube. The Ramey ARC, with ATC, pres.; and ALO, secy.; sponsored the very suc-

(Continued on page 176)



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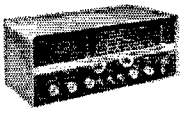
DAVE SEZ: With fall here and winter not far behind, a new season for DX and rag-chewing will open up. Start the season right with the newest in ham gear—We've got it all.

NEW!

S-107

Covers 540 Kc-54.5 Mc. in 5 bands. Two stages IF, Separate sensitivity and volume controls, electrical bandspread for 48-54.5 Mc. band, noise limiter, rec/standby, BFO, 2 posit. tone control, built in speaker, phone jack.

$89.95



NEW!

S-108

Covers 540Kc-30Mc., Logging scale for 10-80 meter, separate RF and AF gain controls, noise limiter, AVC control, BFO, pitch control, rec/standby, self contained speaker.

$129.50

NEW!

SX-110

Covers 540Kc-30Mc., Plenty bandspread for 10-80 meters, crystal phasing, S-meter, BFO, noise limiter, tone control, antenna trimmer, pitch control, phone jack and rec/standby switch.

less speaker **$169.50**

NEW!

COLLINS KWM-2 TRANSCEIVER

The latest from Collins — a transceiver that is the most modern concept of style, mobility and versatility —in SSB. At home in a car, boat, plane or at a fixed station. Freq. range, 3.4Mc to 29.7Mc. Emission: upper, lower sideband, CW-Keyed tone. RF Power input: 175 watts SSB PEP or 160 watts CW Power output: 100 watts PEP into 50 ohm load. Size: 6½" H, 14¾" W, 13" D. Weight: 16 lbs.

Less Power Supply **$1095.00**

FINE USED EQUIPMENT

B&W 51SB	$185.00
B&W 5100B	375.00
Central Electronics 20A	225.00
Central Electronics 10B	129.95
Central Electronics A slicer	49.50
Collins 32V3	495.00
Globe 755A	49.95
Globe 90A	54.95
Globe 680	94.50
Gonset Superceiver	49.95
Gonset Tri-Band	34.50
Hallicrafters SX99	125.00
Hallicrafters SX100	225.00
Hallicrafters HT33	565.00
Hallicrafters S38D	32.50
Hammarlund HQ100	195.00
Hammarlund HQ150	249.50
Hammarlund HQ129X	125.00
Heath DX20	32.50
Heath DX40	59.50
Heath VF-L VFO	19.50
Johnson KW W/desk	1295.00
Johnson 500	749.50
Johnson Valiant	350.00
Johnson Viking II	225.00
Johnson Ranger	195.00
Johnson Pacemaker	375.00
Lakeshore Bandhopper	114.50
Millen VFO	75.00
Multi-Elmac A54-H	99.00
Multi-Elmac A54	75.00
National HR060	495.00
National NC188 Demo	144.50
National NC300	275.00
National NC183	99.50
Palco 65, W/Pw Sup.	125.00

NEW!

GLOBE CHIEF DELUXE

Modern styling, band switching—10-80 meters self contained 90w transmitter for CW, 75w meter indication for novice use, selectable keying, no modification needed for Globe VFO or modulator, built-in power supply. Rotary switches used throughout. Kit contains pre-punched chasis, all parts and tubes, easy to follow instruction manual.

W/T **$79.95**
Kit **59.95**

GARRARD CHANGER
Model RC-121/MK II **$42.50**

PICKERING 371
with stereo cartridge and diamond stylus **$29.85**

$72.35

SALE PRICE $42.50

Bases $3.95 and Up

NEW!

GLOBE CHAMPION
Model 350

Band switching, 160-10 meters, 350w CW, 275w AM, 400w SSB (P.E.P.), w/ external exciter, VFO, push to talk, antenna changeover relay, final tubes blower cooled — Pi network output, high level class B modulation, new audio compression circuit, maximum TVI suppression.

Wired only **$495.00**

Write Uncledave W2APF with your needs and problems.

We also have a full line of Citizens Band Equipment. Write for information on latest models, antennas and prices.

WE SPECIALIZE IN FOREIGN TRADE

TIME PAYMENTS
18 Months to pay, life insurance at no extra cost

24 HR. SERVICE on stock items

cessful MARS-Fest on Sept. 27 with about 300 in attendance. AAN won a kw. emergency power plant. DJ won an all-expense-paid week end at the Montemar Hotel near Ramey AFB. The PRARC plans its Annual pre-Christmas Holiday Party for Nov. 29 on the country estate of ex-4JE. The club will issue a separate WPR certificate award for 50 Mc. 50-Mc. Net members are all getting crystals for 50.9 Mc. ABN plans 2-meter tests with LU stations. The Antilles Weather Net is on 7245 kc. at 7 A.M. and 5 P.M. daily. the P.R. Amateur Emergency Net on 3925 kc. at 7 P.M. Wed. W3PWH/KP4 is now KP4AST in Hato Rey. K9PJH/KP4, a new arrival in KP4-Land, is on 21 Mc. with an Apache and an HQ-150. WT recibio un Diploma de la Academia Hispano Americana de Costa Rica como Humanista y "Abuela de los KP4." AIS and AMJ joined the AREC. The 50-Mc. gang is working LUs 3EX and 2CFD, PY3ADT, CX3AJ, CX7CO and HC1JW. Official Observer AMU advises that he has noted several violations since his recent appointment. Traffic: KP4WT 108, AMU 15.

CANAL ZONE—SCM, Ralph E. Harvey, KZ5RV—Of general interest to all the Canal Zone hams are the new frequency allocations. KZ5s are now permitted operation 50 kc. below the limits of the American phone band on 20, 15 and 10 meters effective Oct. 1. We hope that all amateurs will check carefully before they zero-beat a KZ5 station when they are operating close to the band-edge limits. The Atlantic-Side Radio Club has seven new hams as a result of its last class. A new class is starting soon. There are several new YL and XYL hams in the Canal Zone, among them KK, OA and WWN. WWN's family also is interested in amateur radio. Both the OMs in the family have Novice tickets. HG and KQ are back from Stateside vacations. BX, WF and OG have returned to the States for reassignment. UR now is in the States for a well-earned vacation. LC is building a linear with a pair of 4-400As. RV is busy assembling a Viking Valiant Kit. RM is in the market for a new transmitter. His present one has been sold and is on the way to Boquoto, where it soon will be heard under an HP3 call at an elevation of about 4000 feet. Traffic: KZ5AD 95, OB 61, SW 54, KQ 50, BL 45, US 35, VF 27, RR 26, VR 24, KA 21, CC 13, LC 10 RM 10, DH 6, JN 6, BS 2, RU 2.

SOUTHWESTERN DIVISION

LOS ANGELES—SCM, Albert F. Hill, jr., W6JQB—SEC: W6LIP. RMs: W6BHG and K6HLR. PAMs: W6BUK and W6ORS. The following stations earned BPL: K6MICA, W6GYH, K6HLR, W6WPF, K6OZJ, K6TJG and WA6EEO. Congrats, fellows! W6NKR and K6TPL report some fine DX to Asia and Europe on 40 meters. K6MCA has new 72-ft. towers with beams on 40, 20 and 10 meters. W6GYH made a fine trip to Fresno and Bass Lake country. K6GLS is working hard on the yard at the new home. K6MSG worked the summer in Kings Canyon Park! WA6AYF is sporting a new Globe Champion and received an OTC certificate! W6WPF has a TCC sked as Station "J." W6CK is travelling around the East. WV6FXJ passed the General Class exam. K6TJG has a new Mini-Tribander up. K6VGH has the new Gonset mobile installation going. WA6DWP earned a net certificate on SCN. Congrats, John! WA6EEO is working on new 6-meter RTTY gear. W6BHG had a nice trip up to the Bay Area. W6UFJ has a new DX-40 and worked ZS6! W6IBD is getting set for DX on 80 and 40 meters. K6PLW put a new 4-250A final on the air. K6SVG built an electronic key and it works FB. K6JSD, K6TJG, K6TPL, K6PLW, K6COP, K6OJV and K6RIR are all back hitting the books at school! W6FB had a fine QSO with W6EA after 30 years! W6SYQ was QRL handling traffic. The Associated Radio Amateurs of Long Beach is planning a big Hobby Show for next March. Support your section nets: phone, the SoCal 6 Net on 50.4 Mc. at 1900 PST daily; c.w., the Southern California Net on 3600 kc. at 1900 PST daily. Traffic: (Sept.) K6MCA 2006, W6GYH 1140, K6HLR 816, W6WPF 764, K6OZJ 501, WA6EEO 225, K6JSD 164, W6SYQ 158, K6TJG 157, W6BHG 111, K6PZM 94, K6TPL 40, W6USY 33, W6CK 32, K6EA 22, W6BUK 14, WA6AYF 12, K6VGH 10, WA6DWP 5, K6PLW 4, W6UFJ 4, W6NKR 3, W6AM 2, WA6AWD 2. (Aug.) K6OJV 382, K6YRM 234, K6LJY 211.

ARIZONA—SCM, Cameron A. Allen, W7OIF—PAM Copper State Net, 3880 kc.: FMZ. There was a large turnout at the Ft. Huachuca Hamfest over the Labor Day week end. Many call areas were represented. The Catalina Radio Club of Tucson is doing a fine job with its emergency net on 29,600 kc., 29,627 kc. and 145.800 Mc. The club's monthly paper, *Zero Beat*, with BVA as editor, does a fine job of keeping members posted on

(Continued on page 178)

what goes on. The Arizona Amateur Radio Club in Phoenix meets the 1st and 3rd Thurs. of each month. New officers are K7AWI, pres.; YWF, vice-pres.; UDI, treas.; UXZ, corr. secy.; FMZ, secy.; KOY, membership; OIF, program. MAE, CAF, FMZ and K7BGG take traffic from the 12th Reg. Net. The big annual Christmas Party of the AARC will be held in Phoenix on Sat. night, Dec. 19. All who can make Phoenix on that Sat. night are invited to come. Traffic: W7OIF 10, CAF 5

SAN DIEGO—SCM, Don Stansifer, W6LRU—The Newport Amateur Radio Society, which meets the 2nd and 4th Fri. of each month at the Parks and Recreation Building, elected the following officers: W6DGM, pres.; K6CQS, vice-pres.; K6RCK, secy.; and W6SRA, treas. The publicity chairman is W6WPN (ex-W2DIB), who was Assistant Director in the Hudson Division. K6ZRD, in Escondido, now has a four-element 10-meter beam. W6CAE, prexy for the San Diego DX Club, has moved about a mile to another good spot on top of Pt. Loma. K6BPI gave the San Diego DX Club a big assist when he sent nearly 100 messages to hams with over 50 cards on file in the W/K6 QSL Bureau, which sent out over 80 pounds of cards during the first month the San Diego DX Club operated the bureau. This is over 12,000 cards. W6ELQ, long-time traffic man, now has competition at home. His XYL signs WA6ABT and checks into the SCN, where she earned a net certificate. K6BX continues to knock off DX from the South Bay Area, and do outstanding work as an OO. W6DLN, in El Centro, is very active working DX, as is W6LDJ in Orange County. W6BZE moved from San Diego to Mt. the ECs in the area and triggered by W6KSI, an excel-Helix. K6KGS moved to Omaha, Nebr. The SET for 1959 was a success. Organized by W6LYF, SEC, and lent job was done. Thanks to those participating. W6GBG flew to Turkey and brought back a bride. Merry Christmas to all and the best in 1960. Traffic: W6IAB 1873, K6BPI 1343, W6EOT 1211, W6ELQ 148, W7YKN/6 36, K6ZRD 31, WA6ATB 6.

SANTA BARBARA—SCM, Robert A. Hemke, K6CVR—The Ventura County ARC elected officers. Motion was made and seconded that all of the present officers be retained for another term. The Fishy Hamfest held at Atascadero Lake was almost rained out but here are those who were brave enough to chance it: K6RWP, TIB, CVR, SGI, RZM, SWR, JGY, JHA, TVR, DGI, GNM, RFK, IUX, RBH, IES, LAF, SBP, HAT, GRR, HDN, W6MSW, MSG, CRZ, SSL, LJP, FSA, WIU, PET, RQU, NXT, PDD, NXW, OPP, WA6BLM, AAX, EOQ, CMD, BGL and KØVFM/K6. K6EVQ has completed a triband quad for 10-15-20 meters. W6KCD has another harmonic, a boy. Congrats, Bob. Congrats to Cpl. Raines at Point Mugu on getting his General Class ticket with the call WA6IAV. WA6BLM has a new receiver, an SX-101 Mark III-A. The Poinsetta Club's frequency is 3885 kc. Traffic: WA6BLM 441, W6FYW 2.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, L. L. Harbin, W5BNG—Asst. SCM: E. C. Pool, 5NFO. SEC: K5AEX. PAM: BOO. RM: K5ETX. The Terry County ARC has been busy getting its portable power units in first-class shape and becoming familiar with the operation of these units. K5GEC, RACES officer in Brownfield, wants all amateurs to be familiar with the operation of these units. The General Telephone ARC and the San Angelo ARC went into emergency operation Oct. 3 to assist with communications for the Red Cross, Salvation Army, State and local Police in the evacuation of many families out of the flooded areas of San Angelo, Merton and Knickerbocker. The City Council of Richardson amended its City Ordinance and it is now legal to have a radio or TV antenna up to 99 feet in height. K5MBB has a 5-kw. emergency generator ready to go. New officers of the Central Texas ARC are IL, pres.; K5MWA, vice-pres.; K5TLT, secy.; K5TLP, treas. K5TMQ has a new HT-32. K5YHA is a new ham in Amarillo. K5IPG made BPL. Congratulations, Joan. K5NAO/5 operated a station at the Texas-Oklahoma Fair held at Iowa Park, Texas. This station was operated by GNE, ISI, K5DCB, UUS and RDE. New officers of the Mineral Wells ARC are K5QOV, pres.; GHU, vice-pres.; EBB, secy. Traffic: K5IPG 509, LZA 346, W5UTW 339, BKH 280, SMK 240, K5NAO/5 117, W5GY 102, BOO 65, K5LBB 50, ACD 22, W5LR 17, VEZ 10, CF 8, OCV 4.

OKLAHOMA—SCM, Adrian V. Rea, W5DRZ—SEC: UYQ. RMs: VVQ and JXM. PAMs: K5DLP, VCJ and EJK. Your SCM visited the Northeastern Radio Amateurs at Vinita Sept. 24. K5HIV is president and K5BPV program chairman of the NORA. Also present

(Continued on page 180)

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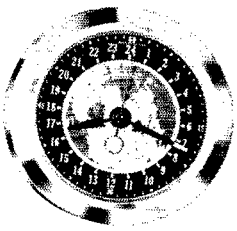

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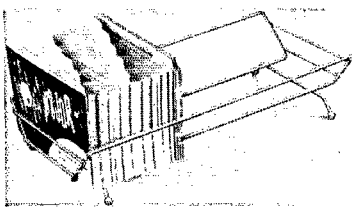

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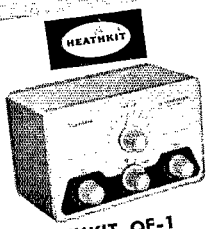

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were amateurs from Miami, Chelsea and Pryor. K5DJA and ECR saw that we had a bed and something to eat. On Sept. 25 we met with K5PHR, OVR, IER, JJR and NDE in the home of 5KY. These fellows are all leaders in their respective clubs. KN5TUH was the winner of the recent Novice Contest sponsored by the Electron Benders of Tulsa. Runners-up in the contest were KN5SLF, KN5TXK and KN5TTN. New officers of the North Fork Club are ZDI, pres.; K5LDN, vice-pres.; ZZP, secy. The Oklahoma Central 6-Meter group is an active bunch. The next project will be the "Ham Bazaar" at Oklahoma City. Amateurs furnished communication for the Oklahoma City Weather Bureau for a 14-hour period after rainstorms had put teletype and telephone out of commission. HHG, AZO, VAX, KBZ and many out-of-town amateurs participated. K5PGC has a new Valiant. KN5YFE is a new Novice at Bartlesville. K5CAY would like to see more 20-meter traffic men. Oklahoma's "Ham of the Month" is UYQ. Ray is doing an outstanding job in getting AREC organized. Traffic: W5EJK 149, DRZ 121, VVQ 120, K5JGZ 96, CAY 75, DLP 40, ELG 35, W5MFX 25, MGK 25, FEC 21, K5CBA 20, W5KY 20, CCK 17, K5JOA 12, QEF 12, W5WAF 12, PNG 11, K5CVU 9, W5SWJ 8, VLW 7, K5EZM 4, INC 2, LUR 2.

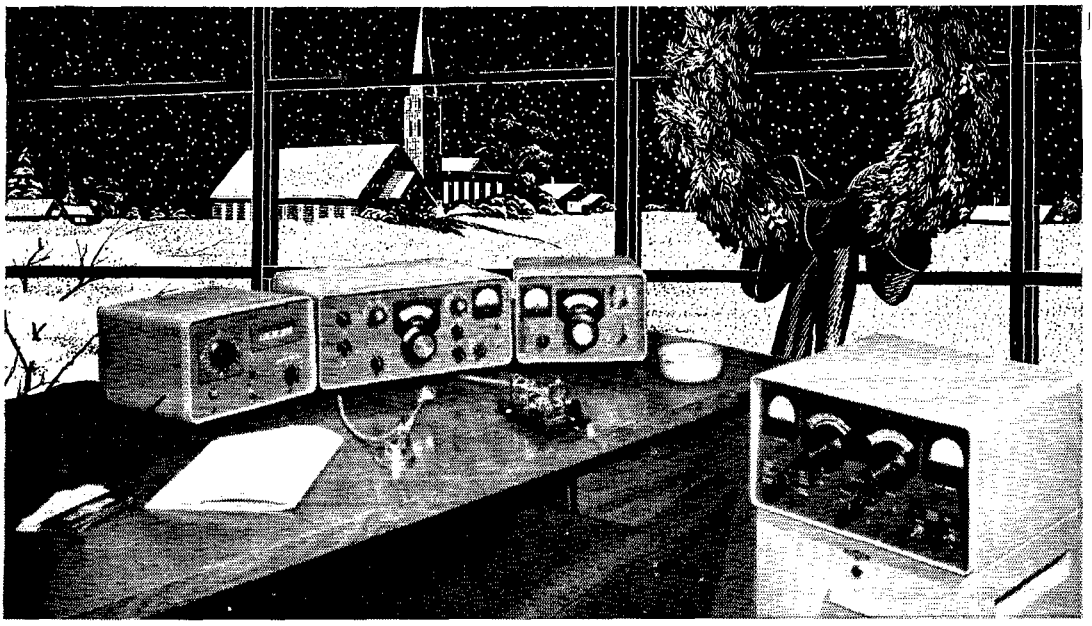
SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF, RM: K5BSZ. ØEIG and KN5VIC are two new members of the El Paso Amateur Radio Club. K5TLO has dropped the "N" from his call. I understand that K5RYS is doing an FB job as Net Control out in West Texas. Keep up the good work, Virgil. Congratulations to Jack Stuart, who has just been reissued his old call, SG. We are sorry to lose 8LIM and 8ABS from Southern Texas. They have gone back to Yankee-Land. ETA, QKF and QEM attended a meeting with the SCMs and SECs of Northern Texas, Oklahoma and Southern Texas, with the director of OCDM at Denton. K5OPQ has his new General Class license. Congratulations to K5BJU, CWL, K5MXO and K5MIZ on the excellent job they did with many who assisted after the "Mad Man Bombing of Poe Elementary School in Houston." The Gaylarks are studying First Aid with K5MXO as instructor. SGA/4 and family visited in El Paso. The Novice Class has been completed by the El Paso Amateur Radio Club with all members passing. The next class will be held to help them get their General Class licenses. K5EJU is gone—s.s.b., that is. K5HUI is attending school in Las Cruces, N. M. We are very sorry to lose ZIN as PAM. Hubert has done an excellent job and will be hard to replace. Traffic: W5ZIN 85, K5BJU 78, W5BHO 52, K5MXO 38.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCMs: A. D. Solomon, VE1OC, and H. C. Hillyard, VO1CZ. SEC: BL. New appointments include CB as EC for Sunbury and Kings Co., N.B. Newly-elected officers of the NSARA are GA, pres.; FR, 1st vice-pres.; XK, 2nd vice-pres.; ADM, secy.-treas.; VN, registrar. Successful 2-meter communications have been established between Middleton, N. S., and St Stephen, N. B. Contact was first made between CL and MA. Deepest sympathy is extended to relatives and friends of VO1DZ, who passed away recently. Members of SONRA, as part of their S.E.T. exercises, provided communications and transportation for the fund-raising campaign of the CNIB. Those assisting included VO1s AO, BI, BU, CZ, DE, EX and FD, also KØIHB/VO1 and K9THQ/VO1. The HARC operated a demonstration station at the Lord Nelson Hotel, Halifax, during the recent Maritime Boy Scout Convention and FO/1 also was active during the Boy Scout Jamboree-on-the-Air. OM reports that the Maritime Keyers Net is back in operation. It meets daily at 2000 AST on 3580 kc. ADH reports making 345 contacts in the W/VE Contest. Traffic: VE1ADH 9.

ONTARIO—SCM, Richard W. Roberts, VE3NG—Many appointments are available to members of the League. If you wish a list of those available, drop me a QSL card for same. The SEC, KM, reports that the S.E.T. was a big success. Four hams participated in the October S.E.T. at Meaford: SCM NG, AJA, DVG and DZA. Maritime-mobile, mobile, portable and fixed stations were in excellent working order. I would like to hear from more of the maritime-mobile stations in the Province. TX, DZA, NG and AMN have reported in so far. DUU is on 2 meters, DTO was a visitor to Atlantic City. EII has a second jr. operator. Congrats, Millie and Jim. DPO is trying to keep his local net together. Keep up the good work, Reg. DVM is at Bowmanville. DUY is a new OPS. AVS was in the hospital. The AREC in Ontario is on the rise. More and more are joining the ARRL. The Hamilton ARC is in

(Continued on page 182)



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with the local Red Cross. The 1960 Convention may be held in Ottawa. K1AYA was a visitor to Sarnia. TX is back on 75 meters. The Scarboro ARC still holds its hidden transmitter hunts on Sundays. It looks like Nortown ARC (Toronto) may again have won the Field Day Trophy. Runners-up will receive their SCM-sponsored certificates. Traffic: VE3BUR 124, KM 124, NG 105, DPO 73, DCX 58, AUU 47, CFR 31, DZA 27, EAM 14, DLC 7, ELC 6, AVS 3, DH 2, VD 2.

QUEBEC—SCM, C. W. Skarstedt, VE2DR—TQ, now located on Magdalen Islands, runs 75 watts to a home-brew 6146. IY also is there. The South Shore Club deserves a bouquet for an exceptionally well edited *Skywave!* The editor, KG, is moving to St. Rose. Many VE2s dusted off the bugs and dragged the ol' fists out of the mothballs and enjoyed the VE/W Contest. LO returned from Newfoundland after five months and now is off to Vancouver. GE also visited the West Coast. YA is back from G-Land. ABE enjoyed his holiday in FP8; operator FP8BG and 8JC and made 1901 QSOs. IC entertained ham friends at his summer camp near Perth. CJO's code classes have started and are held at 7400 St. Lawrence Blvd. at 2 P.M. sharp Sat. AGN still is building the 2/4-125 final. AJP moved to Quebec City. ANR was married. The Lake Shore Club now meets at Green Hornet, Valois, the first Tue. of each month. Many new VE2 calls have been issued. Newcomers are invited to send news to the SCM. New local clubs: VE2VC, "D" Co., 4th Squad., Royal 22nd Regiment ARC.; VE2RW, R.E.T.S. ARC; VE2BAW, Sir George Williams College. AVC, at St. Hubert, is ex-DL4SY, VE3DDU, VE4KR and VE8KJ. AUH, with visitor VK3AMH, keeps weekly skeds with VK3HW. WT keeps rolling traffic-wise. 2-meter activity is perking up. DS, ASZ, ZG, VE, TI, AIM, HO and OX are on the varied equipment. Traffic: (Sept.) VE2WT 712, DR 56, EC 15. (Aug.) VE2EC 7.

ALBERTA—SCM, Gordon W. Hollingshead, VE6VM —Nominations as SCM for the Alberta section are being solicited. Now is the time to consider the candidate of your choice. Let's put an end to the "returned by acclimation" routine. The Alberta (ACWN) C.W. net still requires additional coverage to provide a useful service. Let's hear from you at 1830 MST Tue., Thurs. and Sat. on 3600 kc. An amateur radio beginners' course commenced during October and there still may be time to enroll. VE6WT, QS and IQ are providing the instruction. OD has moved to Vancouver and will be sorely missed. The last issue of *RF* will be published shortly. EH is now making daily schedules on RTTY for testing purposes. VM is checking the BCEN regularly and will take traffic for British Columbia. Traffic: VE6VM 56, CA 26, YE 21, OY 18, TT 8, SE 7, OC 6, ES 4, SF 3, FS 2, YQ 2, PS 1, UK 1.

MANITOBA—SCM, James A. Elliott, VE4IF—The first fall meeting of the ARLM was held Sept. 28. VE4WS, TX, YW and SH are working fine DX when 6 meters is open, which has been quite frequently this summer. VE4EH, of Woboden, is on 75 meters. We wish to extend our congratulations to Larry and his XYL on the birth of their son. QD spent considerable time in the hospital this summer and his recovery will take some time. CB and BR, Ethel and Bris, had their transmitter struck by lightning so are QRT for the time being. They are now the proud possessers of a DX-100B and a 20-meter beam plus tower. 5AW/M4 has been posted to his northern station and hopes to be on 20 and 75 meters with a VE3 call shortly. KP is rebuilding his home station and also making changes in the mobile rig. HH was down from Flin Flon to Piniwa Dam with the Army on the Labor Day week end. IF, GE and PE visited him, making the trip from their summer cottage on Lee River by boat. LF is in the hospital with a heart condition. GB is on 75 meters fairly often and works 20 meters when time permits. HB has been busy helping his brother build a summer cottage, and now is building a boat. IW received his Advanced Class amateur radio license. CX is back on 75-meter mobile after a vacation in California. Traffic: VE4GB 18, PA 10, HL 6, PE 6, MW 2, RR 2.

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• 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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How's DX?

(*Continued from page 96*)

rocked and socked 21 Mc. with the OM's (KX6BQ's) KWM-1 on c.w. and s.s.b. KM6BT now attends school in Hawaii where he hopes to put KH6s CSN and DDB through DX paces on 40 meters when homework breaks permit . . . . *QST* author W4JA currently works out of Honolulu on a giant Pacific scatter-prop project. Gil reports KC6PE already active at the system's Ponape base, with a Koror activation in immediate prospect. This scatter business is buzzing busily in advance of the sunspot minimum ahead . . . . More from the Pacific strands via VERON and WGDXC: ex-VS5JA is analyzing Iran's oil and reports negative progress toward ham authorization over EQ-EP way. . . . YJ1DL's c.w. and FU8AC's a.m. keep the New Hebrides condominium workable on 20 and 15.

Europe — "SVØWT/Crete is on the air occasionally," writes chief op SVØWY (K2RYP), "but we are undergoing some changes in the rig and the shack, and it will be some time before we are again on the air full time. Our favorite bands are 15 and 20 with activity mostly on the latter. We have a BC-610 running 350 watts, receive with an SP-600, and radiate with a 14-Mc. beam. Watch for SVØWT/Crete at night our time and on week ends." . . . . Hey, OM, it's Europe working the rest of the world in the Fifth Annual European (WAE) DX Contest sponsored by DARC (Germany) and scheduled for the 9th-10th and 23rd-24th of next month, c.w. only. Participation particulars in January's column . . . . K4QIJ visited hams in England, France, Italy and Monaco this summer and advises, "The RSGB boys have a luncheon on the third Friday of each month, visitors invited." . . . . W9IOP's projected operational venture to the Vatican last month tickled the fancies of grapeviners near and afar . . . . DXing is fine across the water. SVØWP returned to W3JTC after a whopping 246/237 DX splurge, and DL4ME (K6YTF) is already up to 66 countries with a DX-35 and attic antenna in Kassel . . . . According to W6KG, G3CQE is in the mood for U. S. contacts via 21-Mc. radioteletype . . . . From K6JC: "HB9IH, with 156 countries confirmed, still needs Montana and North Dakota for WAS. You'll find his 807s on phone, 10 through 80 meters." . . . . GM3ICS writes, "From letters and QSOs it appears that many stations interested in obtaining WAGM (Worked All GM), sponsored by the Aberdeen Amateur Radio Society, are finding it rather difficult to meet the qualifying conditions; in particular, making contact with some of the rare GM calls. So we would like to mention that, in common with other countries, activity here is at a higher level during local holiday periods, and this year, with New Year's Day falling on a Friday, the majority of Scottish amateurs will be on holiday from December 31st to January 3rd inclusive. We have taken steps to give this as much publicity as possible in our magazines and meetings. If conditions are reasonable it is hoped there will be even more GM stations active than usual in this period, particularly the GM2-4-5-6-8 prefixes." We dig you, mon! . . . . F9IL of REF points out that some minor modifications have occurred in DUF certification rules, stressing for one thing that Saarland and Tangiers QSOs must date before 1957. Check with Edmond for the up-to-date fine points before applying . . . . Rundown on several U.S.S.R. DX certifications now available world wide, data thanks to Ks 3CUI and 4IEX: *R-6-K*, Worked Six Continents, calls for contacts with each of the continents plus European and Asiatic Russia, either c.w. or phone, since June, 1956. Certificates are endorsed for each of 40, 20 and 15-plus-10 meters or for any combination of bands. . . . *R-150-S*, Worked 150 Countries, which must include contacts with each of the 15 soviet republics, is awarded for either phone or c.w. operation since June, 1956. . . . *R-15-R*, Worked 15 Republics, requires QSOs with each of the fifteen within a 24-hour period (!). . . . *R-100-O*, Worked 100 Oblasts, is merited by contacts with 50, 75 or 100 of Russia's nearly 200 administrative areas within one calendar year, any bands. . . . *W-100-U* is offered this year in centennial commemoration of radio pioneer Popov's birth and may be earned by working any 100 U-stations in 1959, five of which must be located in Popov's birthplace, Sverdlovsk oblast. . . . Application details are not crystal clear, so we suggest inquiries to Central Radio Club, Box 88, Moscow. As K3CUI puts it, "Cyrillic wallpaper, anyone?" . . . . Club Continental comment thanks to IRLL, NCDXC and WGDXC: HADW/HV's admonishments to pursuers of DXpeditionary stations is universally applicable. (1) Stay away from the rare one's frequency by 10 kc. or so, (2) don't ask him to listen for your phone, facsimile or RTTY, (3) avoid tailing unless the guy buys such rudeness, and (4) limit your yak if a queue exists. . . . That roving Czech geographical expedition failed to score in Turkey but managed a few QSOs as OK7HZ/OD5. Next comes Syria, Saudi Arabia, possibly Yemen, then Iraq, perhaps Iran and Afghanistan which will bring the itinerary into April. . . . HA5BI mentions "HA DX Days" as occurring in mid-November, doubtless a Sweepstakes casualty. . . . G3MRC visited New London, Conn., aboard British sub *Adamant* in October.

(*Continued on page 186*)

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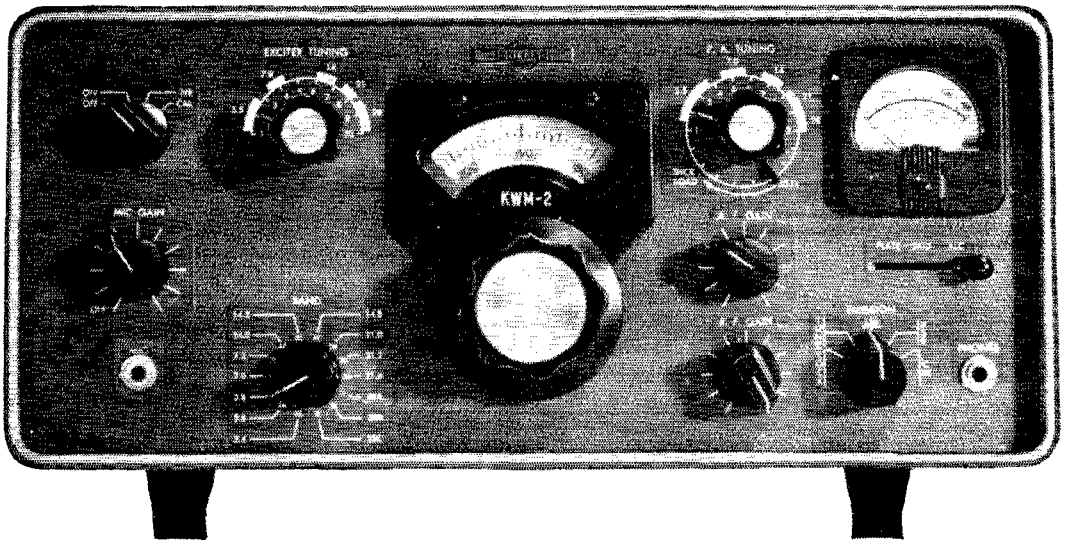

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Hereabouts — K4RJN discloses that something's afoot in Memphis. Kingpin DXers W4s DQH GD and K4LNM are said to be organizing a DX-type club that may well spell perilous pressure for near-by Yankee combines . . . . . Could be that someone still uses the call YN4CB but K4TEA and others note Pat now preparing for the contest wars as TG5HC . . . . . In case you wonder why YN1WW works so many Zeroes around 28,900 kc., W6NKE has it that Tommy's XYL hails from Omaha . . . . . We regret to hear through W9JFT that 28-Mc. specialist HP2ON is in for extensive hospitalization . . . . . Regarding the WANA sheepskin briefed here last month, W3AYD adds that PJ2CE periodically puts rare Bonaire on the air as PJ2BC . . . . . Shattering all miles-per-watt records, W9HPJ receives 28-Mc. s.w.l. reports from Siberia on no watts at all. Phonetic failurization, no doubt . . . . . WAP No. 146 falls to KL7PI, and Joe also anticipates a shiny new WAVKCA diploma at any time . . . . . W2JBL finds old 7-Mc. stalwart VE7AMI now trying 20 meters as VE8DM, Bathurst Inlet, N.W.T. . . . . HH2Z writes of DXploits by the International Gang, a pack of fearless phones that made 21,210 kc. hum this summer. This world-wide net featured such long-haul stand-bys as PZ1AP, VPs 1EE 6ZX, VR2BC, VU2NR and ZL4BO with about 75 stations participating all told. It convened nightly from June 10th through mid-July when conditions began deteriorating. HH2Z found the propagation involved, trausequatorial and otherwise, a most intriguing study as conditions cycled through daily and seasonal progression. One-way skip and multipath confusion were not unusual developments and an interesting DX fling was enjoyed by all . . . . . K7AWH, W9UBI and some other regular "How's" operatives now find their DXing curtailed by heavy school sessions . . . . . VP2VB continues *Yasme III* preparations after a sizzling VP7VB session in October. KV4AA maintains liaison on 20 . . . . . W7GBW steps down as Willamette Valley DXC *DX* editor and a task well done . . . . . Now to aid your perspective and jog your recall, let's see what transpired

Ten Years Ago in "How's DX?" — It's a regular five-ring DX circus in December, 1949, with plenty of action from 3.5 through 28 Mc. . . . . Eighty's regulars make away with KV4AA, PY7WS and TG9RB . . . . Sporty forty-meter men busy themselves with CM4MH, FK8AB, TA3GVU, VPs 4TAQ 5BD 5BE of the Caymans and 5BF on Caicos . . . . Twenty c.w. teems with AC4NC, AP2N, CR10AA, EK1AO, FE8AB, FN8AD, HE1EO, HZ1KE, MDs 2GO 4GC 7DC, MI3ZZ, MP4BAD, PK4KS, ST2RF, VK1FE, VR4AA, VU7AH and ZD3D . . . . . Phone fun on 14 Mc. is famous enough: AR8AB, CR5UP, HL1BJ, M1D, MI3US, MP4BAC, PK6NQ, TA3BS, VK1ADS, VR4AC, W5FYV/VR4 and YK1AC . . . . . If 10-meter phone is your favorite, dial for FQ8SN, LX1DC, MI3s NC SC, MP4BAE, PKs 4DA 5HL, ST2AM, TA3FAS, VS7PS, W2EJV/PK3, ZB2s A H, ZSs 8A 8B and 9F . . . . . Matters for chatter: 11SN readies for more San Marino fun. . . . EQ1RX returns to the U. S. after a 55-country Iran DX kick. . . . JA3AA comes back to W6ZQZ burdened by a 3000-to-4000 QSL backlog . . . . . Jeeves demonstrates some perfectly preposterous levitation, as photos of outstanding DXers CT1CZ, G2PL and VQ8AY wrap up the round-up. Yes, indeed, DXwise it's a *very* Merry Christmas as Jeeves & Co. prepare for a whopping new DX year. QST

I.A.R.U. News

(*Continued from page 97*)

Peru: R.C.P., Box 538, Lima
Philippine Islands: P.A.R.A. QSL Bureau, 67 Espana Extension St., Quezon City
Poland: PZK QSL Bureau, P.O. Box 320, Warsaw 10
Portugal: Rua de D. Pedro V., 7-4°, Lisbon
Roumania: A.R.E.R., P.O. Box 95, Bucharest
Saar: via Germany — D.A.R.C.
Salvador: YS1O, Apartado 329, San Salvador
Singapore: via Malaya
South Africa: S.A.R.L., P.O. Box 3037, Cape Town
Southern Rhodesia: R.S.S.R., Box 2377, Salisbury
Spain: U.R.E., P.O. Box 220, Madrid
St. Vincent: VP2SA, Kingstown
Sweden: S.S.A., Stockholm 4
Switzerland: U.S.K.A., Knutwil
Syria: P.O. Box 35, Damascus
Trinidad: John A. Hoford, VP4TT, Box 554, Port-of-Spain
Tunisia: Francois DeVichi, 5 Rue Can Robert, Tunis
Uganda: P.O. Box 1803, Kampala
Uruguay: R.C.U., P.O. Box 37, Montevideo
U.S.S.R.: Central Radio Club, Postbox N-88, Moscow
Venezuela: R.C.V., P.O. Box 2285, Caracas
Virgin Islands: Richard Spenceley, Box 403, St. Thomas
Wake Island: T. D. Musson, P.O. Box 127
Yugoslavia: S.R.J., P.O. Box 324, Belgrade

YL News

(Continued from page 90)

Alamo YLs (Alamo Ladies Amateur Microphone Organization) — a new club of San Antonio YLs. Net conducted Friday at 0900 CST on 7235 kc. A two-meter net is planned for Novices and Technicians. Interested YLs please contact K5OPT.

Los Angeles YLRC — New custodian of the Lads 'N Lassies certificate is Irma Weber, K6KCI, 762 Juanita Ave., Santa Barbara. Club meetings are held monthly at 720 South Hill St., Los Angeles — new members welcome.

Washington Area YLRC — New officers are Pres. W4TVT; V.P. W3CDQ; Treas. W3RXJ; Secy. W3UTR.

Young Ladies Radio League — K5YIB is the new W5 call on ex-KØLYV, Barbara Houston, custodian of the WACYL award. Applications for the award should be sent to K5YIB at Route 2, Box 178, Garland, Texas.

GAYLARK — K5PFF replaced W5EGD as President upon Lillian's move to Maryland. W5ERH has been named v.p. and custodian for the GAYLARK certificate. Betty's new QTH is Box 45-588, Houston, Texas. A Red Cross course conducted by K5MXO is open to all GAYLARKS, and plans are being made for an advanced instruction class to follow. QST

World Above 50 Mc.

(Continued from page 85)

VK9XK, Port Moresby, Papua, found the band dead only on Sept. 1 and 4. JAs were in every day other than these, and KH6s 13 days. VK6BK, Perth, makes us drool with a report of working 9M2DQ, Malaya. The latter works VS6CJ, Hong Kong, about 3 nights weekly. All these fellows hear the propagation test station on Okinawa (49.68 Mc.) regularly and well, but there is no sign of KR6s on 50 Mc. K6HGP/KH6 logs VKs nightly, usually beginning around 2300 HST.

While most Ws were hearing nothing our friends in Latin America were busy. LU3EX, one of the busiest, worked PY ZP LU OA KP4 CX CO XE YV CE VP5FP VP6PV HR2DK TI2CV KH6 CT3AE and W6PUZ K5DCG K6SQH K6UMG K4JWC and K6SUS in September — a total of 17 countries. Incidentally, if you wonder whether there are South American 50-Mc. operators who can read code, LU3EX is one who can. Several of the above were on c.w.

220 Mc. and Up

Fellows working with parametric amplifiers may want to check on a tip from W6AJF, author of the article "Experimental Parametric Amplifiers" in *QST* for August. Frank got a pleasant surprise when he tried Clevite CTP-592 computer diodes (price $1.50) in his amplifiers. He says that no fixed bias or "grid leak" is needed; just a good d.c. blocking capacitor in series with the diode. Their "zero bias" capacitance is about 1.6 $\mu\mu$f.

There has been a marked upsurge in 432-Mc. interest along the northeastern seaboard in recent weeks, and we've received more mail and comments about this band of late than in several years previously. W2OTA, Wantagh, N. Y., says he has worked 35 different stations, from Rhode Island to Maryland and Delaware. He is on 432.1 Mc. every Tuesday and Thursday at 2200, looking for business. K2UUR, Parlin, N. J. (near Raritan Bay) says that he has worked K3EH, Levittown, Pa., regularly, and W3GGR, Pleasant Hill, Md., occasionally. W3GGR and W3RQT have a detailed record of 432-Mc. stations in mimeographed form, giving the call, location, operating frequency, power, antenna type, receiver and other pertinent information on every known active station in the Northeast. This is available from W3RQT, 74 Amstel Ave., Newark, Del. Better send him a stamped self-addressed envelope if you're interested — and include the information on your setup. Data on more than 60 stations are included in the current list.

W9OJI, Wheaton, Ill., writes that he has been working W9GAB, Beloit, Wis., 80 miles to the northwest regularly. He would like week-end skeds for 432 during the winter months, using the maximum power and c.w. He has a 2C39 grounded-grid amplifier and a 416B converter.

(Continued on page 190)

With the Clubs and Nets

The 51.30 Club of Framingham, Mass., has a well-equipped mobile unit available for emergency and contest work. Largely as the result of intensive effort by W1LHF and K1CMU the truck now has built-in operating facilities and all the comforts of home, including a space heater. Gear and lights can be operated either from the truck's 6-volt system, or from an emergency generator. A 40-foot push-up mast is welded to the side. A 2-meter groundplane is permanently mounted on the roof, and there are lead-ins for at least three antennas and rotator cables.

In this month's mail we have the first edition of *Static*, the publication of the Northeastern Ohio V.H.F. Group. Devoted entirely to the welfare of v.h.f. men of the area, it is available from K8CHE, 242 East Park Blvd., Akron 5, Ohio. Price is $1.00 for 12 issues.

A certificate is being offered to anyone working 5 or more members of the Kansas City V.H.F. Club according to KØITF. George says that over half of the v.h.f. enthusiasts in the Kansas City area are members, so there is a good chance that you are well on your way toward qualifying already. Contacts must have been made since July 1, 1959. Send confirmations to P.O. Box 973, Kansas City 41, Mo.

The Mt. Airy V.H.F. Club of Philadelphia is proud to announce the obtaining of the call W3CCX, to be used in club operations as a memorial to a deceased member, Matthew A. Gelardi.

K4PKK announces the formation of the Greater Atlanta V.H.F. Society. Purpose of the organization is the study and advancement of the v.h.f. art in the Atlanta area. More information from K4PKK, 3607 Orchard Circle, Decatur, Ga.

OES Notes

W1HDQ, Canton, Conn. — Following arrangements made at the Syracuse V.H.F. Roundup, 220-Mc. stations in W1 aim toward Syracuse area at 2200 nightly, transmitting for 5 minutes and listening for 5. This station will keep the sked Tuesdays and Sundays, using c.w. on 220.03 Mc.

W3FEY, Lancaster, Pa. — Keeping nightly skeds with K2CBA on 220 Mc. at 2130. Signals are usually weak, but consistent work has been possible over the 225-mile rough path. Also keeping skeds with W3ARW on 220 and 1296 Mc. Contact is made on 220, followed by shift to 1296. First QSO on 1296 was made during September V.H.F. Party. Distance is 100 miles. W3ARW has exceptional location, but path is far below line-of-sight. Activity on 220 and 432 Mc. increasing locally.

W4FNR, Ft. Lauderdale, Fla. — Worked LU1DCK Sept. 24 for first South American on 50 Mc. this fall. LU4DEN and CX9AJ worked Sept. 26, and XE1GE heard via backscatter. Worked 23rd KP4 this month.

W4LTU, Springfield, Va. — Measured loss in length of surplus RG-10/U coaxial cable that had 4 years of use outdoors. Found loss had increased from 3 db. to 5.5 db. per 100 feet in this time.

K6HCP, San Jose, Cal. — 50-Mc. CD net now operating on 50.5 Mc. at 1900 Mondays. Anyone interested see WA6EIC.

W7MAH, Reno, Nev. — Replacing 15-element long Yagi with 20-element spiral array brought up 144-Mc. signals from Sacramento Valley 2 to 3 S units. Have copied K6TYW, San Mateo, 200 miles over very mountainous path. Now using FSK to work W6GDO; much better than AFSK, which was tried first.

K9PGK, Indianapolis, Ind. — Many locals seem surprised at what can be done with moderate power and medium-sized antennas on 144 Mc. Reliable range of 175 miles is not uncommon.

KP4ABN, Bayamon, Puerto Rico — LU3EX CX7CO and PY3ADT worked Sept. 11, beginning at 2012. Other South American openings Sept. 18, 20 and 25. Only U. S. signal heard was W4HAE, Sept. 4. QST

MEMBERSHIP CHANGES OF ADDRESS

Four week's notice is required to effect change of address. When notifying, please give old as well as new address. Advise promptly so that you will receive every issue of *QST* without interruption.

V.H.F. Party Results

(Continued from page 51)

PACIFIC DIVISION

Santa Clara Valley

K6TJL/6 (multiple-operator) 6304-274-21-ABCD
W7LIH/6 (W7s LIH VMP) 738- 82- 9-AB

East Bay

W6ASH . . 2613-193-13-ABC
K6TPO . . . 477- 53- 9-AB
WA6AGA/6 (4 oprs.) 3210-321-10-AB

Sacramento Valley

K6YII 231- 33- 7-AB
K6KDU . . . 220- 44- 5-B
K6LKK . . . 155- 31- 5-A
WV6GNB . 100- 25- 4-B

San Joaquin Valley

W6FZA/6 . 705- 42-15-ABCD
K6QEZ/6 (6 oprs.) 760- 76-10-AB

ROANOKE DIVISION

North Carolina

W4ZXL . . 1140- 56-20-ABC
W4CAH . . . 85- 17- 5-AB
W4VHH . . . 85- 17- 5-B
K4KSM . . . 24- 8- 3-A
W4BUU . . . 5- 1- 1-B
W4NC/4 (8 oprs.) 729- 81- 9-AB
W4GNF/4 (W4s ACY ULX, K4HQM) 503- 57- 9-A

South Carolina

W4TLC . . . 340- 32-10-ABC
W4VIW . . . 256- 32- 8-AB
W4FAN 12- 6- 2-A

Virginia

W4LTU . . 3807-141-27-AB
W4AO[5] . . 2900-145-20-B
K4RAY[1] . 2322-118-18-ABC
W4WUX/4 1224-101-12-AC
W4AUR . . . 132- 33- 4-B
K4VWH . . . 108- 27- 4-A
K4EUS 100- 20- 5-B
K4RTG 75- 25- 3-A
K4PUD 12- 6- 2-A
K4S8A/4 (K4s IEY SSA, W3-WWA) . . 608- 76- 8-A
W3ML/4 (W3ML, W0QIQ) 72- 18- 4-B

West Virginia

K8AXU/8 . 279- 28- 9-BC
K8EIJ 1- 1- 1-A
W3PGA/8[1] (7 oprs.) 3743-197-19-AB
W8QLP/8 (W3DHQ, W8-QLP) . . . 340- 34-10-AB
K3EIZ/8 (2 oprs.) 2- 2- 1-A

ROCKY MOUNTAIN DIVISION

Colorado

KØLSL[6] . . . 32- 32- 1-A
KØLSL 32- 32- 1-A
WØWYX . . . 32- 32- 1-A
KØBTO 30- 30- 1-A
WØLVL 7- 7- 1-A
KØKKW 5- 5- 1-A

New Mexico

W5JVO . . . 140- 35- 4-AB
W5RKE/5 . 66- 22- 3-AB
W5MVL/5 . . 64- 16- 4-AB
K5UYF/5 . . 24- 8- 3-AB
K5IQL 16- 8- 2-AB
W5FAG/5 . . 14- 7- 2-AB
K5TQP 7- 7- 1-B

Wyoming

W7UFB 1- 1- 1-A
W7VTB 1- 1- 1-A

SOUTHEASTERN DIVISION

Alabama

K4GQK 80- 16- 5-AB

Eastern Florida

W4RMU . . 65- 13- 5-AB
K4PPX[1] . . . 60- 60- 1-A
K4IQS 53- 53- 1-A
K4SLJ 52- 52- 1-A
W4HGT 37- 37- 1-A

Georgia

W4FWH . . 260- 26-10-ABC
K4MDF 85- 17- 5-B
K4SJF 36- 12- 3-B
K4YMC 23- 23- 1-A

SOUTHWESTERN DIVISION

Los Angeles

W6TNJ . . . 845-169- 5-AB
W6NLZ . . . 144- 13- 9-ABCD
WA6DHH . . 42- 21- 2-B
K6IEA (7 oprs.) 1265-253- 5-AB
K6KDE/6 (4 oprs.) 584- 69- 8-ABCE

Arizona

W7QLZ/7 . . . 6- 6- 1-A
K7JTG/7 (K7JTG, W7BVLN VMQ) . . . 94- 47- 2-AB

San Diego

K6COE . . . 144- 36- 4-AB

WEST GULF DIVISION

Northern Texas

W5FEG . . . 370- 74- 5-AB
K5WPD[1] . 184- 92- 2-
K5PDD 64- 32- 2-A
K5KWB 28- 14- 2-A
K5SXU 27- 27- 1-A
K5VPH 26- 26- 1-A
K5KVE 23- 23- 1-A
K5RAK 22- 22- 1-A
K5TXX 12- 6- 2-AB
W5GMA . . . 10- 10- 1-A
K5PCN 10- 10- 1-A
K5VQK (K5s BKC VQK) 45- 45- 1-A

Southern Texas

W5JLY . . . 111- 37- 3-A
W5MVL/5 . 64- 16- 4-AB

CANADIAN DIVISION

Ontario

VE3DIR . 2784-110-24-ABC
VE3AIB . . 1547-115-13-ABC
VE3AQG . 1104- 92-12-B
VE3ELA/3 568- 71- 8-B
VE3HW . . . 462- 66- 7-B
VE3CIT . . . 450- 90- 5-B
VE3NW . . . 392- 49- 8-AB
VE3DUU . . 252- 63- 4-B
VE3BQP . . 162- 54- 3-B
VE3CIL . . . 120- 40- 3-B
VO1DS/VE3 . 2- 2- 1-B
VE3CNA/3 (multiple-operator) . . . 244- 61- 4-B
VE3BAF/3 (VE3s BAF BNZ) 78- 26- 3-A

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VE2TT . . . 848- 53-16-B

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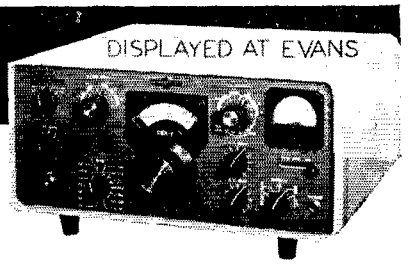

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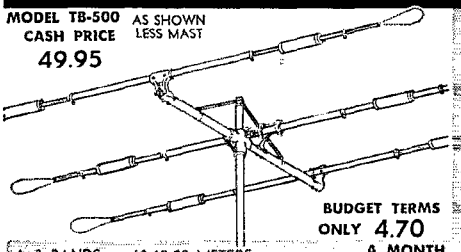

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★ TURN WITH TV ROTATOR

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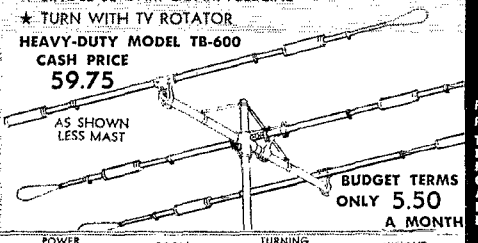

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TB600	15m—7.5 db	15-18 db	15m—Unity	500W	1½" O.D. x 14'	14'-11"	35 lb.
	20m—7.0 db		20m—1.1				
TB-3	8 db Avg.	25 db	1.2 or less	1000W	1½" O.D. x 18'	16' 2½"	55 lb.
TB-3B	8 db Avg.	25 db	Unity	1000W	1½" O.D. x 18'	16' 2½"	55 lb.

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Please Rush the Model_____HORNET TRIBANDER for a 10-Day FREE TRIAL. If Fully Satisfied, I Agree to Pay as Checked Below. If Not Satisfied, I Agree to Return the Beam Prepaid within 10 Days without Further Obligation. ALL PRICES F.O.B. FACTORY

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ABSOLUTELY NO RISK ON YOUR PART

"Medium-Power" Kilowatt

(Continued from page 41)

out some sort of plate suppressors. A bit of juggling may be required to find the right combination of suppressor choke and resistor which will kill the parasitic without overheating the suppressor resistor. Various combinations of resistors can be tried if heating is excessive; the ARRL *Handbook* contains helpful suggestions on this point.

Sum-Up

Well, there is the case of "medium-high" power. Aside from listing specific power output figures for each band, no performance claims are considered necessary. Everyone knows that with 600 or 700 juicy watts of r.f. output tied to a really good antenna, the determining factor is the operator hooked into the circuit — the sky's the limit! QST

Choosing Transmission Line

(Continued from page 45)

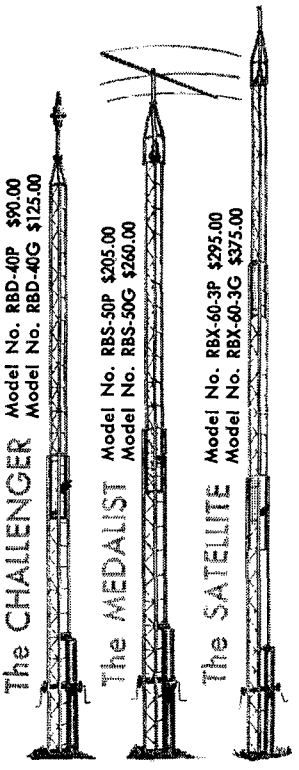
handle any amateur transmitter.

Summing up, the important points to remember are that open-wire line can be operated at a high standing-wave ratio but coax should be kept reasonably "flat" (a line is said to be "flat" if the s.w.r. is 1 to 1 or close to it) if good efficiency is desired. Because the antenna impedance is a fixed quantity which depends on the antenna type and can't be altered to any great extent, while the characteristic impedance of the feed line is also a fixed quantity, it is sometimes necessary to install a matching device between the antenna and line in order to bring about a match between the two. This brings up the subject of matching, which will be taken up in the second part of this article.

Part II of this article will appear in an early issue. QST

Strays

VE3CMK would like to hear from other amateurs who are using family crests on their QSL cards.



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*PAT. PENDING

P. O. BOX 5491
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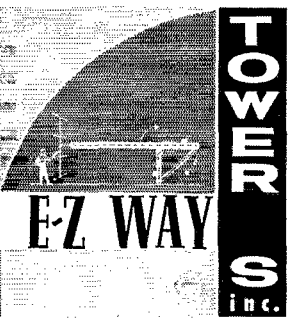

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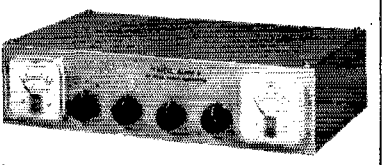

20 WATTS ON 6 METERS

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ALL ABOVE FEATURES PLUS BUILT-IN 3-POSITION CRYSTAL SWITCH

B+ requires 300v @ 200ma (approx.). Specify 6 or 12v filament.

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Alpha 6, wired, complete with tubes and crystal $78.50	As above, kit $32.00	***All transmitters available for 6 or 10 meters and 6 or 12v filament.***
	Fixed power supply, Beta 6 .... $79.00	***• Please Specify •***
	As above, kit $68.00	

See Your Dealer or Order From: **THE NEIL CO. • 1336 Calkins Road • ROCHESTER 23, NEW YORK**

Correspondence

(*Continued from page 98*)

to send more than about 45 w.p.m. in Continental. More in Morse, of course, with reduction in dashes.

Maybe Nose intended it to be 30 and it came out 60.

How 99 44/100% of amateurs would copy 60 w.p.m. I don't know. I know it would be so far beyond me that I'd fold.

— *W. Ross Carruthers, VE3CEA*

BOSCH HORN PORTABLE?

941 Caledonia Avenue
Cleveland Heights 12, Ohio

Editor, *QST:*

In answer to W6BUK's letter on page 192 of the Sept. issue, regarding the "Bosch Horn." I yield to him by date, but maintain he was operating fixed-portable at the Convention.

When 8ADA and myself took that trip in the Ford, we were truly mobile, with the key on the seat in between us. Hi.

— *J. Clifford Erickson, W8DAE*

OUTBOARD IGNITION

1140 Donaghey Building
Little Rock, Arkansas

Editor, *QST:*

I read your article October 1959, entitled "Vehicular Interference Conference." Another source of interference pertaining to vehicular interference, and not mentioned, is that of outboard motors.

I operate 35 Mc. maritime mobile from a 14-foot aluminum boat powered by a 35 h.p., 59 model Johnson. Passing boats several hundred feet away have given me all kinds of grief, besides that of my own motor.

With the event of direction finders, depth finders, broadcast, and two-way ship to shore, amateur and citizens bands, the manufacturers of these motors are turning to fiberglas covers for audible quietness, thus giving less ignition radiation protection. They use no bypasses of any type, nor shielding of the ten- or twelve-foot ammeter and ignition leads to the front of these boats. Addition of generators to the newer models creates more trouble from generator whir.

. . . on a small lake, a craft with interference doesn't pass you once, he is a continual source of interference.

— *Dr. George B. Bean, W5DVI/K5KUR*

BREAK . . . BREAK

1527 Almo Avenue
Burley, Idaho

Editor, *QST:*

Would someone explain this to me? It seems that no one on 75 or 40 s.s.b. fone will answer a CQ, (well, hardly any one).

You find as many as 50 in a QSO with half of them unable to copy the others, still the "break-break" goes on. The log becomes a mess, not to mention the conversation. No one knows who is talking to whom, let alone what they are trying to say.

Unable to raise anyone on a CQ, I decided to experiment. Instead of calling CQ, I carried on an imaginary conversation with myself, and sure enough within a minute came the expected "break-break." I dunno, it seems that hams are nutty enough without compounding the situation.

— *Harry Zadorozny, W7TCL*

LICENSE FEES

1041 Meadowbrook SE
Warren, Ohio

Editor, *QST:*

The October *QST* issue brought some interesting comments on the FCC Notice of Inquiry in regard to Extra Class Status.

However, I must take exception to the complaint of W3VNE, who complains about the requirement to send ". . . an original and 14 copies."

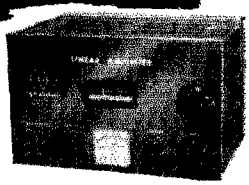
Well, I don't see that that is much of a hardship for anyone interested in the matter.

As I see it, our hobby is not only legally non-profit, it is also non-sustaining as far as government finances are concerned.

(*Continued on page 198*)

THAT'S USING YOUR HEAD, OM!

BUILD YOUR LINEAR FROM AN LA-400-C KIT



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Easily driven—up to 500 WATTS DC INPUT with ONLY 20 WATTS DRIVE. May be used on SSB, DSB, AM, PM and CW. ALL BANDS 80-10 METERS. Uses four modified 1625s (or 837s on customers order) in CLASS B GG. Untuned LOW Z (50-75 ohms) input. High efficiency 3 element variable pi network puts more power into any antenna or load between 25 and 300 ohms. Parasitic free—TVI suppressed. Meter reads: Grid Drive; Plate Current; Instantaneous RF Amps output. Heavy-duty power supply using 816s. Available in grey table top cabinet 8¾" x 14½" x 10½" or grey or black rack models.

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Without paying a nickel, we get application forms, mail and in-person exams, licenses and . . . perish the thought . . . field inspections.

Then along comes a guy who complains when FCC asks us to share the clerical load.

I won't argue the fact that red tape being what it is, 14 copies, plus original, is probably more than really needed.

But if that is what they want, what can you do?

In fact, in the interest of better service I would suggest that FCC set up nominal fees for original and renewal license service. This would provide them with more clerks and cut down on the time (I waited many weeks last spring) to *process applications.*

I know that by proposing license fees, I am inviting the wrath of 90 per cent of the letter-writing hams, but who cares.

A 50-cent fee everytime I renew would be much less than watts I burn in the same period with my rig.

(I also hope the guy next door never learns that part of his tax payments have helped to provide me with my General ticket.)

Incidentally, I did make comments to that Notice of Inquiry and I duly sent along the original and 14 copies. I have to admit however that the XYL did all the typing.

— *Dick Ellers, K8JLK*

NOVICE BAND FOR NOVICES?

Eagar, Arizona

Editor, *QST:*

We realize that your mail-bag is full of complaints from the "youngsters" who are trying to get started in ham radio, but we think we should have an even break. We who are limited to 75 watts and crystal control are having to contend with those Novices who get their General and then "swish" around with 500 watts or so across the Novice bands when we are trying our best to get some "DX" for our "WAS." We hear a luscious CQ from some far corner of the earth and think this is our chance to make that addition to WAS. But what happens? Some high-powered General comes in and nabs him. We don't have a chance. Isn't there a way that the Novice bands could be for Novices? After all, the Generals may have friends on these frequencies, but they can move around now. At least there should be some respect for us on their part and keep their power down to Novice limitations and use crystal just like we have to. We feel that this kind of practice is unfair to the great fraternity of the "rock-bound" low-power Novice.

Speaking of courtesy, it should be one of the first considerations for both Novice and General. When one is trying his best to get his WAS by the directional CQ method, trying to contact a certain call area or a certain state, it should be a matter of mere decency for all other call areas and all other states to refrain from answering. If you are calling "CQ New Jersey" and Oregon answers you have lost any answers you might have from New Jersey. How about adopting one of the popular highway slogans for amateur operation — "COURTESY PAYS"?

— *Harold Richard, KN7HOF*

KIDS BACK HOME

612th AC&W Sqdn
Box 274
Ajo, Arizona

Editor, *QST:*

I would like to quote part of a letter that I received some time ago from my uncle stationed with the U. S. Marines in Okinawa.

". . . About three weeks ago I called Freda and the kids by ham radio and had a most wonderful five-minute conversation with them. Their voices were a little distorted, but it was fabulous to hear them. It sure was a thrill. I have another call scheduled . . . depending on Christmas traffic. I'm almost afraid to go on the air. My first call was a tremendous boost to my morale and if all goes well with my second call I will be making a call home every three or four weeks. All I can say is: "God bless the ham operators!"

I hope this will make a few more of us realize the importance of putting our hobby to use in constructive public service. Keep up the good work.

— *A/2C Gary Vogel, W8FMX/7*

(Continued on page 206)

. . . AW, GEE WHIZ

3475 North 58th Street
Milwaukee 16, Wisconsin

Editor, *QST:*

. . . I really think that W3SUR was kidding about the 10 kw. I think he was pulling our legs to get us to thinking. His article sure started the cobweb cleaning in my gray matter.

— *W. H. Wing, W9EPO*

CALL BOOKS FOR DX

1001 N. El Pase
Russellville, Arkansas

Editor, *QST:*

For the past 18 months, I have undertaken a personal project that pays off in some very nice letters, pictures etc. from DX contacts. I pass this along to other fellows I work, and I think all of us could do the same thing.

When I buy a new *Call Book* each time they come out, my dealer gives me one that just passed out of date. That one, with my old one, makes two that I wrap up, along with a USA map, also a map of the W5 area. When I've made a good DX contact with an operator that likes to visit, I wind up the QSO telling him I will mail him a *Call Book*. The day I mail it, I also send him an air mail letter so he knows it's on the way.

Believe me, the fellows across the waters really can use them. They cost so much when they convert their money to ours, that they just don't have access to *Call Books* as we do. I get some wonderful letters in return, and for the last 18 months I have been able to mail out 12 books. Some of the fellows can't write English, and they take the time and trouble to look up some one that will, and you get a very interesting letter and pictures in return.

There is a special parcel post rate for printed matter, books etc., that isn't very expensive. The most it has cost me to mail a *Call Book* was 52¢, to Australia — and it was worth it to read the letter I got in return.

Early this year I had a very good QSO with DL6EQ. I mailed him a *Call Book*. This operator and his brother have a printer's plant, and in return he sent me 500 QSL cards!!

Why let those books rot away? This would be a good project for all the clubs to engage in.

— *Jack Minor, W5WSM*

P.S. I have also turned in several of the fellows for membership in RCC, and *do they get a kick out of that!!*

CIRCLE REALLY COMPLETED

Geneva
Switzerland

Editor, *QST:*

I've just finished reading "Circle Completed" in *QST* for November; I had to leave for the conference before the copy came in. It's correct so far as it goes but it doesn't go far enough. Ray says Paul, K6AK (whom I have known for nearly 40 years) and I were excited enough to call him at 1:30 A.M. He doesn't give his end, which went substantially like this:

(*Bud*) Ray, sorry to wake you at this hour but do you remember the *Nautilus* transmitter-

(*Ray*, still not fully awake): Oh . . . huh? . . . (loud yawn) . . . oh yeah . . . (mumble, mumble).

(*Bud*) Well, do you remember a note you put in it?

(*Ray*, suddenly coming alive) Say! Sure I remember it but what do *you* know about it?

(*Bud*) Well, I have the guy who bought the rig on the extension 'phone and he still has the note and would like to meet you and give it to you; take it away, Paul.

(*Continued on page 203*)

So Paul took it away but for the next five minutes all that came out of Ray was a bewildered series of comment:

"(*Ray*, muttering) Unbelievable . . . this is unbelievable . . . it's unbelievable . . . I can't realize it . . . this is unbelievable."

But he eventually did, and he and Paul set up the lunch. I wish I could have been there!

— *A. L. Budlong, W1BUD*

ROTTEN QRM

3009 Clinton St., N.E.
Washington, D. C.

Editor, *QST*:

How poignant are my memories of the "good old" under-200-meter days — from Ford coil, straight spark gap, home-brewed condenser (capacitor to the young squirts), etc., to the sweet little tweet emanating from my first 5-watt bottle purchased with lettuce earned the hard way after school hours!

My inner self shudders when I recollect the many miles traveled between hardware stores negotiating bargains on shelf-aged Columbia Hot-Shots for that 200-volt B supply and the many visits to good old friendly Jake, the auto repair wizard three blocks down the alley, to barter hours of hard, dirty work for a recharge of a well-sulphated battery! All for a Saturday night on the air, static crashes permitting. But with fellow hams ten dial divisions apart, who cared about this new talk of QRM!

Need I tell you the story of this rotten QRM? Nope — the store-bought receiver is prime evidence of our bitter struggle against that dirty demon. What with *Q* multipliers, notch filters and all the other necessary expensive accessories we have hanging on our Armstrong circuits these days even the Old Man (love his memory) would, or should, have a dry feline. Now we can almost, or should I say must, spread ten fellow hams over one dial division.

What really gives our most sacred Wouff-Hong the jitters these days are the bug-key squirts and the CQ DX exponents. Why do our 15 w.p.m. friends insist on using bugs adjusted to do 45? And why do some of the high-powered DX hounds bang out "CQ DX" for five minutes, occupying the middle of a choice DX channel, only to end up QSOing a guy in an adjacent state?

Tell me, OT, before I am tempted to bite the business end of my fired-up final!

— *Harry R. Schulte, sr., W3LQ*

P.S. This is just to let off steam, OB. A CQ DXer just caused me to lose a beautiful contact with a CR7 and my cat does not trust me any longer.

HAVE *YOU* TRIED A.M.?

2910 Eastern Pkwy
Owensboro, Kentucky

Editor, *QST*:

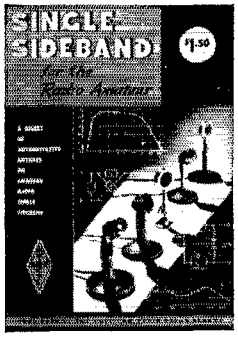
For years I've had the feeling there is something wrong with s.s.b. Now I know what it is. And believe me, it's serious.

First I ought to mention that I started in s.s.b. after numerous hectic rounds with 75-meter tone in the hey-day of CD organizational work in 1950 and 1951. For a year I worked 75 s.s.b. around the nation and a little DX, from Schenectady, with only a piddling little 6AG7 final ("a barefoot 10-A," is the term, I believe.) In 1955 I added a single 811A and by 1957 was leisurely trailing George Bailey's record-making WAS on 75 s.s.b. (In fact, he gave me some leads on who to look for in the tough states — after he'd made it, of course!) I moved here to 4-land before making the WAS, and in sporadic s.s.b. work here in the past year reports on my linear like "Sounds like a gallon, OM" have not been uncommon.

(*Continued on page 204*)

SSB . . .

THE 2nd Edition of "Single Sideband for the Radio Amateur" assembles under one cover the most noteworthy contributions to the art that have appeared in *QST*, revised and grouped as necessary to present a useful reference book. Amateur sideband is covered from its earliest history all the way through the theory and practice of sideband generation, detection, modulation, linear amplifiers, and various accessories which round out the well-equipped amateur station. Contains over 20% more text pages than the first edition at no increase in price. Keep up to date. Get your copy now.



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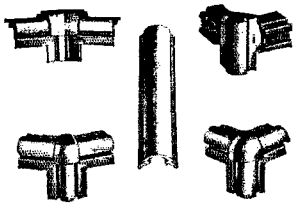

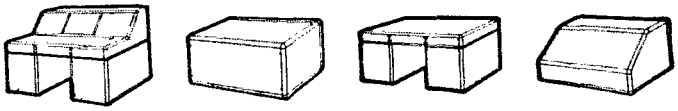

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Now to the point at hand: Slightly bored and wearying of the big, big sideband round-tables et al, I began to work over a piece of surplus a.m. gear — a Bendix TA-12C — that I'd won as a door prize a couple of years ago. After the usual hassling involved in converting surplus, I got on 75 a.m. after lo these many years — with about 100 spanking watts input to the parallel 807's in the TA-12C.

Well, sir, I'd forgotten the sound of the angry snarls of roving heterodyne packs. I'd forgotten how to tune and re-tune continually to avoid the enemy by carefully picking your way through blurps, squeals, chatter and transformer smoke.

The garbled words, the half-sentences, the fills ("sorry, OM, you are 35 over 9, but please say again") the memory of these flooded back as I dove again in the seething, churning mass of signals.

Too, I'd forgotten the helpless agony of impatience in waiting out the windy ones — like: "Well,-let's-see-now-I-must-have-a-pencil-around-here-somewhere-I-want-to-get-this-in-the-log-I-guess-the-junior-op-took-the-pencil-oh-here's-one-stand-by-a-minute-till-I-sharpen-it-a-bit-now-we're-ready-to-get-this-in-the-log-book-now-what-was-it-you-said-about-wanting-a-signal-report-I-remember-talking-with-someone-with-call-like-yours-about-8-months-ago-but-I-guess-it-was-another-call-area-because-I-used-to-be-in w-8-land-and-moved-here-about-six-years-ago-and-have-been-on-the-air-continously-ever-since" — and apparently all six years making one transmission!

And again I fumed with frustration trying to check into some a.m. round-tables and nets that went merrily on their way with hair-trigger switching of steam-roller carriers — in a manner which effectively prevented any break-in.

Two evenings of wondering whether the station came back to me, of frantically searching for the lad whose carrier shifted when he turned on the power — two nights of just plain tough "hand-on-the-dial" operating. And Sunday night as I wearily crept into the sack it came to me in a flood of realization that for years s.s.b. had robbed me of the soul-satisfying catharsis of complete exhaustion without which no hobby is or sport is worthwhile. Down with s.s.b. — unless, of course, you want to communicate.

— *S.W. McCallum, K4URX (ex-W8ZBY)*

Strays

Elmer E. Taflinger, W9GRN, Indianapolis artist, plans a unique fountain as a setting for his city's statue of white, Negro and Oriental figures working together. Taflinger's fountain would send a 40-minute Morse code message — an American prayer of hope for the preservation of freedom — in two 100-foot sprays.

—···—

W4AWY is somewhat amazed at the response to the Stray carried on page 10 of the November issue. Within three days he had over 100 letters, and these were all from people in the eastern part of the country — the western mail hadn't arrived yet. The moral of this story is, be sure that you always include a stamped, self-addressed envelope when you write to a *QST* author or when you write concerning a Stray, because a good many other people will be doing likewise, and we want our authors to get an even break.

Shown with the KWM-2 are the Collins 516F-2 AC Power Supply with SC-301 Antenna Control Console, 312B-5 Speaker Console and 30S-1 Linear Amplifier. The four units are easily arranged for complete and convenient station operation.

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EVERY DEAL PERSONALLY MADE BY THE BOSS, "DOC" DOSSETT, W9BHV. (PS. HE'S AN OLD SOFTIE.) WHAT DO YOU NEED? WHAT DO YOU HAVE TO TRADE? WRITE, WIRE, PHONE OR STOP IN. DROP A CARD FOR OUR LIST OF FINE USED EQUIPMENT AT DOWN-TO-EARTH, UNINFLATED PRICES.

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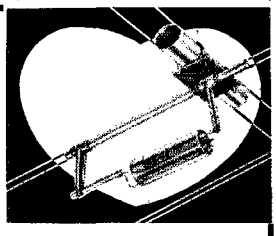
THE HEART OF THE BEAM *by* MACH



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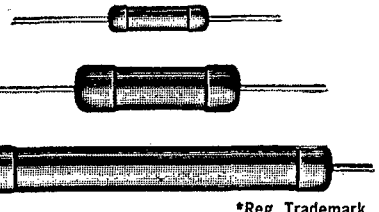

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CLAROSTAT MFG. CO., INC., Dover, New Hampshire

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Technical Correspondence

(Continued from page 81)

adjusted for maximum output. With these changes the filter operation is greatly improved and the gain is increased approximately 12 db. A 24,000-ohm resistor should be added between the +12-volt line and the emitter of Q_8 to increase the a.g.c. range.

Mr. Zilm has informed me that amateurs may buy direct from Collins Radio Company in Burbank any filter type which is offered for sale. The F455Y-31 is available at a unit price of $38.00, in quantities of 1 to 4. The only difference between the F455Y-31 and the F455F-31 is the case; either type will fit easily in the space allotted.

— *H. F. Priebe, jr., W2TGP*

THE 715 TETRODE

Box 291, R. D. 1
Greenfield Center, N. Y.

Technical Editor, *QST:*

For the better part of a year I have been using a 715-B on 50 Mc. in a single-tube amplifier running up to five hundred watts input. The 715-A, -B, and -C appear quite similar, with the A showing slightly more grid-to-plate capacitance. Here are the parameters which have been used:

Et — 26 v. ± 2.5 v. at 2.1 amp. (3 minutes heating time)
C_{gp} — 2 $\mu\mu$f.
C_{in} — 37.5 $\mu\mu$f.
C_{out} — 7.5 $\mu\mu$f.
E_p — 1500 v. (at 300 ma.) or 2000 v. (at 250 ma.).
R_g — 10,000 ohms.
I_g — 10 ma.
E_g — −100 v.
Grid dissipation — 1 watt
E_{sc} — 150 v.
I_{sc} — 15 ma., approx.
R_{sc} — 75,000 ohms approx., at E_p = 1500 v.
Screen dissipation — 8 watts

It usually is a good idea to include a base shield to prevent the input pin from "looking at" the plate circuit.

The high input capacitance which has foiled earlier experimenters can be overcome by using series tuning in the grid circuit. It is then only necessary to tap the bias resistor at the zero-r.f. point. One constructor, W2OKF, used the interesting twist of a push-pull series-tuned grid tank to apply drive to his pair of 715s.

The tubes in stock form have a ceramic wafer at the base in which pins are set. When inserted in its socket, this wafer just fits. To allow cooling the tubes, I have removed this ring with a torch, broken the pins free from the ceramic, and replaced them on the tube. Care must be used in plugging the tube in, but it is well worth it, considering the volume of air which can now pass the tube.

Clamping the screen for protection during c.w. is not sufficient, as the 715 will draw several hundred ma. with the screen grounded. Clamping combined with fixed bias appears to be the answer.

The socket for the 715 is termed "Jumboid four pin," and is the same as that used with the 705A rectifier (Johnson 122-234 and Western Electric D-4A-10).

All bypassing and grounding should, of course, be made with short, heavy connections. Higher values of screen voltage than indicated above do not appear to improve performance, but off-resonant plate current will soar to several amperes.

The main consideration in setting up the 715 is to avoid anode color. These tubes will slowly deteriorate if run far into the red region. Proper adjustment of your favorite tank circuit, be it pi-net or parallel tuned, should allow inputs to 500 watts per tube.

— *W. S. Baker, K2LZF*

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. 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 — G. L. DeGrenier, W1GKK, 109 Gallup St., North Adams, Mass.
W2, K2 — North Jersey DX Ass'n, Box 55, Arlington, N. J.
W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Pa.
W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
W5, K5 — Brad A. Beard, W5ADZ, P.O. Box 25172, Houston 5, Texas.
W6, K6 — San Diego DX Club, Box 16006, San Diego 16, Calif.
W7, K7 — Salem Amateur Radio Club, P.O. Box 61, Salem, Oregon.
W8, K8 — Walter E. Musgrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.
W9, K9 — J. F. Oberg, W9DSO, 2601 Gordon Drive, Flossmoor, Ill.
WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.
VE1 — L. J. Fader, VE1FQ, P.O. Box 663, Halifax, N. S.
VE2 — George C. Goode, VE2YA, **188 Lakeview Avenue, Pointe Claire, Quebec.**
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, 833 10th St., North Lethbridge, Alta.
VE7 — H. R. Hough, VE7HR, 1684 Freeman Rd., Victoria, B. C.
VE8 — J. A. E. Williams, VE8JW, P.O. Box 534, Whitehorse, Y. T.
VO1 — Ernest Ash, VO1AA, P.O. Box 8, St. John's, Newf.
VO2 — Douglas B. Ritcey, Dept. of Transport, Goose Bay, Labrador.
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
KH6 — Andy H. Fuchikami, KH6BA, 2543 Namanu Dr., Honolulu, Hawaii.
KL7 — KL7CP, 310-10th Ave., Anchorage, Alaska.
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(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 35¢ 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.**

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(7) **Because error is more easily avoided, it is requested copy, signature and address be printed plainly on one side of paper only. 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 except those obviously commercial in character, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

TRANSFORMERS (3) W2EWL Special. $3.00 postpaid, SSB, latest diagram, template, 3 xfrmrs, disc ceramic Emica condensers, coils L1 thru L7 for W2EWL Special (Mar. 1956 *QST*), $10.95 postpaid. Vitale. W2EWL, Denville, N. J.

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COAXIAL Cable. New surplus RB-54A/U, 58 ohms impedance —30 ft. prepaid, $1.00. Radio magazines, buy, sell, trade. R. Farmer, 3009 No. Columbia, Plainview, Texas.

HAM licenses, resident courses. Novices and General classes, 3 evenings weekly. Delehanty Institute, 117 East 11th St., New York City 3, N. Y. Tel. GR 3-6900.

COLLINS 51-J-1 receiver, $450. In excellent condition. W2ZMG.

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OSLS-SWLS, Finest and largest variety samples, 25¢ (refunded). Callbooks (winter), $5.00 postpaid. Religious QSL samples, 10¢; subscriptions and renewals to all radio publications appreciated. "Rusty" Sakkers, W8DED, P.O. Box 218, Holland, Mich. "Your Best Contact" free on request.

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QSLS, 3-day service, samples 10¢. Don, K5OWT, 738 Gardenia, Ada, Okla.

QSLS. Reasonable, nice designs, samples dime. W2DJH Press, Warrensburg, N. Y.

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CANADIANS! Selling out HT32, 75A3, Johnson Courier, Matchbox, Gonset Mobile converter, Jennings vacuum capacitor. J. A. Masterson, 82 Cherovan Dr., Calgary, Alberta, Can.

"PIG-IN-A-POKE"? Not if you visit Ham Headquarters, USA and see and choose from the hundreds of "Like-New" bargains in the world-famous Harrison Trade-in Center. More for your money, because tremendous turnover makes lower overhead! Terms, trades. Send postcard for mouth-watering photograph and price list Q-6. For the best in all new and used equipment, it pays to come to "Ham Headquarters, USA"! BCNU, 73, Bil Harrison, W2AVA, 225 Greenwich St., New York City, N. Y.

LEECE-NEVILLE 6 volts 100 amp. system—alternator regulator and rectifier, $45; also, Leece-Neville 50-amp. system, $50; 12 volt 100 amp. system, $85, guaranteed no ex-police car units. P. E. 75 D gas generator 2500 watt a.c. 120 volt, 60 cycle used 10 hrs., $250. Herbert A. Zimmermann, Jr., K2PAT, 115 Willow St., Brooklyn 1, N. Y. Tels. ULster 2-3472 or JAckson 2-2158.

TOROIDS: Uncased 88 mhy. like new. Dollar each. Five, $4.00. P. P. DaPaul Co., 101 Starview, San Francisco, Calif.

HAM TV Equipment bought, sold, traded. Al Denson, W1BYX, Rockville, Conn.

CASH for your gear. We buy, trade or sell. We stock Hammarlund, Hallicratters, National, Johnson, Gonset, Globe, Hy-Gain, Mosley and many other lines of ham gear. Ask for used equipment list. H & H Electronic Supply, Inc., 506-510 Kishwaukee St., Rockford, Ill.

DX, QSL Co-op, Box 5938 K. C. 11, Mo. Save time and $$$. DX QSL'ing. Only 2¢ per card after membership. $2.00 for 5 years.

SEND For list of good buys at bargain prices. Box 575, New York 8, N. Y.

SIX Meter kilowatts: page 24 July 1959 *QST*; parts, kits, complete; Richcraft Engineering, Sterling, Va.

SWAP Or sell over 2000 back issues *QST* and CQ, 1926 to present. Want receiver and transmitter, all-band VFO AM/CW or will sell all 25¢ each (take 'em all!) WØDVN, Box 5938, Kansas City 11, Mo.

WANTED: Trades new and used: KWS-1, $1250; 32S-1, $590; 75S-1, $495; 32V2, $350; HQ100, $149.50; HQ-110, $209; HQ-129, HQ-145, $269; HQ-160, $379; HQ-170, $359; Johnson mobile, $75; Thunderbolt, $589.50; Valiant, $439.50; Johnson Citizen Messenger, $139.75; Courier, $289.50; Hallicrafters 101 Mark III, $395; HT-33, new, $495; SX-99, $119; SX-100, $295; HT-32A, $695; S107, $94.95; NC-125, $139; NC 183D, $319.50; NC-173, $139.50; NC-57, $69; SW54, $35; CB 100 Citizen, $129.95, Globe-King 500A, $425; 90 Chief, $49.50; 90A, $54.95; 680, $94.95; 680A, $97.95; DSB100, $129.95; VFO 755, $42.95; NC300, $299.95; NC2400, $169.50; CE20A, $195; 10B $139.50; CE slicer, $37.50; WO multiplier, $59.95; Heath DX-35, $54.95; AT-1, $23.50; DX-20, $34.50. Easy terms. Ken-Els Radio Supply, 428 Central Ave., Ft. Dodge, Iowa, or 128 31st St., N.E., Cedar Rapids, Iowa.

SELL: Telrex full size Triband beam, one transmission line, $110; 32S1 with pwr supply, $605; 75S1, $435; E-V 600D mike, $10; WRL speech booster, $12; Elenco compression ampl., $30; field phones, $30; Tri-Ex Tower, 56 ft., cost $250, sell for $150.00; Magnacordette stereo recorder, $325; Atlas mike stand; UTC S-12, S46, S62. R. Lamb, 1219 Yardley Rd., Morrisville, Penna.

SELL: Complete operating mobile rig. Elmac AF-67, Gonset G-66B, James Power Supply, Johnson loading coil. Turner mobile mike. WØNQZ, Oslo, Minn.

WANTED: One Kilowatt commercially-built transmitter, like Collins KW-1 or equivalent. Al T. O'Neil, Lake City, Minn.

FOR Sale: Novice rig, top shape, S38E and Globe Chief 90 with xtals, key, etc. $100 F.o.b. Glens Falls, N. Y. Landau, 21 Bay St., N. Y.

SAN Francisco & vicinity: Communications receivers repaired and realigned. Guaranteed work. Factory methods. Special problems invited any equipment. Assoc. Electronics, 58 So. P. St., Livermore, Calif. W6KF, Skipper.

FOR Sale: HT-33, used less than 60 hours. Has been completely checked by professional. Shipped prepaid for $450.00. Will be happy to arrange terms. Contact: James R. Howerton, M.D., P.O. Box 86, Columbia, No. Carolina.

KW Plate transformers 3000-0-3000 VAC, 1.2 amp. 115V Pri. Wt. 110 lbs. Stancor; also 1500-0-1500 VAC, 1.5 amp. 220V, pri. Wt. 140 lbs, Amertran $35. F.o.b. K9HXV, Carl Shogren, 5916 N. Artesian Ave., Chicago 45, Ill.

HALLICRAFTERS SX-71, in perf. condx, all new tubes, $150, with R-46A spkr and 100 Kc. oscillator in speaker cabinet, $165.00 or make an offer. S. B. Hall, 2225 Randolph Street, Florence, Alabama.

WANTED: 6 to 12 304TL tubes. Callanan, W9AU, P.O. Box 155, Barrington, Ill.

WANT 1925 or earlier ham and broadcast gear. Personal collection. No dealer. W4AA, Wayne Nelson, Concord, N. C.

76A4, with 0.8 Lc., 3.1 Kc and 6 Lc filters, serial 2533, perfect condx, $620.00. W6WZD, P.O. Box 761, Menlo Park, Calif.

BARGAINS. All in good condition, unless noted. Polaroid picture of any item, 50¢. I will take first check for my price or your best offer. All inquiries will be answered: Collins 75A4 w/spkr and Pan-adapter $3958, $625; Pacemaker $400, both for $925; Hallicrafters DD-1 dual diversity receiver, complete $250; pocket HF rcvr RBR, $2, no tubes: Drake low-pass filter, needs work, $2; Eico 320 sig. generator, $18; 2 small in. speed drills, $4 each; 2304TLs, $5 ea. Many misc. parts, chassis, tubes, relays. See Dec. CQ classified or write your needs. Tom Perera, K2DCV, 912 Fifth Ave., New York City 21, N. Y.

SELL: Communicator IIb, excellent condx, $175, Richard Axelrod, W3DEG, 125 Edgehill Rd., Bala-Cynwyd, Penna.

G-28 GONSET 10 M. Communicator for sale. Excellent condition, used only 3 hours total. Hy-Gain 3-el. beam for 10 M. Best offer over $270. KØLZT, 4015 Eaton, Kansas City 3, Kansas.

FOR Sale: Hickock signal generators #610A, $140; #288X, $95; Sylvania oscilloscope #132, $125; RCA voltohmyst, #WV-97A, $40; Ferret test speaker, #620, $15; Solar capacitor analyzer, #CB-1-60, $15. Electronic designs VTVOM #100, $20; contact Dan Gravereaux, K1DMG, 46 Carter St., New Canaan, Conn.

HALLICRAFTERS S-85 with Hallicrafters S-meter (excellent condition), $85. K1AJL, 35 Terrill St., Rutland, Vt.

SELL: Motorola 6M xmtrs and 2M xmtrs, $9.95. A. Hatfield, P.O. Box 502, Chesterton, Ind.

75A2, $289; HT-32A $595, NC-300 $245, AR88, $125; HRO-51J3 $650, SX-101 $255, 51J2, $495. Teletype converters, R274 (540 Kc thru 54 Mc) $295. 75A-1 $249, 75A-4 $595, 51J-3 $650, SX-101 $255. 51J2. $495. Teletype converters, printers, perforators, etc. Write Tom, W1AFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. (Richmond 2-0048) (Store: 60 Spring, Newport, R. I. Fred W1JFF.)

2500 volt 1 amp. pwh. supply on caster dolly, caged, plenty capacity, swinging and smoothing chokes, $72s, $125. Not surplus pole pig. 813 final amp. on relay panel, coils 10-20-40 mtrs. fil. xfrmr, etc. inc.$ 50. 2 FM xmtrs w/dynamotors, Motorola, 30-50 Mc., comp. w/tubes, 100 watts input, $30 ea. Lampkin freq. mtr., Ser. 981 and dev ation mtr. model 205A, $300 pair. Rack & panel mounted SSSB xmtr, VFO, toroid filter, self cont. pwr. supp., VOX, 300 watts P.E.P, Final is GG all band, exciter uses plug-in coils, $225. W9DSV, Box 87, Webster, Wisc.

FOR Sale: HQ140X, $150. 10B, $125; both in top condition. Jim Connor, KØADL, 33 Middle Road, Bedford, Mass.

FOR Sale: Globe King 500A, used only 18 hours. In A-1 condx: $400. F. Ciulini, W9MLZ, 6359 So. Keeler, Chicago 29, Ill. PO 7-8938.

HT-32, in excellent condx: $500. W8KBT, Box 1486, Huntington, W. Va.

THUNDERBOLT, factory-wired, in orig. carton: $460; HT-32, in orig. carton, $525. Both units used but very little and are in excellent condx. Johnson attenuator for above; 75A-3, best condx, matching speaker, $365. George E. Dominick, W4UWC, 1025 Nokomis Circle, Knoxville 19, Tenn.

FOR Sale: National NC-57 receiver, in perf. condx. Best offer. Jack Hall, 316 Sneed, Texas Tech, Lubbock, Texas.

MOBILE: Viking mobile, factory-wired, and VFO, $100. Elmac PMR-6A and pwr supply, $75. 135 watt BC-654 transceiver complete, hand generator, PE-103 dynamotor, cables, and manual, $95. Viking Ranger, factory-wired, $159. W9RQK.

MILLEN 90901 oscilloscope and home-brew power supply, $25; QF-1 (new), $5; Ameco Radio theory course, $2; practice tape 1200', 13 wpm and 15 wpm, two hours, $4; RETMA Novice code course with five LP records (to 10 wpm), $7. Calder, 6351 Oakland, Phila., Penna.

SELL. Factory-wired Valiant; HRO 60 four trays and xtal calibrator, $310 each or both $600; Johnson low pass filter, Heath SWR bridge, D-104 mike with G-1 stand. No time to operate. W3YHQ, 500 Hudson Ave., Altoona, Penna.

FOR Sale: Heathkit TX-1 "Apache" transmitter in perf. condx, with JT-30 xtal mike. Best offer over $200. Charles S. Hines, K50GN, Rte. 2, Box 266-A3, Jacksonville, Arkansas.

SELL: Heathkit VFO, like new condx, $13.00. Wilbur H. Rau, WØNUI, Henderson, Minn.

FOR Sale: SX-101 Mark III, in ex. condx, $310. Bob Yarmus, K2RGZ, 532 Lefferts Ave., Brooklyn 25, N.Y.

SELL: 32S-1 and 75S-1. Best cash offer over $875 for both only. Perfect condition. Will ship in original cartons. Serial Nos. over 500. K2MII, 58 Joyce Rd., Hartsdale, N.Y.

SELL: R&W Grid Dip, $30; Eldico KW linear, $325, Millen Bridge 90672, $30; MM 2 RF analyzer, $110; Tri-Ex H 354 tower with platform and bearing, $150 (cost $247); 75A4, $650, all like new condx. K. W. Matchbox, $95. Lamb, W3VDE, 1219 Yardley Rd., Morrisville, Penna.

18-AV vert., 80M-10M, 52 ohm B&W lo-pass, 40 ft. RB-8/U, make an offer. W1DPB, Westford, Mass. Tel. MY 2-8986.

MERRY Xmas and a Happy New Year from WØCVU! Thanks for making these awards possible on Two-Way SSB: DXCC, CQ 100, WPX, WAC, BERTA, 101, TPA, WAA, DRD, 150 countries confirmed on Two Way SSB using Collins KWS-1, 75A-4 and Telrex beams.

SELL: Motorola FMTR-41V(AF) 1D single case front mount 30 to 50 Mc. with mike and cables. Ralph Villers, P.O. Box One, Steubenville, Ohio.

SX-99, $95 or trade. In perfect condx. KØMUK, 457 Yorkshire, St. Louis 19, Mo.

FOR Sale: 32V2, perfect, $385; 75A-1, just factory reconditioned, with 3 Kc mech. filter, $265. Heath BC-1A AM tuner, $20; Powerstat, 115v, 15 amp, $20; transformer, 220v/9000v ct at 1.0 amp, new, $85; 220, 440v/3800V ct. at 2.7 amp, $75; Collins 310B-3, excellent, $165; vacuum variable, 20-675 $\mu\mu$fd, 7500 w.v., new, $35; choke, 20 hy. at 1.0 amp, 50 ohm, $35; Elmac A54H with 6v/600v dynamotor supply, $100. Power supply, 115V AC,2000V DC at 500 Ma. $60; VFO-matic, Mod. 80-20, new, $85. James Craig, 172 W. Third, Peru, Ind. Phone GRidley 3-9306.

SALE: KWM1 and AC, $725 or KWM1, AC, DC, rack and cord, and mike, $950. First money-order or certified check. Will RR exp. collect. Dr. E. Gooch, 704 S. Scottsdale Rd., Scottsdale, Va.

HQ-170 with clock; brand-new condition, $265. C. L. Romberg, 102 W. 18th Austin 1, Texas.

SX-99: Like new in every detail! Only $120. W2BAC, 4 Bayard St., Larchmont, N. Y. TE 4-2640.

SELL: National 183-D. Best offer over $225. New Allied Knight deluxe 60-watt bask stereo amplifier and Knight deluxe stereo preamp, $195. Pietropaolo, 544 Main St., Medford 55, Mass. EXport 6-6172.

VIDICONS: Used 6326 Vidicons for ham TV. Best offer $40. K9CPO, 2 Drexel, LaGrange, Ill.

CLEANING House: two new 4-250s, all enclosed for TVI suppression. Needs a few more hours' work, $89; Viking I cabinet, $7; KW bandswitch two sections, $7; electronic switch and sine wave oscillator, $15, misc. KW power supply components (pole transformers, relays, meters, etc.). Write for details. William Madigan, W1UGE, 159 Nott Street, Wethersfield, Conn.

SELL: "Apache", best bid over $200; Hy-Gain 15 mtr. Gammaxial AR-22 rotor, HQ-100, Globe 90. all in good condx, make bid. K2HQA, Mike Farbman, 8 Borden Terrace, Maplewood, N. J.

FIBREGLASS Quad Arms! Quad users, replace the bamboo fishin' poles with our lightweight weatherproof fibreglass quad arms. Set of eight 9 ft. arms, $44.95; set of eight 12 ft. arms, $59.95. Set of eight 15 ft. arms, $74.95. No. C.o.ds. Shipped express collect. Send check or money order to L & L Electronics C., Box 455, Midlothian, Ill.

COMPLETE Ham Station for sale: DX-100, NC-98, rotary beam, vertical antenna, many extras. $350 takes it all. Twin lens reflex with light meter, $45. W1VSS.

FUN in the sun at greatest of all Florida Hamfests, the Tropical Hamboree, Jan. 30 & 31. Write Box 104, Miami 1, Fla. for details and hotel reservations.

FOR Sale: Heathkit: Coneirad Alarm, $10; 0-5 oscilloscope with probe, $40; six meter converters; National, $30; International xtal, $10; Harvey-Wells TBS50C complete: mike, VFO, APS-50 power supply, low-pass, coax relay, $110; Super Six converter with noise clipper, $40; Carter 6-volt dynamotor 400 volt, 200 Ma., $20; pair 115 volt AC selsyns, $10; 115 volt AC blower, $8; TR switch $8; Transcon 10-meter mobile converter, transmitter, $60. Mobilcon 6 or 12 volt power supply, 350 volt, 125 Ma. and 200 volt, new, $25; Eimac 4X150A new, not surplus, $25. Don Lovett, 3629 Northwood, Warren, Ohio.

FOR Sale: NC-125, gud condx, $110. Globe Chief, $45. Jim Cadien, 629 W. Lexington, Glendale 3, Calif.

WANTED: Collins R388-51J, R390/VRR, R220, SX-42 and lab test equipment. Cash or trade oriental articles of your choice. George Lee, P.O. Box 95001, Los Angeles, Calif.

LOWEST Prices: Latest amateur equipment. Factory fresh sealed cartons. Self-addressed stamped envelope for lowest quotation on your needs. HDH Sales Co., 919 High Ridge Road, Stamford, Conn.

GLOBE Chief 90. $45; S-85 with Hallicrafters S-meter and Knight crystal calibrator, $110; HQ-120, just paid $60 having it rebuilt, $125; Harvey-Wells TBS-50A with homebrew power supply and all relays, $65. RME VHF-152 converter $40. All in perfect shape. K9LTU, 10219, S. Green St., Chicago 43, Ill.

AIR conditioner! Cool your shack next summer. Swap 220V 2HP window Amana worth $550 new for ham gear of equal value. Want a good receiver, SSB exciter, etc. Will crate and ship or deliver within 250 miles. T. J. Gordon, W4TEC/6, 29127 Heathercliff Rd., Malibu, Calif.

SELL: Hallicrafters SR 34, six and two meter transceiver, 110 volt AC, 6-12 volt D.C. slightly used; $400. J. G. Roberts, W2UO, 7 Dolphin Green, Port Washington, N. Y.

FOR Sale: New condition, four months old HQ-160 receiver and speaker; BW5100-B transmitter with BW 51SB adapter; 20 meter Shortbeam 50 ft. mast; AR22 rotator; coaxial relay LM 18 freq. meters pwr supply, DB23 Preselector; 1000 W P.E.P. linear amplifier; 813 100W xmttr; lots of extra parts, surplus and commercial. All in fine condx. $1000 or your best offer. D. E. Hawkins, RR 1, Box 176, Green Cove Springs, Fla. Phone 6582 after 6 PM, W4ETX.

CALIFORNIANS and interested foreigners: Complete 80-10 meter station and lots of junk, $500. Send 4¢ stamp for list. Piercy, 111 East Deodara Vacaville, Calif.

HEATH, Q-multiplier, $7.50; push-to-talk dynamic mic, $7.50; T-17 mic, $2; pair RCA 815s, $10. E. Reardon, 347 Highland Ave., Columbus, Ga.

HOPPED Up SX28 with instruction manual, $89.95, F.O.B.; 304TH, $15; pair balun coils, $5. W3HTF, 909 Glenview St., Phila. 11, Penna.

WANTED: Eimac VVC60-20 vacuum capacitor. Bob Turner, Box 252, Accokeek, Maryland.

SELL: Proceedings of the IRE, 1953 thru 1959. $6 per year or $35 for complete run, plus shipping. W9GJR, 5256 Fairmount Ave., Downers Grove, Ill.

TWO Like new receivers, HQ-170, $285; NC-300, $235; sideband slicer, $32; Sola regulating transformer 180 VA $17; pick up complete 813 linear three ft. cabinet, $145. W2HFZ, 465 Ft. Lee Rd., Leonia, N. J. Tel. WI 4-1974.

FOR Sale: HRO 60T with 15 meter coil, $385; Eldico SSB 100A, $450; Tapetone XC-144, $65; Tecraft 6m, 2m, 1.4m converters, $27 each. Rack mounted power supply, 2500 volt 500 mills. $50. Homebuilt 6m RF unit described in Handbook with 4-400 final tube, best offer over $80; 4-400 in box $28. Robert Coburn, W1JJO, 111 Blaine Street, Springfield, Mass.

FOR Sale: HQ-100, in exc. condx, $139. Want low pass filter. Jim Rankin, Box 161, Co-Lin. Jr. College, Wesson, Miss.

WESTERN Radio Amateur: Third largest ham magazine in the U. S. 1 year, $2.00; 2 years, $3.50; 3 years, $5.00. Also publisher "Surplus Handbook", over 90 pages schematics and photos of popular surplus receivers, transceivers, $3.00 ppd. California, add state tax. Western Radio Amateur, 10517 Haverly St., El Monte, Calif.

FOR Sale: 20-A, OT-1 w/BC458 VFO Deluxe case, $225; Globe LA-1 linear, $80. All in A-1 condx. Walt Isbert, K2ZOB, 21 Glenroy Road, Caldwell Township, N. J. CA 6-3547.

KW Parts needed: Plate xfrmr at least 2500V DC at ½ amp. or more, chokes, filter condnsrs to go with it, B&W butterfly cond. type CX40A or CX49A, complete with coil mountings and N3 neutralizing cond, HDVL coils for all bands, MB-150 tuner, Johnson KW matchbox Model 250-30-3. Send asking price in first letter. Will OSL all letters. Angel M. Zaragoza, W6ZPR, 1356 Olive St., San Bernardino, Calif.

SELL: DX-100 with Cardax model 950 mic and coax antenna relay, $180; SX-96 rcvr with speaker, $185. All are in excellent condx. Contact K6JAY, 280 South Ave., Alamo, California.

WANTED: Tapetone converters, 2 meter XC144C4 and 6 meter XC50C4 in gud condx. KN5VUL, Box 100, Ft. Worth, Texas.

GLOBE Scout Model 66 VFO, Mod. 755 Heathkit, balun coils, TR switch, LP Filter, all in spotless condx. $135 WØPRM, 304 North Park Independence, Kans.

DOUBLESIDEBAND: Unused Globe doublesidebander w/VOX and VFO, sacrifice for $150, complete. Also Regency ATC-1 converter, $50. Write Ralph Marler, W-226 Arlington Towers Apts., Arlington, Va.

NEED Pair 4-400s, 872s, 810s. Lewis West, 3514 West St. Louis, Wichita 3, Kans.

KWS-1 Serial 669, like new, Hy-Gain Tribander, 100 ft. RG8U, all for $1350.00 Virgil Schaffer, 3165 Grove Court, Cedar Rapids, Iowa.

SELL: 6M. Communicator III, $185; Heath SB-10. new, wired, never used or aligned, $75. KØTFM. Erwin H. Meier, Gordonville, Mo.

FOR Sale: Gonset GSB100, SSB Exciter; purchased new in April and used very little in last few months. $400. C. L. Jenkins, K9KAJ. McLeansboro, Ill.

4 BAND Receiver, $50; factory-built 27 meg. transceiver, $100; Temco 75GA factory sealed, $400. Box 211, Olive, Calif.

20A, 600L, Mohawk receiver, W2PSG, E. MacFaul, R. 1, Lewiston, N. Y.

DX-100, $175; two element 20 mtr. Gonset beam, 21" G-E TV, Whittier-Fullerton area only. Call OX 6-4554, Tom Gillen, K6VMV (Ex W8YNZ), 13003 S. Biola, La Mirada.

FOR Sale: 75A3 with 6 and 3 Kc. filters, $375; Johnson 500, 2 mos. old, in first class condx, $725. Will not ship. Arthur J. Dunnick, Rte. 2, New Sharon, Iowa.

FOR Sale: QST magazine, 256 copies, 1926 thru 1945; 1933 thru 1945 are complete; 17 ARRL binders; CQ magazine, 69 copies April 1946 thru December 1951. Best offer. Why compromise? 10, 15 and 20 meter 3-element antennas, separate and complete with CESCO Gamma Match, full size providing maximum gain and front-to-back ratio, $100 for all three. Pick up deal. Sry, will not ship. W8JRG, R. Littler, 640 Snowhill, Springfield, Ohio. Tel. FAirfax 2-8722.

FOR Sale: Hammarlund SP600 SJ receiver with latest modifications; $465. M. E. Smith, K8GDR, 5760 N. High St., Worthington, Ohio. Tel. TU 5-6886.

SWAP New Ham-M rotator for small commercial transmitter W3LVY, Phone RE 9-1753.

PRINTED Circuits photo-etched from your drawing. Ray Megirian, Box 385, Huntington Station, N. Y.

COMPLETE Station: FW Valiant, 75A2 and speaker, Dow antenna relay, $650. All excellent and now on the air. Will not sell as separate items. H. Smith, W5WEA, 827 Marilyn, Oklahoma City, Okla.

FOR Sale: Complete Collins SSB station: 32S-1, 516F-2, 75S-1, $900 (original cartons) or, separately, 32S-1 and 516F-2 for $480. E. Thompson, W2UØØ, Edgewood Road, Rumson, N. J.

I Have 1-BC342 for $50 w/O homebrew pwr supply in gud wkg order when shipped. Will try to answer all letters. Might trade. KN5VYY, Jim Beistle, 434 So. Osage, Ponca, Okla.

SELL: Gonset Linear 6M amp, Excellent condx, white cabinet model. Best offer over $100. Donald Klein, 1725 Westover Road, Clark, N. J.

SELL: KWS-1, in exc. condx; $1100. W2AEV, Ray Jones, 111 Hillside Rd., Farmingdale, N. Y.

FOR Sale: Viking II transmitter with VFO; HQ129X receiver, George A. Rossetti, 1515 Hopmeadow St., Simsbury, Conn. Tel. OL 8-4880.

GRID Dip Meter, Millen Model 90651 1.7-300 Mc. plus low frequency coils 46702, 46704 and extension probe 46721. $50. W2FTY, 738 Parker Blvd., Buffalo 23, N. Y.

FOR Sale: SX-71 with spkr, $75; Gonset II, $70, Sry, will not ship. J. Ressegine, 209 Prospect Pl., Brooklyn 38, N.Y., Tel. ST 3-2264 after 4:30 P.M.

B & W 5100-B, $325; SX-100, R46B, $200. Both in exc. condx. C. Sherman, Jr., W1PNM, 74 Purington Ave., Augusta, Me. or Glen Cove, Me.

VIBROPLEX Bugs, $6.00. K5ENL, Grandview, Texas.

4X250B Eimac. Brand new, in sealed bag. With air socket. $40. Bonney, W8JUV, Muskegon, Mich.

NATIONAL Converters for NC-300. Set of three plus matching case, $100; also B&W 5100B, $350. Both items in like new condx. John Doremus, W3ADE. 47 Condit Rd., Mountain Lakes, N.J. Tel. DEerfield 4-3331.

WANTED: Wireless and radio equipment, tubes, books, etc. 1920 or older. Please describe fully and price. R. Husted, W3OCX, 105 N. Chester Pike, Glenolden, Penna.

SELL: 75A-2 less spkr, $200; DX-100 with grid block keying, $150. Both are in exc. condx. F.o.b. Tucson, W7NPA, Jim Miller, Jr., 24 Polo Village, Tucson, Ariz.

SELL: 75A4, #3894, 3 Kc and 500 cycle filters, $595; Ranger factory wired and tested, #64964, $195; Telrex 20M-56-112 3-el. beam, $75; 40 ft. Rohn pyramid type tower, $49; Model 80 Turner xtal mike, R-46A spkr, Johnson low-pass, Dow-key relay, TR-4 rotor. Make offer. All equipment in excellent condx. No trades! Allan Dreier, K9BEV, 1915 N. Ullman St., Appleton, Wis.

SALE: Generator, hi-voltage, DC voltage 3000/1500/1200/115, coupled to 4 HP motor. Excellent, $250. Chas. Rydzewski, 750 Stocking, Grand Rapids, Mich. Also, transmitter, Navy TAJ-18, exc. 250/500 watts, $200.

$195: RME 4350, Knight VFO and xmttr, TR switch and Vibroplex Bug. San Geise, 3201 Bella Vista, Midwest City, Okla.

ANTIQUE Radios: Atwater-Kent, Breadboard, Westinghouse RC. Make offer. Want Radiola One, Grebe. Paul Giganti, 2429 San Carlos Ave., San Carlos, Calif.

GPR 90 WITH Slicer, $500; original carton. UTC CVM5, 600 watt modulation transformer, used 3 months. W2STW Rt. 40, Newfield, N.J.

SELL: Gonset G77A xmttr, G66B rcvr, both with Universal power supplies, 505C mike; Mosley MA-3 whip with mount; cables and manuals. Like new condx, $425. Ralph Jordak, W8UXP, 6006 Gerald Ave., Cleveland 29, Ohio. Phone TUxedo 5-4018.

WANTED: Universal Model 200A carbon microphones, complete or nickel cases only. WIBB.

SELL: SX-101 rcvr and matching R-46B spkr. Both for $330. Contact Morgan, K9BCX, 3621 Newark St., N.Y., Washington, D.C., Apt. #101. Tel. EM 2-9107.

SELL: DX-40, VF1; Ameco oscillator. Allied code records. All excellent. Any offers? K1IIK, Newport, N.H., 55 Pinnacle Rd.

MEASUREMENTS Model 67 peak voltmeter, $100: Ferret Mod. 701 sig. gen., $20; RCA Mod. 44BX velocity microphone, $110; Kay electric dual megamarker Sr., $125; Kay electric Megapipper, $50; Millivac Mod. MV12A vacuum tub voltmeter A A C., $125. WA2FZH, 238 No. Park Drive, Woodbridge, N.J.

RECONDITIONED Equipment: Terms-Trials-Trades! New Guarantee! *Transmitters:* Aerotron CAP 500 $159.00; 5100 $299.00; 5100-R $379.00; CE-10A $99.00; CE-10B $139.00; CE-600L $349.00; 32V-3 $485.00; SSR100 $395.00; Elenco 77 $369.00; Gonset 500W Linear $199.50; SR-34AC $325.00; TBS-50 (80-2M) $59.95; DX-35 $49.95; VF-1 $19.95; Pacemaker $385.00; 6N2 $129.00; Phasemaster II $199.00; Lysco 600 $69.00; AF-67 $139.00; GLOBE Scouts, Chiefs, Champs, Kings, Etc. *Receivers:* Geloso 209 $199.00; S-53A $69.95; SX-88 $429.00; SX-96 $189.00; SX-101 $319.00; HQ-129X $149.00; HQ-140X $179.00; HQ-150 $229.00; PRO-310 $449.00; HRO-60T $385.00; NC-98 $114.00; NC-125 $139.50; NC-183D $309.00; NC-300 $269.00 Leo, WØGFO, Box 811, Council Bluffs, Iowa.

SELL: Globe Chief, factory-wired, in exc. condx, manual, novice xtals, $40 and shipping. Lavern Smith, 3104 Catherwood, Indianapolis, Ind.

SELL: Mosley 2-element Tribander, in perf. condx, $25.00 F.o.b. Roosevelt, L.I., N.Y. K2MYW, Dr. Mortimer D. Solomon, 41 Westbrook Lane.

COLLINS 75A4 with 3 Kc-6 Kc mech. filters, speaker, also HT 32A. Both 7 months old. Like new condx, $550 each. P. Colman, 47-25 215th St., Bayside 61, L.I., N.Y. Tel. BA 9-2313.

THUNDERBOLT: Factory-wired, beautiful condx, about thirty hours use. Johnson T-R switch, power attenuator included. Now have Collins S-line. Asking $485. W2HQH, JV 1-1875. Intercontinental SSB net to be formed. If you live outside U.S. write, giving bands, suitable hours. L. Rosencrans, 644 Wildwood Road, West Hempstead, L.I., N.Y.

RECEIVER SX-100 new condition, with speaker, $200; 20A exciter for sale with VFO F/W in exc. condx, $150. Robert C. Dunham, 12 Fenwood Place, Yardley, Penna. Tel. CY 5-5564.

VIKING Valiant xmttr for sale; factory-wired, in excellent condx, new tubes. Send offer to J. R. Little, K9DLU, Elwood, Ill.

FOR Sale: Viking Adventurer, $45; Viking II (factory-wired) with VFO, $195; Hallicrafters HT-18, VFO and NBFM exec., $55; Heathkit AT-1, $25; Heathkit DX-20, $29.50; Heathkit DX-35, $45; Meissner Signal Shifter, $26.50; Collins 32V2, $350; Central Elec. 10B, $125; Central Elec. 10B with 458 VFO, $150; Morrow Conelrad Monitor, $29; National NC-66 (new), $90; Hallicrafters S-95, $39.50; Central Elec. Sideband slicer (with "Q" mult.), $49.95; Elmac PMR-6A with PSR-6 pwr supp., $99.95; Millen 92105 SSB selector, $30; Hammarlund HQ-140XA, $175; RME 4350 with spkr, $195; Drake 1-A, $210; National NC-300, $275; National HRO-50T1, $300; Hallicrafters SX-101, $250; BC-221 freq. meter, $50; Gonset G-77 mobile xmttr (exc.), $195. Write Art Brown, W9IHZ, Brown Electronics, Inc., 1032 Broadway, Ft. Wayne, Ind.

DX-100, $150; DSB100, factory-wired, $100; NC-125, $120. Jack Hall, K4AEG, 921 Temple, Knoxville, Tenn.

HOMEBREWERS! Don't miss this one! Send for list. Like-new surplus parts. Digging deeper into gold pile. Want that new rig. Meters, $2.00, 866A, 75¢; transformers and chokes, 25¢/16. W7HNV, 3113 Rocky Point Rd., Bremerton, Wash.

PE-103A, brand new, cables, plugs, relays, filters, shock-mount BASE: $28. K7DAI, 219 S. Hillcrest Ave., Yakima, Wash.

SELL: Collins 75A-3, needs minor repairs for best operation. Also, new UTC voltage adjuster, input 40-160V, output 115V, 300 watts. Cannot ship, sry. H. E. Benton, New York City, UN 4-6262, Ext 2F.

HRO-60, with nine coils, AA, AB, AD, C.D, F,G,H,J. $500. Margolis Audio, 28 High St., Hartford, Conn.

QSTS: Complete: 1935, 1936, 1953 through 1958 incl; partial 1931, 1934, 1937 to 1941 incl; 1943, 1944, 1945, total 158 issues. Also Handbooks, 1934, 1935, $25 for all. F.o.b. W2YUQ.

SELL: Stancor Multimatch modulation transformer A-3899, 500 mil 600 watts list $199.63 net $199.20, never used, $60; BC221 freq. meter, gud condx with book, $50. All letters answered. P. A. DeClaive, W6GIB, 6646 MacArthur Blvd., Oakland, Calif.

SELL: NC88, pr. 254s, 833A, 7-2 and 4 henry 550 Ma. chokes; all in gud condx. Want: Matchbox, Variac, 20-4 henry 400 Ma. choke, 3500V CT xfrmr. Available only from 12/13 to 1/5. K9BFI, 125 Hillcrest, Hinsdale, Ill.

RANGER for sale, like new condx, $200 or your best offer. Also NC-183, Make offer. Dennis Royal, 852 E. Aurora, Des Moines, Iowa.

BUFFALO, Rochester Area! KWS-1, Ser. #992, with 4-250Bs. In perf. condx. Aug. weekly use for 2 years, ½ hour. All sensible offers considered. Phone to inspect. K2HKP 1510 Genesee, BA 7206.

WANTED: Military or Industrial laboratory test equipment. Electronicraft, Box 399, Mt. Kisco, N. Y.

FOR Sale: Meck T60-1 transmitter, 60 watts input, phone and cw, 10 and 75 meter coils: A-1 condx, $45. W1KLD, 49 Abbott St., Nashua, N. H.

HALF Gallon CW rig, June 1954 QST: 1955 Handbook, 813 final, fil. & bias supplies integral, less H. V. supplies: $75. W3MCB, RD 4, Box 163, Gibsonia, Penna.

NATIONAL NC-125, immaculate condx, seldom used: $100. John Pixley, W4YKA/3, 116 Aikens Pl., State College, Penna.

HT-32, like new, $500; 600L linear, like new, $300. Made DXCC and WPX SSB in eight months with pair. K2HEA/K2MGE, Lynbrook, L. I. Tel. LY 9-2356.

NEW Leece-Neville rectifiers, 50 amp., $5.00; 100 amp, $7.50; 110 volt selsyns, $3.00; 50 volt, $1.50; 500 watt isolation transformer 110 volt $7.50; Western Electric condenser mike, broadcast type, $35. B. J. Kucera, W8CKR, 10615 So. Highland Ave., Garfield Heights 25, Ohio.

WANTED: Johnson 6N2 and 100w. Multimatch modulation transformer. K2ZSP, 67 Russell Ave., Rahway, N. J.

FOR Sale: Johnson dual 3-element 10 and 20 m. beam with tilt head, $50. Also Space Raider 3-element 15 m. beam, $20. Southern California only. Dick Fossett, W6PTA, 10931 Allen Drive, Garden Grove, Calif. Tel. JE 4-3360.

TRANSISTORIZED Six meter converters. Small, sensitive, crystal controlled. Free information. $29.95. Also limited quantity VHF transistors at experimenters prices. Guaranteed minimum alpha cut-off 100 Mcs. $2.65 each. Robin Radio, 13229 Red Fern, Dallas 30, Texas.

FOR Sale: Johnson KW, speech amplifier, power reducer and spare tubes, $1100. Collins 75A4 with 3 Kc, 6 Kc and IF can, $550. HRO-60 with spkr, regular coils and 6 meter coils, $450. All above in first class condx. Collins 310B exciter bandswitching, $175. W5DYL, Forrest City, Arkansas.

WANT: Old QST and CQ Binders, 500 cycle filter for 75A4, B&W model 850 pi-net coil, vintage 1914 crystal detector. Cash only. Al Marcy, W4ID, 461-3rd Ave., Sea Park, Eau Gallie, Fla.

CASH For used Short-wave ham receivers, transmitters and accessories. Treger, W9IVJ, 2023 N. Harlem Ave., Chicago 35, Ill. Tel. TUxedo 9-6429.

SSB Transmitter, Johnson Matchstick, MM-1. Gates compression amplifier, TR switch, transistor course, QSTs, CQs, etc. Stamp for list. W4API, 1420 South Randolph, Arlington 4, Va.

DSB-100 for sale, doube sideband, c.w. and AM xmtr, in new condx, used only a few hours, VOX included: $85 cash. Take it or leave it. No offers or deals. W2ADB, 27 Grayson Pl, Teaneck, N. J. Tel. TE 7-2004.

SAVE On Electronic, Radio and Communications components and equipment for Hams and commercial use. See thousands of parts in stock—many more coming in daily, all at unusual savings. If you live in or near Philadelphia, visit our new warehouse at 31st and Grays Ferry, or send for free catalog. Teletype perforator paper oiled tape, yellow 11/16" wide, 8" O.D. roll, 1" E.D. Sold only in sealed boxes containing 40 rolls each. Shipping weight 46 lbs. $10 per box. RTTY clubs write for quantity discounts. Selectronics, 1206 S. Napa St., Phila. 46, Penna.

VIKING II complete with VFO, LP filter, relay, xtal mike, like new condx, $225. HQ150 with spkr, like new condx, $235. Rev. C. R. Wilson, Rt. 1, Jonesville, S.C.

REQUIRE Late model SX101A. SSB equipment and rotor. Will sell or trade Viking II, vy clean w/new tubes recently installed. What offers? John, 20 Belmont, Brunswick, Me.

SELL like new KW SSB station 75A4, $450; Eldico SSB-100A, $325; HT-33 KW amplifier, $550; RF analyzer, Electronic Key, beam, rotor, etc. Complete station: $1400. W2QZQ Hal Riederwolf, Chapel Gate Lane, Glen Head P.O. N. Y., Tel. MA 6-1099.

SELL: CE20A, QT-1, Deluxe 458 VFO, $180. W2QJC, 54 Charles St., Clifton, N. J. Tel. PRescott 9-0639.

DX100: Professionally wired, in good condx, spare 6146s, $165. Need: Approximately 1500V DC 350 Ma, 150 W modulation transformer. Warren Nissen, Ashokan, N. Y.

NC-183 rack model, 16 tube all-band receiver, $99.00. K6TWL.

HAMMARLUND HQ110C, matching speaker. In original carton, $200. F.o.b. Syracuse, N. Y. Allen Kier, 516 Hillsboro Parkway, Syracuse 3, N. Y.

SACRIFICE Collins 75A4 almost brand new, original carton. Ser. 4913 with spkr, $595; 6 Kc filter, $29 extra; Collins 32S1 xmtr, 0478 (in perf. condx); A.C. supply, $89; Electro-Voice 664 microphone and stand, $35; Collins 30S-1 linear amplifier, used 17 hours (perfect) order. Money back guarantee. Quin LaFargue, Jr., W5BQJ, 214 North Adams St., DeWitt, Arkansas.

SALE: Elmac A-54 (12V): 5BR-1 conv., James C-1450 PS, Johnson Whipload-6, $170. Major J. R. Hansen, W4DTU, MOQ, 3367, Camp LeJeune, N. C.

TWO Collins 75As, Serials 1097 and 2500, perf. condx, $495 and $525; Collins transmitter 32S1, demonstrator, $489; receiver 75S1 demonstrator, $419. Crated Collins 30S-1 Linear amplifier, $500. Allowance on HT-33 or Thunderbolt or others. Collins KWM-2 immediate delivery, $1095. Will trade. Terms: cash, money back guarantee. Moory's Wholesale Radio, 12th Jefferson, Phone WH 6-2820. DeWitt, Arkansas.

FOR Sale, HQ14OX, w/xtal calibrator, $185. EX Viking II, W/VFO, $195. Both $375. WØFGV, 108 S. Orchard, Northfield, Minn.

SALE: Homebrew 150 w. fone, 200W c.w. Built-in VFO. Pair 807 modulators, pair 807 final bandswitching 40-10 meters, $85. Julius Countess, K2VYD, 64-04 217St. Bayside 64, L. I., N. Y.

SELL: Collins 75A4 ser. No. 7005, $560; new condx, used approx. 75 hours. Factory manuals, cards and packing case. E. C. Welch, 10730 Stubbs Lane, Culver City, Calif. Tel. VE 7-5425

SIX Meter transmitter, Lettine, like new, $60. K9DUQ.

SELL QSTs, 1920-1959, 466 issues, 11 binders, in gud condx. March 1920 and August 1921 missing. Best offer takes all. Ralph Carson, 6111 Kent Road, Ft. Wayne, Ind.

HRO50T, $250; NC173 and spkr, $135; in exc. condx, 172H sig. gen., $15. W3GCZ, P.O. Box 389, Glen Burnie, Md.

SX-24. $50; Meissner Ex Shft., $14; Eico sig. generator, $9; Eico tube tester, $14; Heathkit 0-12 'scope, $44; 10M converter, $9; KV power supply, $18; Telrex 20M 3-el. Supermini, $30; Graham 4-el. 10M, $19; Mosley V-4-6 vertical, $14. Many other items. Wanted Hi-Fi components. Will trade. W1ABJ, 40 Salisbury Rd., Brookline, Mass. Tel. LO 6-0230.

WANTED: For immediate cash, a 75A4 Collins receiver with ser. no. 5,000 or more which is clean and in good condx. Also, immediate cash for Hy-Gain RBX-1 rotor with control system using wedge of light on great circle world map for central U.S.A. State lowest cash price, condition and approximate express shipping cost in your first letter. George E. Clark, KN4EKW, P.O. Box 308, Brandenburg, Ky.

SELL, cash: Hallicrafters S-72, $45; BC-348-R, S-meter, xtal-controlled 135 Kc sharp IF, power supply, $100; Heath AT-1 (converted 70 watts), VF-1 and AC-1, $60; QST 1944-49 complete, $6. All in A-1 condx. Local sale desired. Herbert Ley, ex-W3VYN, 104 Schuyler Rd., Apt. 304, Silver Spring, Md.

FOR Sale: 75A4. Ser. No. 3973, brand new condx, electronically and apparance matching speaker, $575. Need KWM-1 and AC supply. Ed Schofield, Autumn Acres, Limekiln Pike and Dillon Rd., Jarrettown, Penna.

SELL: Central Electronics 20A, Matching VFO, QT-1, excellent, $190; also 40 ft. telescoping tower, Hy-Gain 3-el. 15 M beam, Heath SWR meter, Johnson Signal Sentry, coax relay. W2GIM, 455 Oakridge Dr., Rochester 17, N. Y.

HALLICRAFTERS SX-99, $115; R-46B spkr, $10; DX-35, $50; VF-1, $15; $175 takes all. W3KFI, George Hockenbrocht, 365 South Broad St., Lancaster, Penna.

COLLINS 75A4, immaculate, $575. W8WGA, 3451 Ridge Ave., Dayton 14, Ohio.

NEW Service for amateurs. List your equipment for sale, let us know your needs. No charge to buyer, small brokerage fee to seller after transaction. W2EEJ, Herbert Greenberg, 821 Rutgers Road, Franklin Square, N. Y. IVanhoe 6-0809.

CALL Letters: Gold or Silver may be applied on any surface. Set of 2" 65¢, 3", 85¢. A & B Services, Box 147C, Kittery, Maine.

TUBES, New Guaranteed, 4—65A5s $12.50. 4—125A's $18.50. 4—250A $29.50. 4—400A $37.50. 5—12B/4E27A $19.50. 4X-250B $32.00. 4D32 $22.50. 810 $12.50. 9811 $3.00. 813 $8.00. 829B $6.50. 832A $5.50. 833A $37.50. 866A $1.50. 872A $1.50. 3B28 $1.75. 75TL $12.00. 250TH $15.00. 304TL $18.50. Command Receivers, all tubes, 190—550Kc $12.00. 3—6MC $10.00. 6—9.1 $8.00, tuning knobs $1.00. 85KC I.F.'S $1.25. command transmitters, all tubes, 3—4MC, 4—5.3MC, 5.3—7MC $6.50 each, racks single $2.00, double $2.75. URC-4 VHF-UHF walkie talkie $37.50, less batteries. ART-13 transmitters $45.00. ART-13 modulation transformer with driver $10.00. Add postage. C.O.D.'s OK, all guaranteed, Bill Slep Company, Box 178, Ellenton, Florida.

JOHNSON VFO, $25; Viking II, $175. Original owner. Factory-wired. John Ward, Jeffrey Rd., Greenwich, Conn.

SELL: Convention won GSB-1 sideband adaptor, never used, with warranty card. $120. Ross Randolph, K1ATS, 92 Savage Hill Rd., Berlin, Conn.

COLLINS 75A-3 with matching speaker and calibrator, $375. Jack Fry, 5136 W. Nelson St., Chicago 41, Ill. Avenue 2-1898.

COLLINS 32V3 xmtr in excellent condx, no scratches. Good for use in fringe TV area where TVI is a problem. $425. R. Bartel, W2AWS, 198 O'Neil St., Kingston, N. Y. FE 1-1321.

FREE Flyer monthly, Electronic surplus. Kurtz, 702D Bay, Staten Island, N. Y.

20A in top condition, QT-1 and BC458 VFO with Feb. 1957 QST conversion, $175. W4YNY, 2712 Springmont, Jacksonville, Fla.

SELL Gonset 3156. Covers 112-132 Mc. In gud condx, used less than 35 hrs. $40 or gud police rcvr. Jim Russell, 596 Rutland, W. Englewood, N. J.

SELL: NC-173, matching speaker, and NFM unit, $140. Also Knight VFO $25.00. All are in FB shape throughout. Fred Matthews, 107 E. Rockwell St., Fenton, Michigan. K8LJU.

SELL: National NC183D with spkr, $200; F.o.b. Cincinnati. Double conversion—Brought me 250 countries! W8EV.

SALE! NC-109 with matching speaker and 6-meter converter, $150; three months old DX-20, $30; 24 hour wall clock, $9. Gary Cooper, K4PLZ, 318 Hemlock Rd., West Palm Beach, Fla.

DX100, all modifications, $165; HRO5 complete with power supply and spkr, $100; T47/ART-13, latest model, just like new, $50; BC221AK, new, $75; B23 Preselector, $30; Gonset Triband converter, $25. All items in excellent condx. H. D. Haines, W5QCB, 1316 S. W. Military Dr., San Antonio 21, Texas.

NC-183D for sale, with matching speaker, in excellent condition. $239. F.o.b. W2COY, 232 Johnston Circle, Sidney, N. Y.

ATTENTION Hams! Receivers and transmitters serviced and calibrated by professional personnel. Low prices. All work guaranteed! Also kits wired to order at 33 1/3% of list price. Write: Monarch Engineering, 3058 Lehman St., Hantramck, Mich.

SALE: Good DX-100, $145. 15 meter beam and rotator, $25. Robert Trostle, Avondale, Penna.

DSB100, new, $95; 1.5 KVA pole xfrmr with auto xfrmr, to 3 KVDC, outp., $18; Masco 30W PA amp., $15; Millen R9'er, 4 coils, $10; 32V2 PTO, $35; 6 ft. open rack, $5. Joe Gillson, W3GAU, 109 Mullin Rd., Wilmington 3, Del.

SELL: SX101/spkr, Viking Valiant W/T, D-104 mike, PTT stand, co-ax relays, all in exec A-1 condx. Only $600. Leaving for college. Will ship. Dave Dahan K2TTA, 87-06 63rd Ave., Rego Park 74, N. Y.

SELL: Hallicrafters S20R, gud condx, $30. K4YFC, Rt. 8, Kingsport, Tenn.

HALLICRAFTERS SX-99 receiver, R-46B matching speaker; seldom used. Excellent, $115. John Parker, 58 Ellison Hills Dr., Rochester 10, N. Y.

QSLS, 100 two-color cards, $2.00, plus postage. One style. Sample 3¢. Onondaga Press, Onondaga, Mich.

SUPERB Eico 720 and 730 combination with Heath VFO and low pass filter. Push-to-talk incorporated. Owner in service and unable to use this fine rig. Will sell as package only due to interlocking control switching. $175. Write now to L. S. Fisher, W3MVK, 1020 Olive St., Scranton, Penna.

QSLS-SWLS, 3-colors, 100, $2.00. Samples, dime. Bob Garra, Lehighton, Penna.

TAPETON XC-50 six meter converter with power supply, output 14-18 Mc., brand new, $47; K2OOG, David Hershkowitz, 1835 East 52 St., Brooklyn 34, N. Y.

SELL: Like new Rubicon decade box. Units, tens, hundreds, ohms. .05% accuracy. $20. W7QIN, 21429—68 W., Lynnwood, Wash.

JOHNSON Ranger, excellent condition, will ship express in original carton. First check for $175 takes it. Joseph Bau, W8JEH/0, 4060 Vine Ave., S.E., Cedar Rapids, Iowa.

WIREP has HT32A almost new. Will sacrifice at $595. Also NC-300 with spkr at $250. DX-100 perfect at $150. Prefer local deal but will ship if necessary. Bob Gibbons, Everett St., Canton, Mass.

75A4, perfect, $550; HT32 perfect, $495. Also 75A2, $295, buying KWM-2. WØBNF, Box 105, Kearney, Nebr.

FOR Sale: Viking II with BC459 VFO, $190. On the air now on 10 and 20. Stamp for list of misc. parts. FOR Sale: 20 meter CrushCraft ground plane, $10; Link 250 watt output FM transmitter receiver suitable for six meters, complete or units, final, exciter, receiver power supply, some miscellaneous meters, condensers, tubes. Send stamp for complete list. Al Rac, 5 Oakbrook Rd., Ossining, N. Y.

B & W 5100 B and 51S-B perfect condition, original owner, $500; also P-P 813 final, not TVI'd, $40, no P.S. Chas. Horn, W2KDC, 38 Radcliff Dr., Huntington, N. Y.

FOR Sale: Viking II, VFO, LP filter, excellent, $215; 6 meter VFO, $15; 6 meter xtal converter, power supply, 26-30 IF, $25; 60 watt modulator, pwr supply, $30. 100 watt 6 and 2 meter separate RF sections on single chassis, $40. Send for photos W. J. Moulton, W9DSP, RFD 4, Chippewa Falls, Wisconsin. Tel. PA 3-3000.

DX-40, $60; CA-1, $10. Wanted: 20A, K9LON, 3000 Lexington, Hazelcrest, Ill.

20A, QT-1, 458 for sale. Factory-wired serial E7855. Very clean. $220. Local preferred. George Scott, W2LFX, 6 Stuart Dr. West Glen Cove, N. Y. Phone ORiole 6-2088.

QSTS. 1930 through 1956 for sale at 20 cents each for all. Eugene Butt, Box 569, Kerrville, Texas.

FOR Sale: Collins 32S1. SSB xmtr, with power supply. Latest modifications by factory. $585. K5GVP, Basil R. Wilson, 446 Royston, San Antonio, Texas.

SSB Station. New CE 20A with QT1 and deluxe 458 VFO. Astatic D104 mike, Viking low pass filter, and HRO5OT1 equipped with CE Model "B" Sideband slicer. All new or guaranteed operating condition with instruction books. $600 or best offer takes all or part. W5KXD, 6511 Aberdeen Street, Dallas 30, Texas.

CRYSTALS Airmailed: SSB, Novice, CD, Commercial, Net, Citizens, MARS, etc. FT-243 Custom finished .01%, any kilocycle 3500 to 8600 $1.49. (10 or more 99¢), novice 99¢. 1700 to 30,000 $1.95. All frequencies 60¢ additional per crystal for hermetic holders. SSB "Package" June 1958 QST. SSB Handbook.—5 crystal fundamental mixer sets, FT-243 $9.95, HC-6/U $12.95, matched filter sets $6.90. Citizens .005% overtones FT-243 $2.45. HC-6/U hermetics $2.95. Airmailing 9¢ per crystal. Crystals? Ask us, we have them all. Crystals since 1933. C-W Crystals, Box 2065Q, El Monte, California.

SALE: DX-40, exc. condx, $65; VF-1 new, $20; SG-8 signal generator, $15; OM-3, 5" oscilloscope new, $30 without probes. Derek Duplantis, 100 N. Washington St., Battle Creek, Mich.

WORLD's finest reconditioned equipment at lower prices. On trial. Trades. World's best terms financed by us. S38 $29.00. S53A $59.00. S85 $89.00. SX-99 $119.00. SX-96 $159.00. SX-100 $199.00. SX101 $299.00. SX-88 $349.00. HT32 $479.00; HQ100 $129.00, HQ170 $299.00: NC57 $59.00. NC98 $99.00, NC125 $99.00. NC183D $225.00, NC300 $279.00. NC303 $379.00; Globe 755 VFO $29.00, Globe Chief $39.00, Globe Scout $59.00; DX-100 $179.00; Viking II $179.00; 75A2 $325.00, 75A4 $549.00, KWM1 $595.00. KWS1 $1195.00, AF-67 $129.00. Hundreds of other items. Write for list. Special discount for all cash. Henry Radio, Butler, Mo.

LOW Capacity filament transformer for maximum efficiency in Ground Grid Amplifier. 5 volts at 30 amps, sec. 115 to 125 volt pri., $10. C. Brooner, P.O. Box 261, Morton, Ill.

FOR Sale: Heathkit Apache transmitter, $195. A Verne Roberts, WOGML, 5520 Porter, Wichita, Kans.

SELL or Trade: Mobile rig consisting of Gonset Super 6 converter, Commander transmitter and VFO, PE103, whip, controls, cables, $150; James C-1050 power supply, $25; BC221, book, power supply, $60; remote control 6 position coax switch, new, 110v., $30; 2½" round 150 microamp. meter, $4; 110v. selsyns, $7 each; dynamotor, new, 12v. in, 235v. 75 mils. out, $4; Johnson variable condenser, new, 100DD70, dual 99 mmf., $5; T126/ARC5 transmitter with tubes, $10; WE plate transformer, oil, 3000v. CT .23A, choke, 4 mfd. 1500v. cond., $20. All FOB. A. Kimeldorf, 127 Nesbit Trrace, Irvington, N. J.

FOR Sale: Receivers: NC-57 and SX-43. W8WFV, 1753 Kensington Ave., Youngstown 4, Ohio.

BUFFALO, Rochester area: Wanted: to rent, from February 1 until Mar. 15th or from now until March 15th, Ranger, 32V, B&W, or any exciter capable of driving KW. Your rig will receive best of care. K2GXI, 120 Yorktown, Buffalo 26, N. Y.

MUST Sell: HBR 14 tube double conversion rcvr with 40 and 15M coils. All parts for other bands, Bud cabinet, matching speaker and phones. See QST for July 1957, $135. Parts for 800V 300 Ma pwr supp., oild conds., 25 watt CW xmtr, 40M coil, xtal controlled. Heath grid dipper, 4-65A with socket; E-V model 637 dynamic mic, each $15. W5OPU, Sam Accardo, 4943 Arthur Dr., New Orleans, La.

FOR Sale: Globe King 500 and HT18 VFO, $415; Harvey-Wells Z match coupler, $50; SX-100 and R46B spkr, $215. All in gud condx. Clayton Smith, W1CYE, New Milford, Conn.

SIDEBAND Inexpensively: 20A factory-wired exciter, QT1, deluxe VFO, 350 watt pair 811A linear with power supply, microphone. Will deliver and place into operation within 200 miles Boston. First check for $280 takes this bargain. W1KIB, Dr. James Martin, Shrewsbury, Mass.

FOR Sale: Heath Apache, all inquiries answered. In exc. condx. A. McGowen, 833 North Ave., Macon, Ga.

SELL: Hammarlund HQ100 for $100; Heath DX35 for $38. Alliance "Tennarotor," $18. Am going mobile. T. Turner, W1NHE, 39 South Quaker Lane, West Hartford 7, Conn.

FOR Sale: Hallicrafters S76 receiver and R46 speaker. Has 15 meter bandspread. Best offer over $90. Shipping charges collect. Ken Voth, WØCIZ, Route 4, Newton, Kans.

LEADING Radio-Televison operation has opening for two young apprentice engineers. Professional experience not required, but must have First Class License and ability to learn quickly under guidance of Chief Engineer. Write Station WSAV, Savannah, Georgia.

KITS Wired. Write for price. J. C. Anderson, Jr., K5GCM.

WANTED: VHF152 also 1 KW band switching final. W4VB, Duke's Trailer Court, Raleigh Rd. Ext., Rocky Mount, N. C.

CANADIANS! Complete station NC98, TBS50, AC pwr. supply, Mic, VFO, LP filter. Worked 50 countries on fone last winter. What am I offered? VE2AYE, 105 Orchard St., V. LaSalle, Que., Canada.

MANSFIELD 16mm camera, lists at $59.50, excellent condition. Need ARC5 7-9 transmitter, 450th, 6C21 or what have you? K8QYK, 1250 Center Drive, Wooster, Ohio.

FOR Sale: Knight Communications receiver, 54 to 30 Mc., 50 watt transmitter, VFO, for $175. Modulator (24 watt home brew) free. In like-new condx. Prefer Georgia area deal. K3DFW, Bob McCracken, 13 West 57th Apt. A, Savannah.

2 Pair 4X250Bs, brand new, $50 pr. Pair 813s, $15; SX99 w/built-in xtal calibrator, $125. Improved SX17, best offer! KØAQX, Richard Robinson 4324 Farnam, Omaha, Nebraska.

FOR Sale: QSTs for the past 14 years. Complete volumes for nearly every year. Also have 4 issues from the year 1940. All in perfect condx. Make any offer. W9UMX, 4853 N. Lake Dr., Milwaukee 17, Wis.

FOR Sale: Johnson Viking I, $105; VFO 21, $25; SX-25 with spkr, recently factory reconditioned, $65; S-38, $20. All items in gud condx and shipped F.o.b. Vermillion, S.D. Russell Voorhees, WØBPH, 208 University Park, Vermillion.

BEST Offer takes Collins KWS-1. Used very little. Just given factory modernization. Will be shipped direct from Collins in Cedar Rapids in factory carton. WØHBG, 5311 Worthington Dr., Washington 16, D.C.

TRADE with Bob & Jack: We stock Collins, Drake, Hallicrafters, Hammarlund, National and others. Send for used equipment lists. Bob & Jack's Store for Hams 4507 Forest Ave., Des Moines, Iowa.

HQ129X with speaker, built-in 100 Kc oscillator. Looks like new. First $125.00 takes it! H. F. Vinel, 4240 Loubell Lane, Cincinnati 5, Ohio.

SWAP: My S40B in nice condition for your DX40 similar condx, with VFO. Prefer local deal only. W1FDN, MacKenzie, 29 John Carver Rd., Reading, Mass.

TRANSISTOR Power supply, brand new, wired Heath, Model MP-1. First $35 gets it. Bruce Parsons, W2COT, 12 Washington Park, Maplewood, N. J.

FOR Sale: Almost new Hammerlund HQ-170, with matching speaker and advance antenna relay; $325. Will ship C.o.d. E. F. Hayes, KØKVV, 12141 Valencia, St. Louis 38, Mo.

WANTED: Set of 15, or some tapes for a TG-34A Keyer. W3RSB.

WANTED: Unmodified HRO-60, NC-183D or 75A4 in top condx, state serial number and price please. All replies will be answered. G. H. Anderson, 7537 Meadowair Drive, Sacramento 22, Calif.

SELL: Collins 32K3, $390; Collins 74A1, $180. In perfect condx. WØWTM, 9808 Allendale, St. Louis 23, Mo.

MICHIGAN Hams! See the Collins "S" line and KWM-2 at Purchase Radio Supply, 327 E. Hoover Ave., Ann Arbor, Michigan. Telephone NOrmandy 8-8262. Roy J. Purchase, W8RP.

RUBBER Stamps. QTH and Call, $2. 1408 Dial, Springfield, Ill.

ALLIED R-100 rcvr, S-meter and factory checked, $100. Kenneth Manabe, WA6FYS, 10708 Foothill Blvd., San Fernando, Calif.

HRO-60 A, B, C, D coils, matching speaker, product detector, xtal calibrator, practically brand new, used very little, A, B, and D coils, never used; $395. Wallace Printz, W2KAN, 1177 East 14th St., Brooklyn 30, N.Y. Tel. DE 8-8343.

SALE Or trade: Heathkits VTVM 7A, $20; SG-7, $15; AM-1, $11; CA-1, $11; Gonset Super Six 12 volt, $35; 6 volt dynamotors $3 each; latest Q & A, $3; Leece-Neville 6 volt, less rectifier. Will consider trades on S-85 or equivalent. All letters answered. Sell: Collins 75A2A, 3.2 and 800 cycle filters, 100 Kc xtal calibr., spkr, ranger push-to-talk. In exc. condx. $550. cash. K2LHW.

DX100 converted 100B, in perf. condx, $159; HQ140X, $149. Dave Goggio, 2671 Barron, Memphis, Tenn.

300 W. Cw xmtr, 813 final, new parts throughout; Par-Metal rack, $60; high and low voltage power supplies for the above, unwired, $25; 125 W. modulation trans. UTC CVM3 and driver trans. S8 unused, new, both for $15. W2ADC, Box 201, Elmont, N.Y.

ONLY Used two months, HRO60T, complete with coils, calibrator, and spkr, $400; also 6 & 2 Hi-Bander completely new, $100 or both $475 cash. Write or call SAratoga 7-0074, Hal Steward, K3IFN, 1711 Belt St., Baltimore, Maryland.

WANTED: Two RK-65 tubes, no sockets. Or 2 4-400 tubes with sockets. Ralph Hough, 705 59th St., West Palm Beach, Fla. K4VNL.

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60,052

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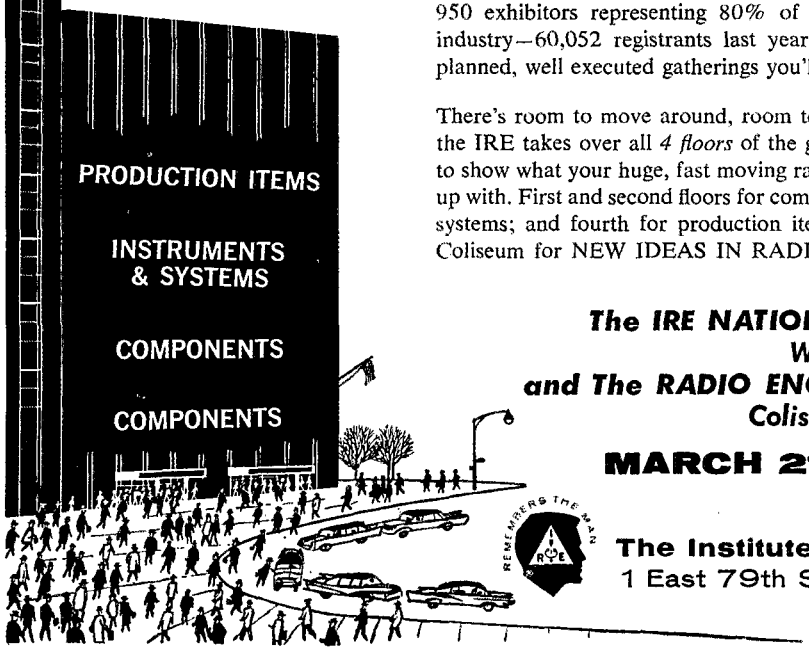

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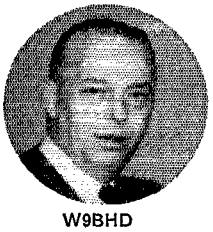
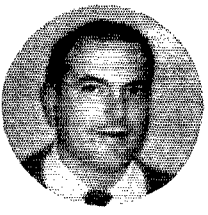


W9BHD
Joe Huffman



W9HLA
Joe Gizzi

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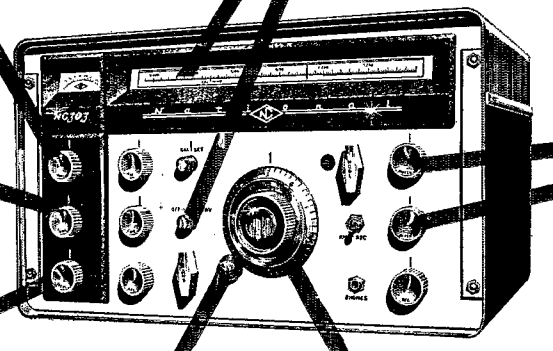

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